Forest, People and Profit net equations for sustainability

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Content

Preface

With increasing environmental awareness, sustainable development has attained top-most priority on National and International agenda, yet, the integration of sustainability into development planning remains largely a theoretical concern. If the objectives of sustainable development are to be realised, it is imperative that development administrators are exposed to the concepts of sustainable development, grounded in the techniques and methods of achieving sustainability and are sent out to their careers in the field fully conversant with the urgency and the expertise for achieving sustainable development.

It is with this objective in mind that the Centre for Sustainable Development was established at the Lal Bahadur Shastri National Academy of Administration in April, 1994. The Centre seeks to create awareness among young development administrators and serving officers on sustainable development issues, conduct long and short term training programmes, network with other National and International institutions with similar interests, document all available research material on relevant issues and generally seek to make a break through in achieving sustainability in field level implementation of development plans.

One of the activities of the Centre is to bring out a series of publications on various issues in sustainability which will be of relevance to the layman, the academic and the administrator. Based on extensive literature surveys, field trips and case studies substantiated by the findings from workshops conducted on each subject, each volume will emphasise the current status, guidelines for implementing sustainable concerns, constraints to successful implementation, policy prescriptions, and lessons from experience with an attempt at providing a practical manual on sustainable development administration.

A vast array of topics ranging from forests, food and fisheries to watersheds, wasteland management and traditional wisdom will be covered in the series.

The first of the series focuses on the much debated issue of forest lands. Retaining the existing forest cover, improving the quality of so-called forest land, bringing back the traditional ethos of preserving forests as part of the Indian heritage and lifestyle and making people part of the greening movement rather than policing the forests, the changing policies over the past century and their impact on the forest cover, the relevance of these policies in the context of liberalisation and structural adjustment are all addressed in this volume.

Introduction

Twenty three per cent of India's geographical area has been declared as forest land, and is mostly under the control of the government. For almost a century and until 1988, the policy was to use these lands for commercial purposes. Man-made plantations of industrial species were encouraged on forest lands, often by clear felling mixed forests. Even after India became independent in 1947, this policy continued. This policy led to deforestation, which increased rural poverty and unemployment on the one hand, and social unrest and conflict over rights on the other.

A shift in thinking has occurred of late as planners recognised the difficulty of excluding people from forests; the importance of forests to people's livelihoods and the effectiveness of communities in local protection and management. In this context, a three day Workshop on 'Policy and Implementation Issues in Forestry' was organised by the Centre for Sustainable Development of the Lal Bahadur Shastri National Academy of Administration (LBSNAA), Mussoorie, at Mussoorie from July 4 to 6, 1994.

The Workshop deliberated upon the evolution of the policies relating to forests, their implementation, and the problems encountered. It also endeavored to examine the role of voluntary organisations and their relationship with the Government in the forestry sector, involvement of people, particularly women, social forestry and its relationship with ecology and environment, development of the concept of joint forest management, implications of industry managing forests in the context of the new liberalisation policy, and a host of other forest-related issues.

The broad objectives of the Workshop were as follows:

- To discuss forest legislation and policy with the participants,
- To assess the results of implementation of various social forestry projects,
- To examine the constraints resulting in poor success of afforestation programmes,
- To appreciate the relationship of people, particularly women, with the forest,
- To anticipate problems in the implementation of joint forest management, and,
- To evolve a viable policy framework for the greening of wastelands and management of CPRs

Structure of the Workshop

The three days of the Workshop were devoted to presentations followed by discussions both in plenary sessions and in group sessions.

The first one and a half days were devoted to five plenary sessions. Each session began with a presentation followed by an open house discussion. The present forest policy and the legal framework were reviewed by Dr. N.C.Saxena, Director, LBSNAA. Shri S.Palit, Chief Conservator of Forests, Government of West Bengal made a presentation on the experience of social forestry on village lands and the involvement of village panchayats in afforestation. Discussion on farm forestry and agro-forestry was initiated by Shri Ranjit Issar, Joint Secretary, National Wastelands Development Board. Prof. K.C. Malhotra, I.S.I, Calcutta, presented a case study from West Bengal on the institutional aspects of joint forest management. Ms. Jaya Chatterjee, SPWD, discussed the role of NGOs in joint forest management.

The participants broke into three groups for deliberations in the afternoon on the second day. The groups focused on (a) Administrative Issues, (b) Equity Issues and (c) Leasing and Marketing Issues. Group presentations were made on the last day followed by a summing up and concluding session.

The participants were a mix of middle and senior level officers from Central and State Government Departments (both IAS and IFS) who were directly associated with the forestry sector either at the field level, or at the policy level. NGOs were also represented.

An Overview

Meeting the basic human needs of all who inhabit our earth in a way that fosters harmony between man and nature, is a challenge of our times. The Brundtland Commission Report (1987), the Rio Conference on Environment and Development (1992), and the setting up of a UN Commission for Sustainable Development have all been able to bring a global focus on the urgency of meeting human needs in a sustainable way. The Green Movement across developed and developing nations has stressed the need for evolving a participative system where people themselves shape their own destinies in a manner that future generations may also prosper. All such movements have highlighted the need to meet basic human needs, especially of the unprivileged poor, if conservation and sustainable development have to have a chance.

Such global perspectives have made our national policies and priorities highly dynamic and receptive to eternally changing issues in the management of sustainable development. The national policy on forests and forest dwellers has also witnessed maximum responses to global concerns. These responses have been conditioned by the concerns emanating from depleting forest resources, meeting fuelwood and other energy needs of the people, the promotion of social, agro and farm forestry as a commercial venture, and JFM responses in the naturally regenerating forest regions. From a policy of policing against/ from the forest dwellers, we are now shifting to policing by the people. At a time when we have again started looking upon the forest dweller as a friend of the forests, it is imperative to evolve such community participation and sharing of forest products which results in empowerment of the people together with sustained growth of our forest cover.

The advent of the British, their Empire building, and the network of the Indian railways, systematically put pressure on forests. Forests started being looked upon as a renewable asset that required management, in order to systematically meet the timber needs of the colonial masters. The process of alienating the forest dweller from the forests was given legitimacy by the Indian Forest Act and the administrative processes that were unleashed on forest regions after its inception. Villages were established in deep forest regions to facilitate the labour needs in extracting timber at a pace never witnessed before. The Forest Act, the Forest Working Plans, the Survey and Settlement Operations in the forest regions, were all aimed at limiting the rights of the people and transferring ownership of forests to the state. The categories of Reserved, Protected and Village Forests, the powers of a Forest Settlement Officer to change the status of some lands after entertaining objections were meant more to contain the aspirations of the people, than to satisfy them. Since forests were still in plenty, it was possible to provide for the subsistence needs of the forest dwellers from the village forests - a few 'prescriptive inversions' meant only to reinforce the hegemony of the state.

The accelerated pace of exploitation of timber and the introduction of a large population in "Forest Villages" to carry out timber extraction operations, during colonial times, put limits on Independent India's forest policy in deciding the involvement of people. After almost a century of management of forests by policing and by regulating the rights of the forest dwellers, an administrative situation was created where it was not even perceived that people could protect. At the same time, the shift from nomadism and pastoralism to settled intensive agriculture, the growing pressures of human and livestock population, the increasing extravagance of the well-to do, and energy needs of the people, all increased the pressure on our natural forests. The failure to meet the basic human needs of the forest dwellers and securing alternative means of livelihood for them, made tree felling a source of wage earning for the forest dweller. The alienation of Forest lands from the people who needed it for satisfying their needs, and consequently Forests turning into open access lands has been one of the main causes for degradation as well as for increasing the misery of the people.

The response to deforestation after 1976 was to promote tree growing, especially eucalyptus. In our endeavour to make the country green, we often mistook tree growing with planting, not realising that forests are natural and nature's bounty, and no amount of tree growing can be a substitute for the natural regeneration of forests. Even here the involvement of, and benefit to, the poor was well below the potential. Much as it gave good returns to the planters in the initial years in the agriculturally surplus regions, it had

nothing for the forest dwellers who still felled green wood for wage earning. Plan funds started flowing into the social forestry and farm forestry sectors which did help in meeting pulpwood and pole shortages of the urban markets, but forest regions and the livelihood needs of the forest dwellers did not become a priority. It is this failure to meet the livelihood needs of the people that accounts for our poor performance in the natural forest regions.

At some places, however, a tradition of people's protection facilitating the process of natural regeneration of forests was observed. Joint forest management is a recognition of this tradition. Almost all states have now accepted the philosophy of involving people in forest management. These efforts at regeneration have also started getting reflected in the satellite imageries of the states.

However, there are several issues to be addressed. How widespread is the practice of communities managing commons as opposed to only using them as an open access resource? There is yet little understanding of how best to combine forestry with anti-poverty aims and the socio-economic realities of the rural societies, and with sustainability. What should be the various elements of peoples' participation? Why does collective action succeed in some cases and not in others? Would the Governments accept transferring decision making, control and management on forest lands on a large scale to the people or panchayats? Or would it be more feasible to improve the capability of village organisations first through joint management schemes, and then gradually increase their control? What has been the experience of NGOs? What should be the role of forest-based industry in the afforestation of barren lands? And above all, what administrative changes are required to accomplish the new policies?

These were some of the questions which were debated among the participants during the three days. Some background information was prepared on these issues to help the deliberations. These notes have now been redrafted in the form of this book and the views of the participants on the controversial issues have been incorporated at the appropriate place. The various chapters of the book are therefore an amalgam of the personal views of the author as well as the consensus reached with the participants at the Workshop.

This book would not have taken the present shape without the meticulous care with which its earlier drafts were checked and commented upon by my colleagues at the Centre for Sustainable Development, Dr. Nira Ramachandran and Shri Amarjeet Sinha. Several others at the Academy helped in the organisation of the workshop and in writing its proceedings, upon which the discussion sections of the book are based. Special mention must be made of Ms. Smita Sabhlok and the Training III team.

The participants of the workshop contributed in a large measure to the new ideas emerging in this book through their lively discussions on several issues.

The World Bank has very kindly permitted us to publish its Executive Summary of Policies and Issues in Forest Sector Development which is included in the Annexures.

We acknowledge with gratitude assistance received from the Ministry of Environment and Forests, Government of India and the Swedish International Development Agency (SIDA), New Delhi which made it possible to organise the Workshop and publish this book. We hope the book will be found useful by all students and researchers interested in forestry.

Chapter 1: Forest Policy of India

Three categories of land

Similar to many countries, trees in India occur on private lands, on public lands other than those under the management of Forest Department (such as village lands, road sides, etc.), and on Forest lands which are under the management of Forest Department. The last category has been referred to in this book as Forests or Forest lands, (with a capital F) to distinguish them from forests which would include village forests too. More than 90 per cent of land legally classified as forests is today managed by the Forest Department.

Trees on farm lands - Trees have been an important part of the farm economy in some parts of India. In Kerala, a region of high rainfall and good soils, farmers plant trees on homesteads and on farms to maximise overall returns from land. In arid western Rajasthan, farmers protect khejri (Prosopis cineraria) and bordi (Zizyphus spp.) trees to increase soil productivity and land sustainability. These trees recycle nutrients and provide mulch and shade for crops, and fodder for cattle, and thus complement farm production. In the hills, trees are maintained on farm boundaries for subsistence products, like fodder and fuelwood. Casuarina plantations for urban fuelwood have been a part of rural landscape in southern coastal India for more than a century now (Hill 1982: 159). The actual number of trees would of course vary a great deal, depending upon agro-ecological conditions, being higher in high rainfall and fertile regions than in dry regions, and on farmers perception of opportunity costs for farming inputs (Singh 1987; Tejwani 1987). In regions of abundant Forests, farmers rarely plant trees on farm lands, as gathering from Forests is considered more cost effective.

In most parts of India however farm trees have remained of secondary importance to agriculture. Apart from Kerala and ecologically similar areas of western Ghats, where both soil and rainfall pattern are extremely favourable to an intensive home garden type of agroforestry, elsewhere tree density on homesteads, boundaries and crop lands has tended to be low, or has declined. The All-India Rural Credit Survey Report studied 75 districts from all over the country in 1951-52, and noted that in most districts either no expenditure was reported or less than one per cent of the families reported expenditure on the laying of new orchards and planting of trees (RBI 1956: 692), indicating that tree growing on farms had been highly localised. Several studies (for instance, Gupta 1984) have observed that with the spread of irrigation, trees on crop lands were not needed, and were felled or not protected. The area under privately owned tree crops and groves in the country was 2.77 per cent of the total reporting area in 1951-52, but fell to 1.15 per cent by 1980-81, showing a substantial reduction in the area under farm trees (Government of India 1989).

The trend of decline in the density of trees was reversed in some regions in the late 1970's when farm forestry programme was taken up. This is described in chapter 3.

Village lands - At the time of consolidation of British empire in India in the mid-19th century, more than two-thirds of the land mass was lying uncultivated (Singh 1986). While uncultivated land remote from habitation was declared as government Forests and managed under the new forest regulations, lands close to habitation were left as village lands for common use by the villagers. Over the years not only has their area declined but these lands are today highly degraded for a variety of reasons. There was pressure on them due to increase of population. The lands that were left out to provide the community needs of forest produce and for grazing were often assigned and brought under cultivation in due course (see table 1 for post-Independence figures, showing increase in cultivated area from 118 to 142 m ha). Often they were encroached upon by the village elite (Jodha 1990) and others, and later the encroachments were regularised. A laissez faire policy was followed as there was neither any fund allocation for these lands, nor was any specific government department made responsible for grasses and pasture development. The village commons, due to lack of interest from all concerned, became open access lands, rapidly deteriorated and were unable to meet local demands for fodder and fuel, leaving the villagers with no other recourse, but to turn to the Forests which increased pressure on them.

Table 1: Changes in land use in India in million hectares

	1950-51	1984-85
Reporting area	284 (100)	304 (100)
Unculturable/ not available for cultivation	47 (16.6)	40 (13.1)
Area under Forests	41 (14.5)	67 (22.0)
Cultivated area	118 (41.6)	142 (46.7)
Culturable area + grazing lands + groves	50 (17.6)	38 (12.5)
Fallow land	28 (09.9)	17 (05.6)

(figures in parentheses show percentages)

According to rough calculations done by the author (Chambers et al. 1989: 40-45) the total area among village lands now suitable for vegetation has been reduced to only 12 m ha. With some 6 lakh villages in the country, the average is about 20 ha per village, but there is much regional variation as well as variation between neighbouring villages. In villages of intensive cultivation, village lands are of marginal importance, but in hilly and unirrigated tracts village lands still offer livelihood possibilities for the poor. Thus the villages can be broadly classified as "CPR-limited" and "CPR-dependent" (Blaikie et al. 1986: 484).

Forest lands - Forests were divided by the British into two broad categories; Reserved Forests and Protected Forests. Reserved Forests were exclusively for use of the Forest Department, and the surrounding villagers had no rights other than the ones explicitly permitted by the State. The Protected Forests were also managed by the Forest Department, but the people had certain rights in them, such as gathering fruits and other produce of the trees, and cutting wood specifically for household use (but not for sale). They also had freedom to graze their livestock and hunt wild game for domestic purposes. Over the Protected Forests the villagers had all rights not specifically taken away by the State. At the turn of this century the areas under Reserved and Protected Forests were 20 and 2.4 m ha respectively (Stebbing 1926), which increased to 31 and 10 m ha at the time of country's independence in 1947. Since then the net area under the control of Forest Department has further increased, notwithstanding the fact that between 1952 and 1980, an average 154,571 ha per year of Forest land was converted to non-forest use, mostly irrigation and power dams, and agriculture (Shyam Sundar 1993: 24). Two processes helped this increase.

With the abolition of the princely states and landlordism, all uncultivated lands under landlords' control became vested in the State. The larger tracts were handed over to the Forest Department generally as Protected Forests, and the rest was vested in the village panchayats (local councils), which are under the overall supervision of the Revenue Department. Secondly, private forests were acquired by the state governments in the two decades following Independence. Massive felling of trees took place from these forests because of the fear that these forests would be nationalised, as indeed they were in the 1950's and 60's. For several years after this take-over an impression has continued in the villages that if trees are planted on private lands, not only would the trees belong to Government but land on which such plantation takes place would also revert to Government. In contrast to Africa (Ridell 1987:6), where trees are planted to establish tenure rights, in India they are often removed to demonstrate claims to land. Even as late as 1987 a SIDA team promoting farm forestry in South Bihar encountered tribals' fears that if they planted trees their lands would be taken away by the government (GOB 1987). The fear is not baseless as the Bihar Private Forest Act and similar other enactments did precisely this in the past, by "nationalising" private trees.

Productivity of Forests - Of the area under Forests, 37 per cent is tropical moist deciduous forest (where sal is the main species), 29 per cent is tropical dry forest (with teak as the main species), 8 per cent is tropical wet evergreen forest, and the rest is subtropical, temperate, alpine and other forests. Nearly 12 m ha has been set apart as protected area for wildlife, out of which 8 m ha has tree cover (World Bank 1993). According to the Forest Survey of India (FSI 1988: 31), 40 out of 75 m ha of Forests has a crown density of more than 40 per cent, 28 m ha has it between 10 and 40 per cent, and the rest 13 m ha has less than 10

per cent of crown cover. The FSI estimated current productivity for the entire forests at 0.7 cum (cubic metres) of wood per hectare per year in 1985, which includes both recorded and unrecorded removals from forests. These levels are dramatically lower than the potential, which has been estimated at 2 cum per ha per year. Achieving this potential which is about three times the current productivity would bring considerable improvement in the economic and environmental well-being of India's people.

Dependence on forests - Forests are not spread evenly in India, but are concentrated in the Northeast, the Himalayas and Shivalik ranges, the central belt, strips along the Western Ghats and other hill areas, and in patches of coastal mangroves. More than 50 per cent of Forest land is located in the central belt, which is the poorest region in India with heavy tribal concentration. India's forests have generally speaking not been uninhabited wildernesses. Even in the remote Forests people have either been living traditionally or were brought by the Forest Department and settled there to ensure the availability of labour. Today, there are about 100 million forest dwellers in the country living in and around Forest lands for whom Forests have continued to be an important source of their livelihoods and means of survival (Lynch 1992).

Besides fuelwood and other wood products, forests provide what were misleadingly termed "minor" forest products, and now better known as NTFPs. Most NTFPs come from forests, although some trees yielding NTFPs occur on private fields too, providing valuable assets and flows for subsistence and cash. Seventy per cent of NTFPs are collected from the five states of Maharashtra, Madhya Pradesh, Bihar, Orissa, and AP where live 65 per cent of the tribal population (Guha l983: l890). Much collection is done in the lean agricultural months of March-July when other employment is not available.

As regards fuelwood, which provides 69 per cent of fuel for cooking in rural areas (only 5 per cent comes from commercial fuels, the rest from cowdung and agricultural residues), the importance of collection from public lands can be judged from the fact that only 15 per cent of fuelwood is purchased, 62 per cent is collected from forest and public lands, and the remaining 23 per cent is collected from private lands (Leach 1987).

Evolution of forest policy in India

There have been three forest policy pronouncements in India since Independence; the 1952 Forest Policy, The National Commission on Agriculture (NCA) 1976, and the 1988 Forest Policy. As forests have been put in the concurrent list of the Indian Constitution, and the Indian Forest Service manning all superior bureaucratic positions is an all-India service which has traditionally looked upto Government of India which controls its recruitment, service conditions and foreign trips, the ideas contained in these policy pronouncements carry a great deal of weight. However, four factors have limited their implementation. First, these were all non-statutory and advisory statements issued by the Government of India, not backed by law. Second, actual implementation of forest projects and policies is under the control of the state governments, who may have different compulsions from the Government of India. Third, what gets implemented in the field is generally what is provided in the budget and funded, and therefore many policy prescriptions requiring budgetary support may remain unimplemented, if not supported by matching funds. And lastly, bureaucracy in India is fairly powerful and its own predilections may act as a filter to what is demanded of it by governments. Radical and swift changes in policies may therefore take more time in their implementation, if these are found unconvincing by the officers.

The broad distinctions in the three policies have been shown in table 2.

Table 2: Three phases in forest policy

	Period	Main focus
1.	1952-1976	Forests for timber, neglect of village commons
2.	1976-1988	Commercial forestry on Forest lands, but more funds for social and farm forestry on non-Forest and private lands
3.	from 1988 onwards	Joint forest management and integrated forestry

Forest Policy 1952 - This was broadly a continuation of the old British policy, which in theory indicated that Forests were to be managed in the interests of the people of India as a whole. But, even if the policy on paper promoted a conservation and populist objective, in practical terms, forest administration was almost exclusively intended for the purposes of increasing revenue for the State. Forests were managed with a view to producing timber for industries, railways, markets, export, and for defence needs. The Forest Policy, 1952 declared that village communities should in no event be permitted to use Forests at the cost of 'national interest' (para 7), which was identified with defence, communications and vital industries. It wanted (para 13) Forests to be used to produce valuable timber for industry and other national purposes. The Policy stated,

> 'Village communities in the neighbourhood of a forest will naturally make greater use of its products for the satisfaction of their domestic and agricultural needs. Such use, however, should in no event be permitted at the cost of national interests. The accident of a village being situated close to a forest does not prejudice the right of the country as a whole to receive benefits of a national asset. The scientific conservation of a forest inevitably involves the regulation of rights and the restriction of the privilege of users depending upon the value and importance of the forest, however irksome such restraints may be to the neighbouring areas..... While, therefore, the needs of the local population must be met to a reasonable extent, national interests should not be sacrificed because they are not directly discernible, nor should the rights and interests of future generations be subordinated to the improvidence of the present generation.'

Right from the First Plan in 1952, emphasis was laid on the conversion of 'low' value mixed Forests into 'high' value plantations of commercial species such as teak and eucalyptus. Forestry at that time meant raising trees in order to get sustained yield of timber in perpetuity. Exotic species were introduced to create man-made forests. Out of the Rs 67 crore spent on afforestation during 1966-74, roughly Rs 56 crore was on production forestry alone (Government of India, 1981: 45). In Madhya Pradesh, which alone contains 23 per cent of India's Forests, the Chief Minister, in a message for the Forestry Souvenir, said in 1976, 'Madhya Pradesh has taken great strides in the development of scientific forestry. There is much greater emphasis on man-made forests, designed to meet industrial requirements'. Thus scientific forestry was equated with raising of industrial plantations. A diverse forest eco-system was converted by government into a single species 'timber mine'. The foresters, who were to conserve the forest ecosystem, became the main agents of reducing the diversity of forest species.

The National Commission on Agriculture (NCA) 1976 and the Social Forestry Phase - The Commission too put its stamp of approval on the approach outlined above in the following terms, 'Production of industrial wood would have to be the raison d'être for the existence of forests. It should be project-oriented and commercially feasible from the point of view of cost and return' (Government of India, 1976: 32). It recommended that Forest Corporations should be created to attract institutional finance. The NCA also suggested that it would not be in the interest of the programme to tackle forest on poor site quality, where even with the best efforts the growth potential would be limited. It said:

> 'There should be a change over from the conservation oriented forestry to the more dynamic programme of production forestry. The future production programme should concentrate on clear felling of valuable mixed forests, mixed quality forest and inaccessible hard wood forests and planting these areas with suitable fast growing species yielding higher returns per unit area.'

Thus the entire thrust of forestry during the first four decades after Independence was towards the high forest system, created after clear-felling and ruthless cutting back of all growth, except of the species chosen for dominance. For instance, the 6th Five Year Plan (1980-85) of Madhya Pradesh stated,

> 'To produce 25 m cum of industrial wood it would be necessary to subject 5.5 m ha of production forest lands to the intensive management, that is to clear-felling and planting. .... with the massive plantation programme being launched in the state, there would be extensive monocrops of teak in the forests. .. we should clear-fell and plant roughly one lakh hectare annually if we want production of industrial wood to keep pace with demand in future.'

As regards efforts made to meet tribal demands for fruit, medicinal herbs etc. from forest lands, the same Plan document admitted, 'no special programme were taken, which could directly contribute to the upliftment of the tribal economy. The programmes executed were essentially the forest development programmes which benefited the tribals only indirectly, .. (through) wage earning opportunities.'

Social forestry - The degradation of village lands led to increased pressure from the people on the Forests. By the mid-seventies the realisation became clear that if people demands were not met it would be impossible to save Forests. This was then sought to be achieved through social forestry on village and private lands. It is significant that social forestry was not tried on Forest lands, except in small measures in SIDA Projects of Bihar and Orissa, as such lands were, as in the past, used for producing timber. In order to reduce pressure on Forests, the NCA recommended growing trees on lands accessible to village people. To quote from its report:

> 'Free supply of forest produce to the rural population and their rights and privileges have brought destruction to the forest and so it is necessary to reverse the process. The rural people have not contributed much towards the maintenance or regeneration of the forests. Having over-exploited the resources, they cannot in all fairness expect that somebody else will take the trouble of providing them with forest produce free of charge. .....One of the principal objectives of social forestry is to make it possible to meet these needs in full from readily accessible areas and thereby lighten the burden on production forestry. Such needs should be met by farm forestry, extension forestry and by rehabilitating scrub forests and degraded forests.' (Government of India 1976:25)

Thus social forestry was seen by the NCA as a programme which would release industrial forestry from social pressures. Forest lands were still to be used for production of commercial timber, but in order to keep people out it was necessary to make them produce what they consumed free of charge using village lands to draw off some of the pressure on Forest lands.

Thus, as regards the objectives of management of Forest lands, there has been an almost unbroken policy for the last 100 years of managing these lands for meeting market demands of timber and industrial wood. Alienation of Forests from the people has had several adverse effects which are described in chapter 5.

Aggravating the situation was the paucity of funds for the forest sector - forestry accounting for less than 1 per cent of the development budget as compared to agriculture which received between 20 to 24 per cent. Although the availability of funds has improved in absolute terms, the proportion of forestry budget to the overall plan budget has remained generally less than 1 per cent, as shown in table 3.

Table 3: Outlay in forestry and wildlife sector (in crore Rs)

Plan	Year	Total public sector	Forestry	per cent of forestry to total
First	1951-56	1,960	7.64	0.39
Second	1956-61	4,600	22.21	0.46
Third	1961-66	8,576	45.85	0.53
Fourth	1969-74	15,778	84.42	0.59
Fifth	1974-79	40,650	208.84	0.51
Sixth	1980-85	97,500	629.49	0.71
Seventh	1985-90	1,80,000	1859.10	1.03
Eighth	1992-97	4,34,100	4081.87	0.94

(Government of India 1993)

Unlike Protected Forests, the Reserved Forests have generally been well preserved even today. The Forest Department's control and domain over Protected Forests is highly fragmented, and constrained by external factors. Given the ease of access to Protected Forests, indiscipline and socio-political culture it has been impossible, in practical terms, for the Forest Department to enforce its property rights. Protected Forests were close to village habitation, high biotic pressure dissuaded the field officers from including them in afforestation schemes, and hence central assistance as well as funds from the states (which were in any case inadequate), were mostly concentrated on Reserved Forests.

The Forest Policy 1988

Even before 1988 there were indications that government was not happy with the outcome of the previous policies. Several modifications were introduced piecemeal before the formal change in 1988. Till the Sixth Five Year period (1980-85) meeting industrial needs used to be mentioned in the Government of India Plan Document as one of the main objectives of investment in forestry. But the 7th Plan Document (1985-90) for the first time recognised the importance of non-market and ecological benefits from forests. It did not explicitly mention producing timber for commercial purposes as one of the objectives of forest policy. It also stated that raw material for forest-based industries would be provided only after meeting the needs of the local people.

The Central Board of Forestry (the highest policy making body at the Government of India level), in its December, 1987 meeting presided over by the Prime Minister and attended by the Chief Ministers decided that Forest lands would be used for preserving soil and water systems, and not for generating state incomes. All supplies to the market and industry would be met from farm forestry. Small and marginal farmers would be especially encouraged to use their degraded lands for meeting commercial requirements (Government of India, 1987). This was followed by another announcement by the Forest Minister in the Parliament in May 1988 that 70 per cent of the total afforestation would be in the farm sector. The Central Board of Forestry also took a courageous step in recommending a ban on commercial exploitation of degraded Forests, and on replacement of natural forests by monocultures, which were accepted by various states.

Not only policy planners, but many perceptive foresters also realised that the old strict custodial policies were counterproductive and needed to be radically changed. In 1970 West Bengal Foresters resolved in a conference that, 'unless peoples participation is ensured the future of sal coppice forests in South Bengal is bleak. .. First the needs of the local communities are to be met and only surplus is to be auctioned'.

A major breakthrough was achieved in the 1970s in West Bengal with the initiation of the Arabari pilot project where Dr. A.K. Banerji, the then DFO Silviculture, stressed the importance of involving village communities in the protection of natural forests. Ever since the Forest Department alongside village communities have set about attempting to establish such committees throughout areas of natural forest in South-West Bengal.

People orientation in the new Forest Policy - This process was facilitated when a new forest policy was announced in 1988. According to this, Forests are not to be commercially exploited for industries, but these are to conserve soil and environment, and meet the subsistence requirements of the local people. The Policy gives higher priority to environmental stability than to earning revenue. It discourages monocultures and prefers mixed forests. The focus has shifted from 'commerce', and 'investment' to ecology and satisfying minimum needs of the people, providing fuelwood and fodder, and strengthening the tribal-forest linkages. Para 4.3.4.3 of the new Policy reads as follows:-

> 'The life of tribals and other poor living within and near forest revolves around forests. The rights and concessions enjoyed by them should be fully protected. Their domestic requirements of fuelwood, fodder, minor forest produce, and construction timber should be the first charge on forest produce.'

The Policy emphasises the role of minor forest products, and states in para 3.5 that 'Minor forest produce should be protected, improved and their production enhanced'. As regards supplies to industry, the first part of Para 4.9 reads as follows:-

> 'As far as possible, forest based industry should raise the raw material needed for meeting its own requirements, preferably by establishment of a direct relationship between the factory and the individuals who can grow the raw material..'

The June 1990 Guidelines - The implementation of the Policy was facilitated by the Government of India by issuing a resolution on 1st June 1990 making it possible for the Forest Departments to involve people in the management of Forests. The salient features of the scheme suggested by the Government of India are as follows:-

- No ownership or lease rights over the Forest land including assignment of the Forest land to the beneficiaries/ voluntary agencies;
- Access to Forest lands and usufructory benefits only to the villagers who get organised into a village association;
- The beneficiaries to be given usufructs like grasses, lops and tops of branches, and non-timber forest produce. On successful protection of Forests, they are to be given a portion of the proceeds from the sale of trees when they mature;
- No grazing in the Forest land protected by the village communities to be allowed. But the villagers cut and carry grass free of cost to promote stall feeding;
- Along with trees for fuel, fodder and timber, the village community may be permitted to plant fruit trees such as aonla, imli, mahua, etc. as well as shrubs, legumes and grasses;
- In case of failure of to protect the area from grazing, encroachment etc., the usufructory benefits to be withdrawn; and
- The benefits of people's participation to the village communities alone and not to commercial or other interests.

As is obvious from the above, Joint Forest Management is a fairly new and novel concept, radically different from the previous policies in which people and the environment were seen, all too often, as antagonistic.

Political economy of reforms

Policies are not made in a political vacuum. How does one explain a complete turn about in the forest policy favouring people's management?

Marxists hold that a capitalist State cannot promote radical reforms in favour of the poor. The nature of State power depends upon the mode of production and the classes that own the means of production, and it is in the interest of these classes that State power is exercised. If this view is accepted in toto, and keeping in mind that the Indian State is increasingly becoming pro-rich and wary of poverty concerns (especially after 1991), it would be futile to expect the Indian State to promote reforms in the forest sector in favour of the Adivasis, forest dwellers, and women, who in any case live in remote areas, and cannot easily influence those in power.

Two counter-arguments can be advanced against the pessimistic view expressed above. Firstly, a pro-people forest policy does not hit the rural elite at all, it in fact reduces the despotic control of the centralised bureaucracy, and hence such a policy should not attract political impediments, which are inherent in

programmes such as land reforms. Secondly, the Indian political system has always been resilient and responsive to public opinion, which can be built without a proletarian revolution being a necessary pre-condition. Several environmental battles have been won in the recent past; scrapping of the Blue Pine Project in Bastar (Anderson and Huber 1988), withdrawal of the Forest Bill 1980 (Fernandes et al. 1983), cancellation of leases of common lands to a paper mill in Karnataka (Hiremath 1994), to mention a few; which shows that radical restructuring of policies does not require a new constellation of the ruling classes.

The nature of State power in India is itself rather complex. People oriented policies have a legitimising role for the State power. Deforestation and land degradation weakens the State, whereas land rehabilitation policies make people depend more on the State authority, and thus strengthen the State. In West Bengal JFM programmes, the lower level forestry staff, including Beat and Range Officers, have been quite enthusiastic about participatory methods, although conventional wisdom would have suggested their sympathies to be on the side of coercion. Rather than feel threatened by the new approach, the lower level staff in West Bengal seemed to be enjoying their new role in extension, and in providing expression to the group feelings of the village communities. They still represented the State apparatus, but in addition they had also become spokesmen of the community to the Forest Department. Thus one should not be surprised if the State in India is repositioning itself through JFM with a view to regaining land productivity.

While the policy of 1952 stressed the needs of industry and defence as the paramount concern of the Forests, from 1988 onwards commercial interests are no longer a major concern. This striking policy reversal suggests that there were apparently no strong political constraints in effecting a radical shift in forest policies. In fact, forestry policies and programmes do have one major advantage over other land use programmes such as land reforms, i.e. political feasibility. Implementing any scheme in the rural areas of the country must take into consideration the two ends of the rural spectrum, the rural elite and the rural poor. Schemes in which either group loses are not feasible. However, schemes in which both benefit or the poor benefit without leaving the elite at a disadvantage are feasible, as summarised in table 4.

Table 4: Political feasibility of developmental schemes

Type	Elite	Poor people	Political feasibility of schemes
A	Gain	Lose	Low
B	Gain	Gain	High
C	No change	Gain	High
D	Lose	Gain	Low

D schemes would perhaps become acceptable after empowerment of the poor or under enlightened political leadership. Judging from the above classification, change in the forest policy has perhaps meant a change from Type A to Type B or C types of schemes.

In fact this change in the policy has been facilitated by a history of forest based movements in India. Environmental activism is not a new phenomenon in India, but is rooted in the past. One study (quoted in Poffenberger 1995) identified 64 incidences of major tribal revolts between 1778 and 1971, which were triggered off by encroachment by the State on their commons. There have been both armed struggles and political movements to regain control over what they perceived to be their lands. Even today there is a movement, called Jharkhand (meaning land of trees) for creation of separate state in the heavily forested central region of India. Several forested districts in AP, Maharashtra and MP are facing violence from the Naxalites directed against the State.

There have also been peaceful and non-political forest movements in the country. In many places during the 1970s people on their own initiative started protecting forests, of which CHIPKO is a well-known example. It brought to fore the collaboration of forest officials with commercial interests, which came in for serious criticism. The state government was in this case forced to declare a moratorium for fifteen years on all commercial felling in the hills above 1000 meters in as early as 1979. The contribution of forests to state

revenues, similar to land revenue, has been falling drastically since Independence, because of expansion of economic activity outside land. This has facilitated banning of logging in several districts of India by the states, as the states, except perhaps with the exception of Madhya Pradesh, are no longer dependent on forest revenues.

It may also be mentioned here that the dependence on donor agencies of the Government of India, like of many other governments of developing countries, is likely to increase in future. This may bring further pressure on the government to introduce policy and institutional reforms to involve local people in the task of forest conservation. Lastly, many saw mills in India are small enterprises with no organised voice in policy making. These industries need to be distinguished from paper mills and some plywood factories who have been the major beneficiaries of state largesse in the past. To what extent will they succeed in regaining hold over Forest lands and its produce has been discussed in chapter 7.

Despite these weighty arguments it must be admitted that the old custodial way of thinking is still not totally dead among the policy makers, as is evident from the new legislation introduced in 1980, and discussed below.

Forest Conservation Act

The other policy initiative taken by the Government of India is the Forest Conservation Act, 1980. This Act limits the powers of the state governments, and they cannot de-reserve Reserved Forests or divert forest lands for non-forest purposes unless permission of the Government of India has been obtained. The Act has often been justified by the central Government on the grounds that the states did not resist popular pressure in permitting use of forest lands for non-forest purposes, and that they were liberal in frequently allowing de-reservation of Reserved Forests for development schemes. Facts however do not support these contentions. The area under Reserved Forest has in fact increased from 31.6 m ha to 45.2 m ha during the period 1960-80, as a result of a process of bringing uncultivated lands under the control of the Forest Department. Similarly during the period 1951-52 to 1975-76 forest land lost due to River Valley Projects, construction of roads and other public purposes (other than agriculture) was only 1.6 m ha (giving an average of 67,000 ha annually) whereas during the same period net forest area increased from 45 to 75 m ha. Thus area lost due to the transfer of land to government projects was insignificant whereas the total area under the control of the Forest Department had been increasing. Loss has not been that of land, which the Act protects; but of vegetation, which the Central Act is silent about.

It is generally believed that the Act has succeeded in preventing diversion of forest lands to non-forestry use. The period 1980-84 certainly seems to support this conclusion, but from 1984 onwards the loss of forest land has been higher than in the earlier period.

Table 5: Year-wise diversion of forest land for non-forest use

Year	Forest land diverted (in ha)
1980	Nil
1981	2672.04
1982	3246.54
1983	5702.01
1984	7837.59
1985	10608.07
1986	11963.11
1987	72780.05
1988	18765.35
1989	20365.05
TOTAL	153939.81

The reason for low figures during the initial years after 1980 is perhaps due to the fact that the states did not report cases of diversion of forest area for other purposes to the Government of India. While the Act was passed in 1980, its implications were not clear to the states and in many cases they did not take Government of India's permission before diversion. The real import of the restriction imposed by the Act on the powers of the states was felt only after 1985, when stricter implementation of the Act was insisted upon by Sri T.N.Seshan, the then Secretary, Environment and Forests, Government of India. Thus the reported figures of loss of forest lands after 1984 could also be the level of diversion in the early 80s.

This is not to suggest that the Act has had no impact. On the positive side, it has put a stop to the old practice of regularising encroachments on forest lands for agriculture. On the negative side, it has delayed developmental projects in heavily forested districts, such as Sarguja, Koraput and Dangs, where the availability of land other than forest land for roads, bridges etc. is severely limited. Besides, some provisions of the Act are not in conformity with the Forest Policy, 1988, as described below.

Contradictions in the new policies

Despite the emphasis in the new policy on meeting people's needs, there still remain a number of contradictions within the new Forest Policy, and with the Forest Conservation Act (which was amended in 1988). These are summarised in table 6.

Table 6: Contradictions in the new Forest Policy

Provisions of the Policy	Contradicted by
Minor forest produce should be protected, improved and their production enhanced (section 3.5).	Forest Conservation Act prohibits plantation of horticultural crops, palms, oil bearing and medicinal plants on forest lands, unless prior permission of the Government of India has been taken.
Degraded lands should be made available on lease or on the basis of a tree patta scheme to individuals and institutions (section 4.2.4).	Forest Conservation Act bans assignment or lease of forest land to the people or institutions not wholly owned by government.
Rights and concessions enjoyed by the tribals should be fully protected (section 4.3.4.3).	Rights and concessions, including grazing, should always remain related to the carrying capacity of forests (section 4.3.4.1).
Domestic requirement of tribals should be the first charge on forest produce (section 4.3.4.3).	MFPs and substitute materials should be made available through conveniently located depots at reasonable prices (same section).
Land laws should be modified to facilitate individuals to undertake tree farming on their own land (section 4.2.4).	Appropriate regulations should govern the felling of trees on private holdings (same section).

There are two provisions of the amended Forest Conservation Act which need to be taken note of. First, it bans assignment or lease of forest land to the people; and second, it prohibits plantation of horticultural crops, palms, oil bearing and medicinal plants on forest lands, unless prior permission of the Government of India has been taken. These provisions should be read with the new Forest Policy, which looks down upon gathering of forest produce by stating that 'these (MFPs) and substitute materials should be made available through conveniently located depots at reasonable prices'. It also wishes to curtail the rights and concessions of forest dwellers by relating them to the carrying capacity of forests.

Forest Conservation Act and people's participation

The operative section 2 (iii) of the Act (after amendment in 1988) reads as follows:

'No State Government or other authority shall make, except with the prior approval of the Central Government, any order directing that any forest land or any portion thereof may be assigned by way of lease or otherwise to any private person or to any other authority, corporation, agency or any other organisation not owned, managed or controlled by government.'

This new section contradicts section 28 of the Indian Forest Act, which states,

'Formation of Village Forests.-(1) The State Government may assign to any village community the rights of Government to or over any land which has been constituted a Reserved Forest or declared a protected Forest or is a Forest belonging to the Government and may cancel such assignment. All forests so assigned shall be called village forests.'

The amendment thus nullifies the entire concept of village forests provided for in the Indian Forest Act. The rationale for keeping section 28 in the Forest Act was the realisation that villages can better protect lands which are close to the village. In pursuance of the powers given to the states under this section some states, such as UP, had transferred forest areas to village bodies for protection and management. These rules too have now become null and void, and thus the existing legal basis for encouraging peoples' participation has been wiped off.

Similar ambiguous position exists regarding the choice of species. The new Act discourages planting of horticultural crops, oil-bearing plants, palms, and medicinal herbs on forest lands. Although there is a good case for banning crops like oil-palms in Andaman and Nicobar, or apple in HP on Forest lands, yet reading this clause with section 2 (iii) gives rise to a suspicion that all usufruct based trees, which attract people to the Forest areas, like ber, mahua, neem, karanj, palmyrah, tamarind, jamun, and several medicinal herbs would not be permitted now. This shows total insensitivity to the needs of the tribals and forest dwellers. Already a large number of such livelihood trees have been replaced by monocultures of teak, eucalyptus and pines. This trend would get further support from the new Act.

Para 4.3.4.3 in the new Forest Policy relating to making forest produce available to the people from government depots amounts to banning the entry of the people to Forest lands. It can be criticised on three grounds. First, it takes away the fundamental and age-old rights of the people to gather. India's forests are not uninhabited wildernesses; there are people living inside forests who under the new dispensation would have to travel miles outside their habitat to a government depot to buy essentials, which so far they got free. Second, the new scheme further strengthens the petty officials, who would get new powers to harass the forest dwellers. And third, given the poor condition of state funds, the scheme would not be able to get enough subsidy, and hence supplies are unlikely to be available at a price the poor can afford.

The objective seems to be that the Government wishes to have exclusive monopoly rights to management and ownership over Forest lands, specially Reserved Forests. It does not trust the poor, and hence would not permit growing of trees such as mahua, jack fruit and tamarind which attract the poor to forest areas. The mid-term evaluation of Social Forestry Projects by a World Bank/ USAID team revealed that even where the programme for regeneration of wastelands through tree patta schemes is intended on road strips, (as in UP where road strips have been declared as protected Forests), or unclassed Forests (HP), the programme had been held back due to lack of permission from the Government of India.

The new Policy expresses concern for ecology, but read with other provisions and the Act it appears that environment is being used as a new excuse to keep people out of Forests, just as "vital industrial needs" were considered enough of a justification to deny legitimate aspirations of the poor in the past.

An immediate and pressing problem caused by the Forest Conservation Act is the uncertain status of lands under shifting cultivation, in Orissa, AP, MP, and the north-eastern states. State governments are often keen to grant such secure rights to the people which are consistent with sustainable forest development. However, such proposals are viewed with suspicion by the Government of India, and are not approved. For instance, in AP, the state government was keen to allow limited rights of cashew cultivation on such lands. This

unfortunately is a banned species, according to the Forest Conservation Act, and hence the proposal has not been put to implementation. Some 1300 villages in Madhya Pradesh are still designated as forest villages, where people do not have full rights over lands that they cultivate. The Madhya Pradesh government passed a law to give them security of tenure, but the Forest Conservation Act has struck down this law. The result is that the tribals, although not being displaced from lands that they have cultivated for decades, cannot get loans from banks as they are not legal owners over this land. This results in insecurity of tenure, due to the rigours of the Forest Conservation Act.

On the positive side, it must be admitted that some of the draconian provisions of the Forest Conservation Act are not being implemented rigidly, as usufruct sharing schemes are being promoted by the Government of India itself, and the Government of India has also clarified through an administrative order that fruit species etc. could be permitted, but the power of harassment of NGOs by state officials under the garb of enforcing the Forest Conservation Act is immense. Further, who knows a more "conservation" oriented bureaucracy at the Centre tomorrow would not wake up to realise the powers given to them by the new Act! Further, as is well known, the legal enactments reach all sections of bureaucracy, but benign circulars favouring people have a habit of disappearing fast before they reach every one. This will further delay the execution of people oriented schemes in the forestry sector.

Looking into future - The fear expressed above is not without basis as it is learnt that a new Forest Act, proposed to replace the existing one, contains a number of provisions which will dilute the control of the people over forests. The ultimate objective, according to the new Act, is to create only two kinds of legal categories of forests; Reserved forests and village forests. The most draconian provision of the new Act is that village forests cannot be constituted from Reserved Forests, whereas joint forest management cannot be applied on the Reserved category. Thus about two-thirds of the forest area (as 45 out of 67 m ha of forest is declared as Reserved Forests) would not be available for management by the people. At the same time, people's rights of entry and usage in Reserved Forests will now be subject to carrying capacity, and can be 'rationalised' by Government of India. Further, sacred groves can be acquired by the government. The proposed Act also discriminates against nomadic groups, as it debars them from exercising any rights on Forest lands.

The other danger to the people's hold over Forests is from a recent proposal of the Ministry of Forests and Environment, Government of India to lease out Forests to the private sector. The proposal is against the provisions of the Forest Conservation Act which bans both leasing and the planting of commercial species like tea, coffee, rubber and oil-palms on forest lands. This provision was made so that the nexus between industry and Forests may get weakened, and they depend only on farm supplies. However, the Ministry seems quite keen to reverse once again the forest policy and use forest lands for industrial plantations. The implications of this proposal have been discussed in chapter 7. Thus what is being given to the people through JFM programmes is sought to be taken away through the new proposed Act and leasing mechanisms. This is obviously being opposed by the NGOs and people's organisations. Which forces will be more powerful and decisive, only the future will tell.

Discussion

The discussion following the presentation focused on the following issues:

Reasons for deforestation

The relative contribution of the two categories of consumers, people and industry for deforestation was debated. While one view held that tribals have an in-built traditional concept of sustainability, the other view was that the tribal population has been responsible for much of the destruction of forests, especially in the north-east. As commercial and industrial requirements are low as a proportion of the total demand for wood, at less than 20 per cent, some participants thought that peoples' demands put an unbearable burden on forests. For instance, the deficit faced by the pulp industry in Karnataka in 1985 was 0.2 million tons per annum, whereas the firewood deficit was more than 4 million tons (Shyam Sundar and Parameswarappa,

1987). In addition to the demand for home consumption, wood is also extracted for sale. There has been a rapid increase in the incidence of headloading (fuelwood collection by the poor from public lands and carrying it on their heads to the nearest market), which in itself was attributable to declining opportunities to the landless in rural areas to earn a livelihood. The almost continual lopping for fuelwood and/or fodder as well as cattle and goat browsing, that occurs in many areas and prevents adequate regeneration, must play a major role in forest destruction. Therefore the responsibility for deforestation should also be borne largely by the people, and not by industry. Clearing for agriculture, particularly in tribal areas, resettlement, heavy grazing and fodder collection, all done by rural people, play an important role in destruction and degradation of the forest cover. For instance, most of the Maharashtra soils contain a large clay proportion, compaction by trampling makes the surface impervious to water penetration and increases the soil density. The former leads to run-off, flooding and erosion during the monsoons and the latter reduces the tree growth significantly. The result is that most forest lands have no regeneration (USAID 1991).

Often the two processes of industrial extraction and use by the people follow each other. The selective logging of a few large trees creates openings in the crown cover leading to better grass production, which invites cattle and goats. Their browsing makes regeneration difficult, and then the area is invaded by exotic, non-palatable weed species.

On the other hand, it was mentioned that the net cultivated area in India was 141.3 m ha in 1970-71 and 141.8 m ha in 1990-91, showing almost no increase in twenty years. Thus the demand for land and consequent extension of cultivation to forest lands, which is so often the cause of deforestation in developing countries is not the cause in India, for recent deforestation at least. It was also suggested that forest dwellers' over-exploitation is a recent phenomenon, caused by two factors. First, increasing marginalisation of small land owners has forced them to seek new avenues of income, like head-loading and second, the indiscriminate tree felling by the contractor-official-politician nexus and development of markets has had a corrupting influence on the forest dwellers, who also wish to 'make hay while the sun shines'. It was ironic that tribals, who for centuries lived in harmony with forests were today forced to eke out a living by further destroying their forests. This alienation is the outcome of the government policy of appropriating forests on which peoples' livelihoods were dependent, and then encouraging their use for commercial ends, which changed the perception of Forests from village commons to an open access resource (Agarwal and Narain 1991, Gadgil and Guha 1992).

Discussions with field officers indicate that during the last three decades two processes led to fast deforestation. One, arising out of political populism, was to allow people to harvest in an unsustainable manner, and the other was pressure on officers to contribute more to revenues. It was not unusual for forest officers to receive letters right down at the operative level from the highest officials of the Forest Department instructing them to produce more revenue. The same pressure was repeatedly conveyed in the monthly meetings of range officers, always in the same form: "Range X has contributed (a stated amount revenue) and Range Y is not contributing enough." Ironically, before an election, it was common for a Minister to order that the forests be opened for the people without penalty. But after the election, the same Minister was likely to demand more revenue.

Another group of participants made a distinction between the use of fuelwood by rural people, which is largely twigs and branches and hence sustainable, and by the urban sector, which uses logs. According to them, there is a need to differentiate between urban and rural demand patterns and their respective effect on wood fuel supplies, as well as on the chances for inter-fuel substitution. Not only are urban wood fuels usually traded, thus having a much wider effect on the supply scene than village fuelwood demand, but the greater use of logs and larger branches means that reasonably-sized trees are sought after and cut, possibly in large patches thus having a more degrading effect on the forest than may be the case with village supplies that can be obtained more often from pruning or pollarding branches of trees or even bushes in a limited area. Thus sale of fuelwood in urban areas is the cause of much destruction and degradation of forests.

An entirely different argument put forward was that deforestation has often been associated with sudden policy change or periods of uncertainty, like takeover of private forests, abolition of landlordism, setting up of Forest Corporations, political unrest leading up to elections, etc. Once large trees are felled, the old harmony

between people's demands and supplies through twigs and branches gets disrupted, and the department's efforts towards replanting come to naught. Thus deforestation, rather than being a continuous phenomenon, could be interpreted as a one-shot operation often directed by governmental activity. Thus rather than concentrate upon the highly publicised factors of population growth, compulsions of subsistence agriculture to clear more forest lands, and demand for fuelwood and fodder, the less well known factors of government policies affecting the forestry sector may have also contributed to the fast decline in forest resources.

Whereas it is not possible to determine to what extent each of the above factors causes deforestation, it was agreed that deforestation can occur through excessive depletion of young trees by households with even a limited demand for fuelwood under open access forest exploitation. Denying rights to the local people has led to the organised fellings in the Jharkhand area by the people themselves which have been damaging the forests. On the whole local patterns of deforestation vary and it is 'never a simple matter of numbers outstripping environment'. It occurs as a result of not just local pressures on resources, but also 'any momentary disruption of the institutional framework responsible for resource protection and management'.

Carrying capacity and livestock

Some participants felt that the utilisation of resources should be related to the carrying capacity. Demands above and beyond the carrying capacity of forests would have to be met through social forestry. The fact that carrying capacity varies from area to area was also brought up. Two opposing view points arose. One stressed that carrying capacity should be decided by the people, not imposed by the government. After all tribals fall back on forest produce only when cereals are not available, as tribals have an 'in-built' traditional concept of carrying capacity, which is now being destroyed by commercialisation.

The other view was that carrying capacity needs to by estimated by experts. Utilisation within this sustainable limit will require curbing the consumption by the people. Thus both density of people and cattle in the area needs to be reduced. The cattle population could be reduced by as much as one-third through genetic upgradation. It was felt that internal consumption of beef which does exist in several states may resolve the problem of high livestock densities. The case of Murshidabad district where about 2000 cattle a day are transported across the international border for slaughter and export was cited. In addition to reducing pressure on forests, its productivity also needs to be increased, which will raise the carrying capacity of forests.

Several counter arguments were advanced against the traditional received wisdom about ‘biotic pressure’. It was argued that the two constraints of human and cattle population have certainly not come in the way of securing impressive increases in agricultural production. Secondly, while determining the ideal number of livestock which can be supported by environment, both private and social costs have to be considered e.g. a reduction in the number of livestock under semi-arid conditions would imply a fall in the supply of manure resulting in a loss of farm productivity. Thirdly, the suggestion of replacing non-descript cattle by better breeds has implications of efficient energy use. It is well established that cattle are bad converters of energy, requiring almost five units of input for every unit of output. So long as the inputs come from way side grazing, agricultural stubble and leaf fodder, which are not consumed by human beings, the adverse input-output ratio does not matter. On the other hand, hybrid cattle require green fodder, legumes and oil cakes which implies the utilisation of prime agricultural land for the production of animal feed. Its social cost needs to be considered carefully. Fourthly, regional variations in the number and choice of livestock exist and must be considered when calculating carrying capacities. In regions, such as the north-east, milch cattle are unimportant as beef cattle are in demand; among the tribals of Maharashtra, cattle are valued as pack animals; whereas in central India, the number of heads of cattle imply wealth and security. Also livestock is not limited to cattle, but includes sheep, goats, camels, yaks, etc.

Table 7: Livestock population in India (in '000)

Year	Cattle	Buffaloes	Sheep	Goats	Others	Total livestock
1951	155295	43400	39052	47155	2152	292784
1956	158669	44948	39259	55449	2165	306615
1961	175557	51211	40223	60864	2052	336432
1966	176182	52955	42015	64587	1871	344111
1972	178341	57426	39993	67518	1854	353338
1977	180140	62029	40907	75620	1907	369526
1982	192453	69783	48765	95255	1000	419600
1987	199695	75967	45703	110207	897	445286
Increase during 1951-87 (in per cent)	28.59	75.04	17.03	133.71	negative	52.09
Annual growth rate (in per cent)	0.7	1.6	0.4	2.5	negative	1.2

And finally, because of lack of fodder resources, cattle population has only marginally increased from 155 million in 1951 to 200 million in 1987, as shown in table 7. However the number of goats which can survive in harsher environment has increased by 134 per cent in the same period. This may be more as a consequence of land degradation rather than its cause. The total livestock population during 1951-87 has increased from 292 to 445 million, giving a growth rate of less than 1.2 per cent annually. Had the productivity of grass lands and forests increased by more than 1.2 per cent annually, the imbalance between the carrying capacity of present public lands and livestock pressure would have been further narrowed. However, the productivity of forests, instead of increasing, has declined.

The central issue here is, is it unrealistic to expect a growth rate of more than 1.2 per cent in forest productivity without demanding a cut in the present population of livestock and human beings? It would be useful to compare the fodder supply and demand scenario with that of foodgrains. During the same period 1951-87 the human population in India increased by 2.1 per cent per annum, but the production of foodgrains increased by 2.8 per cent, thus resulting in a comfortable surplus stock position. True, the constraints of biotic pressure apply more to public lands, given their vast stretch, yet the task of achieving a modest target of 1.2 per cent does not seem undaunting. More so, because controls to curb headloading or the number of livestock, however desirable they may seem, are hardly practical in the Indian political environment.

While still on the subject of grazing, it may be mentioned that the type, composition and number of cattle and small livestock maintained by the people is a function of ecology, land capability, and demand for animal products. It has nothing to do with religion, and cannot be easily changed through extension alone. Studies done on the Hindu villages in Rajasthan, and neighbouring Muslim villages in Sind show striking similarities in livestock portfolio. The very fact that in north-west India, where tractors have replaced bullocks, the number of bullocks is considerably less than that of cows, or the number of she-buffaloes in all regions of India is much more than that of he-buffaloes shows that religion does not come in the way of disposing off unwanted animals either through ill-feeding (and thus allowing them to die) or through sale. In fact, it is generally believed that the main reason for the high growth in the number of goats is the increasing demand for meat. Therefore, encouraging beef eating may result in increase rather than decline in cattle population.

The point which is being laboured here is that if demand from cattle has only moderately increased, but the supply from forest lands has drastically come down, the solutions at the macro level have to be sought primarily in increasing the supply of forest products, rather than on demand management. Thus constraints of low productivity and poor supply of forest products of the type wanted by the people and livestock, rather

than biotic pressure and increased demand, should be of greater interest to a policy maker, if an alternative policy framework to save forests is to be considered.

Tree Pattas

The anomaly between the new Forest Policy recommending the sanctioning of tree pattas while the Forest Conservation Act bans the leasing of forest lands came in for much discussion.

One view was that the anomaly in fact, did not exist, as the degraded lands referred to in the new Forest Policy for leasing are not degraded forest lands, but degraded lands outside the forest. In states such as Gujarat and Haryana, only non-forest degraded lands were offered on a 30 year lease to any individual, but without much success. But some participants pointed out that despite the Act, in some states, such as Madhya Pradesh, degraded forest lands are being given for tree planting. Under the 'Van Lagao Rozi Kamao' scheme in HP about 25,000 tribals have been given one hectare each of forest land to plant and maintain, and this can even be used as collateral for bank loans. It was also pointed out that tree patta implies the right to 'usufruct' and not to land, so no anomaly exists.

In addition to the legal restrictions in involving the people as individuals in forest management, it was felt that the field machinery is generally not serious in giving rights to the people in such schemes for fear of encroachments, leading to half-hearted implementation. For instance, in AP, where such a scheme remained in operation for almost a decade during the 1980's, it met with a limited success for a variety of reasons. First, nowhere had any agreement been executed, or any letter given to the poor establishing their claims to usufruct. Second, there were often problems in ensuring continuity in wage employment, as the same people did not turn up every year. Although the scheme started in 1984, very few of the workers were at the site from the beginning. Third, each year the workers were shifted to a new site. They did not work on a sequence of contiguous plots as was envisaged in the scheme. Fourth, discrepancies existed from district to district on what was told to the beneficiaries, and the degree of effort made to accommodate local needs. Somewhere cultivation of legumes was permitted, elsewhere not. Fifth, species selected such as eucalyptus and Acacia auriculiformis did not produce any intermediate goods of substantial benefit to the poor. Their sense of identification with the planted trees would have been stronger had usufruct giving trees been planted.

The result of all this was that the beneficiaries saw themselves as wage employees. The part of the deal concerning share in the final produce meant little to them. Even where the scheme had succeeded, it was only on far away lands, where in any case there was no problem of protection, and through planting of eucalyptus. The same output could have been easily achieved at a much less cost through departmental works. Thus a lot of money was spent, for an output which did not require intensive labour and supervision. One could have justified higher expenditure if a labour intensive crop like cashew or tamarind was planted, which would have improved annual incomes of the labourers for many decades to come. Income through sale of eucalyptus means giving doles to the poor without expecting higher labour efforts from them.

Tree Growers' Co-operatives in MP - The experience of usufruct-sharing schemes on forest lands has generally been dismal. The latest example is from MP In the year 1990, the State Government took a decision to implement a scheme of gap planting in degraded forests, and share benefits with the wage labourers. These poor people have been made members of Tree Growers' Co-operatives. The project is being operated in 20 districts of the State with an annual target of afforesting 20,000 ha of degraded forest lands. Part of the benefits accruing from these lands are planned to be shared with the wage workers after deducting the loan component. On paper, these cooperatives would be 'fully involved' in planning and management of these lands, and will be provided with the benefits accruing from these lands after deducting the loan component. However, discussions with field officers indicate that the social objectives of this scheme are not likely to be achieved for the following reasons:-

1. No letter has been given to the members of the cooperatives establishing their claims to usufruct, nor has any agreement been executed with them.

2. Nowhere have elections to the cooperatives taken place, nor have the executive committees been formed.

3. Species, such as eucalyptus and gmelina will not produce any intermediate goods of substantial benefit to the poor, who would have been benefited had grasses, legumes, bushes, shrubs and socially useful trees been planted.

4. There is no forum in which the decisions are taken in consultation with the poor.

5. No effort is made to promote agroforestry on such lands.

6. Only sharing usufruct with members will be against the spirit of Joint Forest Management, and it is likely that local bigwigs will chase the poor away, asserting that forest was meant for meeting the nistar needs of everyone, and a few poor could not deprive the rest from their legitimate rights.

7. The members of the cooperatives have no authority to prevent the cattle of non-members from grazing, or to stop them from collecting usufruct. They also have nothing to lose from not protecting such lands from being misused by others. In fact, the members of the cooperatives lose nothing if the cooperative is disbanded, just as they get nothing extra (at least in the near future) by remaining as members.

8. The system of calculating what the cooperatives are to get from the final harvest is too complicated and distant to enthuse the members in giving anything to the scheme beyond daily labour for which they are paid.

In practice, therefore, these are mere departmental plantations of eucalyptus on forest lands, from which the poor are not likely to get any benefit beyond wages. People are also scared that if they join such a cooperative, they will not be able to get bank loans, as sooner or later there would be bad debts standing against such cooperatives. Plantation of eucalyptus on forest lands will also discourage farmers wanting to plant eucalyptus on farm lands. None of the officers to whom one talked had faith in this scheme. Calling them cooperatives gives a bad name to the Forest Department, as it will appear that the Department is promoting bogus schemes. Even other good schemes of the Department will lose their credibility.

Summing up

Unlike other developing countries, extension for agriculture and shifting cultivation, the two familiar causes for deforestation, have not been the main reasons of deforestation on Forest lands in India, at least in the last thirty years. The alienation of Forest lands from the people who need it for satisfying their needs, and consequently Forests turning into open access lands has been one of the main cause for degradation as well as for increasing misery of the people. Till the mid-eighties the response of the government to this crisis of deforestation was to bring more area under the Reserved category, and plant non-browsable and market oriented single product timber trees in order to reduce pressure from local population and increase state revenues. This strategy turned counter-productive and hastened the process it was designed to prevent.

The correction came in the form of a new Forest Policy in 1988 followed by June 1990 guidelines recommending Joint Forest Management (JFM). Although the old thinking is still not dead, yet by now almost all major States have passed enabling resolutions to implement the programme. The Government of India and the donor agencies, appreciating the realistic foundation of the new concept, have decided to make the JFM the central point of its future forest development programmes. The progress of the programme and the constraints in its wider application are discussed in chapter 4.

However, Joint Forest Management should not be seen as a panacea for deforestation or for alleviation of rural poverty. In itself Joint Forest Management sets out the minimum conditions necessary for halting land degradation. Whether it will succeed, and where, may often depend on efforts made to increase productivity of land other than degraded forests: private lands, non-forest village commons, and forests remote from villages. If simultaneous programmes to make these lands productive are taken up, they may meet the daily

needs of the people during the period they are required to reduce their consumption from forests to be protected. Mere protection of a degraded area may transfer harvesting pressure to some other area, as people have to meet their daily requirement of fuelwood and fodder somehow or the other. Therefore the village plan should be comprehensive enough to include all elements of land management. These three programmes, on village lands, farm lands and productive Forest lands, have been discussed in chapters 2, 3, and 5 respectively.

Chapter 2: Social Forestry on Village Lands

The social forestry programme of planting woodlots on village lands and distributing seedlings to farmers originated in response to the growing pressure on Forests for fuel and fodder needs of the people. The National Commission on Agriculture in 1976 recommended growing trees on lands accessible to village people in order to fulfill their subsistence needs, and free the Forests to pursue their original objective of producing timber. The woodlot programme was based on the premise that the initial investment of afforestation would be undertaken by the government, the plantations being later handed over to the village communities for protection, management and distribution of benefits.

Physical progress

In aggregate, the communal woodlots have planted considerable areas. The figures in table 8 record areas planted under donor supported projects in some states, in each case forming only a part of the total woodlot activity in that state.

The scheme of village woodlots was also funded from several budgets other than the donor funds. There were components for this activity in NREP and RLEGP funds (programmes meant for employment generation), which were comparable with what is shown in table 8. Moreover the activity was spread over a large number of villages, average per village being often less than 10 ha. For example, the 32,076 ha planted in Orissa over four years during Phase I from donor funds was distributed among about 3,200 villages (SIDA 1987).

In terms of sheer plantation of new trees the Social Forestry programme, specially farm forestry, has been immensely successful. Between 1980 and 1987, the Government claims to have raised 18,865 million trees. If the estimate of survival of 60 per cent is taken as correct (IIPO 1988, although another survey done by GTZ 1992, albeit for a smaller sample, puts this at 77 per cent), and taking the number of villages as 5.8 lakhs, the average number of surviving new trees per village comes to nearly 19,500. This is by all means an impressive achievement, and is reflected in the steep fall in the price of poles, and stabilisation in the price of fuelwood after 1985 in some regions of India (World Bank 1990, see chapter 6). However, it is doubtful whether the social and long-term objectives of sustainability were achieved. The farm forestry programme has been discussed in the next chapter, whereas the village woodlot programme is being analysed here.

Evaluation reports of community afforestation schemes in India, such as those of West Bengal (GOWB, 1988), Orissa (SIDA, 1987), MP (USAID, 1985), UP (GOUP, 1984), Tamil Nadu (SIDA,1988), Orissa (SIDA, 1987), UP, Rajasthan, Gujarat and HP (World Bank, 1988), and AP (CIDA, 1988), have in general found little evidence of interest by the village community or of management capabilities of the panchayats. Benefits to the poor beyond wage employment seem to be in doubt. There were shortcomings in the way the programme was conceptualised and implemented, leading to marked divergence between the stated objectives of Social Forestry and the actual outcomes (Chambers et al. 1989). The gap between the objectives and outcomes of Social Forestry projects can be discussed under two heads; design problems and shortfalls in implementation.

Table 8: Physical and financial targets of donor assisted forestry projects

Sl.No.	Name of the project and state	Donor agency	Project period	Project cost in lakhs	Project activity	
					Farm forestry	Village woodlots
1.	National Social Forestry Project UP	World Bank USAID	1985-86 to 1989-90	1,611.60	P 147,210 F 536.20	14,000 150.40
2.	National Social Forestry Project Gujarat	World Bank USAID	1985-86 to 1989-90	1,296.50	P 230,500 F 143.60	35,000 369.80
3.	National Social Forestry Project HP	World Bank USAID	1985-86 to 1989-90	572.90	P 66,838 F 139.30	41,000 201.20
4.	National Social Forestry Project Rajasthan	World Bank USAID	1985-86 to 1989-90	391.90	P 91,500 F 121.80	5,000 30.20
5.	Haryana Social Forestry Project	World Bank DANIDA	1982-83 to 1986-87 extended to 1989-90	333.25	P 30,000 F 25.65	12,000 46.39
6.	Jammu & Kashmir Social Forestry Project	World Bank DANIDA	1982-83 to 1986-87 extended to 1989-90	237.40	P 19,000 F 17.40	5,000 17.00
7.	Karnataka Social Forestry Project	World Bank ODA (U.K.)	1983-84 to 1987-88	552.30	P 120,500 F 180.00	26,946 98.50
8.	Kerala Social Forestry Project	World Bank	1984-85 to 1989-90	599.11	P 69,200 F 162.25	14,100 na
9.	West Bengal Social Forestry Project	World Bank	1981-82 to 1986-87 extended to 1989-90	348.65	P 52,000 F 18.84	6,000 17.84
10.	Bihar Social Forestry Project	SIDA	1985-86 to 1990-91	538.57	P 71,750 F 156.28	30,750 21.52 -contd.
11.	Orissa Social Forestry Project	Phase I SIDA Phase-II SIDA	1983-84 to 1987-88 1988-89 to 1992-93	281.70 783.40	P 26,500 F 11.60 P 62,000 F 253.60	32,076 na 52,500 222.30
12.	Tamil Nadu Social Forestry Project	Phase-I SIDA Phase-II SIDA	1981-82 to 1985-86 extended to 1987-88 1988-89 to 1992-93	591.38 854.00	P 85,165 F 50.80 P 18,000 F 154.40	131,405 178.94 56,300 247.50
13.	AP Social Forestry Project	CIDA	1983-84 to 1987-88 extended to 1989-90	383.78	P 108,100 F 68.78	25,000 61.03
14.	Maharashtra Social Forestry Project	USAID	1982-83 to 1989-90	564.00	P 44,035 F 257.74.	33,975
	T O T A L			F 9940.44	P 1,242,293 F 2,090.50	508,730 1662.62

Note :

1. P shows physical target in hectares, and F is the financial allocation in lakhs.
2. Farm forestry component is shown in hectares by converting @ 2000 seedlings/ha.
3. A large part of Project cost was committed to establishment, institutional development and plantings on roadsides, etc., not shown in the Table.

The faulty design of SF Projects

Perception of problem - As deforestation was perceived to be due to fuelwood and fodder demands of the people, it was assumed by the policy makers that given government help people would willingly invest their labour and capital in raising fuelwood and fodder trees. However, as fuel and fodder were often collected free, farmers (at least in the commercial areas where farm forestry made greatest impact) as well as panchayats preferred income-generating trees, and continued to collect branches, twigs, leaves and grasses from Forests as before. Thus the assumption in Social Forestry about how village farmers would react to a given crisis was untenable. Producers were interested in increasing their incomes, and not in the national objective of providing fuelwood and fodder to the poor.

The fuelwood 'crisis' - At the same time, the extent and magnitude of rural fuel shortages was overestimated; and the role of other gatherable biomass fuels (woody shrubs, agricultural residues, animal dung) underestimated. Shortages of fuel are often severe, and bear particularly heavily on women. However, village studies have shown that when confronted with shortages of fuelwood, the landless and poor shift to other gatherable fuels rather than to purchased fuelwood (Bhagavan and Giriappa, 1987). Moreover, the poor face many other shortages and have many other concerns besides fuelwood including food, employment and cash which must be given higher priority (Leach, 1987:92).

Besides, the poor do not budget for fuel for cooking. Fuelwood which is to be sold, as is the case with most Social Forestry woodlot projects, is therefore unlikely to be accessible to them - even at concessionary prices. Moreover, as they need regular supplies of small quantities, sources which produce only at the infrequent intervals provided by the harvesting of woodlots are of only limited value to subsistence users. In general, the woodlot planting has therefore created a resource which is unlikely to make a significant contribution towards meeting local needs of the poor.

Convergence of people's and panchayat's interests - Foresters and foreign experts who designed the projects did not fully grasp the complexity of rural power structure and assumed that the village council represented the interests of all concerned in the village. In actual practice, village panchayats often tended to be indifferent to the poor. They perceived the woodlots primarily as significant sources of communal income, rather than as sources of produce to meet village needs. For this reason there was usually a preference for auctioning the output, rather than selling it at preferential rates or distributing it. The nature of species was also such which tempted the panchayats to sell in the markets, rather than distribute in the village.

The evaluation of the second phase of the Tamil Nadu Social Forestry Project done in 1992 concluded that ‘community planting has had little social impact ... a large proportion of the benefit from community plantation goes to the town and cities - to middlemen, fuelwood using industries and retailers. The distribution of benefits has thus been different from what was intended in the project' (SIDA 1992: 45, 50). In village Medleri, district Dharwar (Karnataka) a local voluntary organisation had to obtain a stay order from the High Court against the auction of eucalyptus by the panchayat to urban contractors (Indian Express, 23rd April, 1988, and Deccan Herald, 23rd July, 1988), pleading for equal distribution to all families within the village. Fuelwood which is to be sold, as is the case with most woodlot projects, is therefore unlikely to be accessible to the poor.

Second, panchayats representing several villages may often come in conflict with initiative from a single village. The villagers whose common lands were developed insisted on all the benefits being made available to them only. On the other hand the panchayats wanted to have control over the forest products and services arising out of the developed lands.

Willingness of panchayats for management - In addition there are practical problems with panchayat management, which have nothing to do with their political economy and class bias. First, panchayats are political organisations and find it difficult to enforce the discipline required for managing plantations. Second, continued involvement of the Forest Department discourages local bodies from taking over; and encourages them to opt for extending Forest Department management. Had village organisations been able to control and spend funds right from the beginning of community forestry projects, there would have been better chances of their taking an active part in decision-making and management. Third, control carries with it financial responsibilities which panchayats have difficulty in meeting - as a minimum hiring watchers to protect the woodlot. Fourth, many panchayats have been superseded and do not exist. And lastly, woodlot management plans, Village Forest Rules, etc., are often complex, unclear and require skills and experience that panchayats do not possess.

In Maharashtra the reluctance to take over responsibility for management was attributed to the people's lack of self-help attitudes, Sarpanches' worries about theft and encroachment, the time-consuming nature of legal action against encroachers, and lack of income to meet protection costs(USAID, 1985: 22-23; USAID, 1991).

Technical issues - Species selection, spacing and other silvicultural issues were considered technical questions to be settled at the field, and hence were not examined carefully at the project stage. Benefits which could flow to the poor from species yielding intermediate products were not properly appreciated. The value of a tree was linked in the minds of planners with the final product obtained through felling. Thus production of grasses, legumes, leaf fodder, fruit and NTFPs was neglected. Close spacing was prescribed to avoid intermediate management operations, to reduce plantation cost, and to cut down on staff supervision time. As a consequence, thinning and pruning which could have produced intermediate yields of grass and tree products for the people were not made use of. Technology with which the Foresters were familiar for large scale plantations for markets within Forest areas was applied to small scale village woodlots, where the need was more for fodder and subsistence than for timber. Lastly, as projects were designed around the ultimate felling of the planted trees, degradation often set in after the trees were harvested.

Estimation about availability of land - The area under village lands which could be made available for afforestation was highly exaggerated when the Social Forestry programme started, just as the area under private lands was grossly under-estimated, under a mistaken notion that the entire private land is under cultivation. Social forestry programmes in several states encountered shortages of actually available plantable land. Of the 30 community woodlots in Gujarat, set up between 1974 and 1976, only 8 had a plot size greater than 4 ha (World Bank, 1988). The reasons have included encroachment, competition from other government programmes (including competition between the Social Forestry programmes of different departments), competition from grazing and other existing local uses and poor productivity (additional land could be brought under trees, but only at a per hectare cost well in excess of what was budgeted and made available). As a result, the area of woodlot available to a community was usually small; liable neither to satisfy the fuelwood needs of the village, nor to promise sufficient non-monetary returns to village leaders who were expected to devote their time and energy to raising the woodlots.

Policy for Forest lands - The small size of village woodlots had implications for policy on Forest lands too. In district Ganjam (Orissa), it was noticed by the author in 1991 during the mid-term evaluation of the second phase of the Orissa Social Forestry Project that due to the small area of the village woodlots, people continued to depend on nearby Forest areas, which were being used by the Forest Corporation for timber and cash crops like teak and cashew, thereby depleting the availability of fuelwood meant for the people. People's pressure however endangered the success of commercial plantations. It was ironic that millions of rupees were being spent to create new fuelwood resources through small woodlots, whereas the existing much larger potential fuelwood areas on Forest lands were being diverted for non-fuelwood commercial plantations. It would have been cheaper to rehabilitate the existing Forests for the purpose of meeting people's demands. This is discussed in chapters 4 and 5. Unless creation of woodlots and rehabilitation of nearby government forests are both undertaken in an integrated manner with the specific objective of satisfying people's needs, the long-term viability of village woodlots would be in doubt.

Neglect of Forest lands - Fund availability for Forest lands became quite precarious during the Social Forestry phase. As state funds got locked to meet the matching contributions required for external assistance for projects on non-Forest lands, Forest lands got starved of funds, with several adverse effects. The neglect of Forest lands hurt forest dwellers and tribals. It reduced timber supplies to the markets, resulting in price escalation, which further increased smuggling from Forest lands. Price increases for both timber and fuelwood have been highest during the period 1975-85, as compared to either before 1975 or after 1985 (see chapter 6).

Problems in implementation

In addition, scores of problems were encountered during the implementation of Projects. These are discussed below.

Scattered plots - There was no continuity in the management and control of thousands of scattered pieces of planted village lands creating enormous problems of protection. Another consequence of the shortage of village land has been to divert Social Forestry planting on to areas such as roadsides which are available to Forest Departments but which are less easily brought under communal management and usage, and on to categories of public land, such as canal banks, for which legal authority for establishment of village woodlots was weak or absent.

Neglect of grasses and fodder - Although at the project formulation stage highest priority was given to 'meeting fuelwood and fodder shortages', in actual practice fodder trees (as they are difficult to protect) and grasses were generally ignored. Close spacing to accommodate more trees affected grass production. Woodlots often reduced fodder supplies to those who earlier used the sites for grazing. Though the protection of the grass cover in woodlot areas, and its enrichment in some places, often subsequently increased fodder supplies, it required cutting and stall feeding and so was not necessarily available to the grazers displaced. When woodlots were reopened to grazing, the grass cover quickly deteriorated again.

Species choice and technology - The structure of most plantations reflect Forest Department's rather than local preferences and priorities. There were many cases of unfulfilled requests for fruit trees. Where fruit trees had been supplied farmers addressed the problem of protection and management by planting them around the homestead on currently underutilised land. Farmers were willing to pay for fruit seedlings, which indicated the strength of the demand. They were interested in learning how to graft seedlings, if training opportunities were provided. Women were particularly keen on species to produce fruit for consumption and sale.

Though the earlier preponderance of eucalyptus and other commercial species was later superseded by a range of coppicing, timber and fruit tree species, and bamboo, these were commonly grown in intimate mixtures, which are difficult to manage and inefficient ways of producing fuelwood and fodder as these are likely to be progressively suppressed by the longer rotation species (Arnold and Stewart 1990).

Lastly, research on 'rainfed' horticultural crops is not adequate, hence not much technology is available for transfer to the farmers of these regions.

Rights and distribution policy - Another serious reason for the poor performance of community plantations has been the failure to define, establish and publicise the rights to the trees and the procedures for marketing and allocating benefits. The mid-term evaluation report (CIDA 1988:51) of AP observed, 'Final benefit sharing agreements are neither finalised nor formalised, which obviously causes uncertainties in the minds of beneficiaries.' In Karnataka several villagers, when asked by a World Bank team about distribution said, 'We know nothing about this.' (Brokensha 1988) Even forest officials disagreed with each other about the rules. The shares which would go to the individuals, village, mandal panchayat and the Forest Department were not clearly laid down.

Rights to trees and distribution policy are not official preoccupations in the early stages of tree planting, but are very important for the people. As they were not clearly defined and credible from the start, benefits were unfairly distributed later.

Lack of people's participation - Staff engaged on project implementation have understood participation as getting people to agree to and go along with a project which has already been designed for them. Community plantations in fact, whatever the theory, have usually been bureaucratic impositions on villages. Participation has been limited, at best confined to a few members of a village elite. Community members, especially the poor, have not accepted these plantations as their own. People's involvement has been limited to the handing over of common lands to the Department and to wage employment. They have otherwise remained passive spectators of the raising of trees on their land.

In a government evaluation of village woodlot scheme in AP (CIDA 1991), it came out that only 20 per cent of the respondents knew about the woodlots at the planning stage, the rest learnt only after they were started, showing lack of communication. Only 14 per cent of the people and 24 per cent of the leaders participated in the village meetings regarding woodlots. The general belief among the people was that woodlots were to generate income for the panchayat, and they were not perceived to provide fuelwood and fodder to the people. About 83 per cent of the low status people were adversely affected by the closure of the community land. Twenty five per cent of the leaders did not know that these woodlots are to be handed over to the panchayat, they thought that these would continue to be with the Forest Department. Another 64 per cent of the leaders believed that the panchayats could not take over the woodlots because of insufficient funds, lack of experience and village factions. Further, almost none of the villagers reported receiving or collecting products from the woodlot. Only 8 per cent claimed that a benefit-sharing plan existed. Most people viewed woodlot management as a departmental responsibility. Less than 10 per cent viewed panchayats as being responsible.

Such indifference on the part of the people was one of the reasons why they were reluctant to get involved with the management of woodlots at a later date.

Understanding of tenurial issues

One of the least understood issues in management of communal lands is the tenurial basis on which land is held by the panchayats. A well designed forestry programme, which gives benefits after many years, would require tenurial clarity to exist in the minds of all actors - people, panchayats and government departments. Laws pertaining to village lands have evolved over more than a hundred years, are state specific, but are not very well known. We discuss below several legal issues, starting with the evolution of laws relating to village lands.

The proprietorship of uncultivated village lands in India at the time of British occupation varied in accordance with the historical and political conditions prevailing in each province. Despite its complexity, it broadly approximated to two types. Cultivated land in the villages in western and southern India was settled with individual farmers, while the kings claimed only uncultivated areas (Ribbentrop 1900: 86-122). The kings appointed a local village headman, who was in charge of the uncultivated land of the village. Anyone wanting to extend cultivation could apply to the headman, and obtain land without difficulty. In the other type of village found in the north and the east, one family claimed to be owner or Zamindar (landlord) of the entire area, both cultivated and uncultivated. The uncultivated portion of the village was the common property of this proprietary body. It would locate tenants to cultivate its land, and tenants of longer standing could graze their cattle on the shamlat (the term used in north-west India for commons) of the landlord, as long as they did not cultivate it.

The two systems of land settlement evolved by the British, ryotwari and Zamindari, were based on the above understanding on their part about village proprietorship in India. As sovereignty passed from the local kings to the British, uncultivated lands became government property in western and southern India (which became known as ryotwari areas), but were generally settled as part of the Zamindar's estate in eastern and northern

India. In ryotwari states all uncultivated land, except that allowed for use to the village for grazing land, remained government property. In Zamindari areas, the local Zamindar continued to be the owner of both cultivated and uncultivated lands, as he was before the arrival of the British. There were some local variations, though, to take care of existing land use practices. For instance, in the Western Ghats, certain patches of wood and grass-bearing land were attached to each cultivated land holding, and were allowed to form part of the holding under a stipulation that this could not be cultivated or separately alienated.

The difference in revenue land systems in the south and the north continued after independence. In the south, uncultivated lands are still considered to be government property, known as C&D lands in Maharashtra and Karnataka, or poromboke in Tamil Nadu. In AP, although orders have been issued for transfer of uncultivated lands to the panchayats, in many places these orders have not been implemented, and thus there too uncultivated lands are mostly in the control of government, and from this pool the state has been allotting land to the poor.

In the north, after the abolition of the Zamindari, all uncultivated lands became vested in the state. Where there were large tracts, these were handed over to the Forest Department, and the rest was vested in the village panchayats, which are under the overall supervision of the Revenue Department. Their use by the panchayat is regulated by local Acts, like the Revenue Codes, the Panchayat Acts, and various Manuals. Initially panchayats were free to lease these for temporary cultivation, but these powers were withdrawn when the programme to lease these lands to the poor started in the early seventies.

Thus, whereas panchayats were expected to manage the woodlots, their control over land was not absolute. In the south, often they had no control as these lands were the property of the Revenue Department, in the north too their control was weakened due to several laws.

Administrative implication of legal issues - There are several administrative implications of these legal issues. First, throughout the social forestry phase there was no clarity whether these lands belonged to the Forest Department, or the Revenue Department, or to the village body. This made their local management an impossibility. It was difficult for the Forest Department to remove encroachments on such lands. Such uncertainty about ownership and legal rights has impeded community action. Second, panchayats representing several villages may often come in conflict with initiative from a single village. Third, non-forestry laws often conflict with Social Forestry. In Gujarat, village woodlots are not legal on Revenue land; but have been established there by the Forest Department because of shortage of communal land (USAID/World Bank 1988). Similarly, in Orissa communal land used for grazing may not be afforested, but some has been planted under Social Forestry (SIDA 1987). Although many of the woodlots in Orissa have been established on Forest land, none have yet been given legal status as "village forests" under the Indian Forest Act. States have thus been slow to amend laws in favour of viability of social forestry plantations.

Discussion

The discussion focused on three major issues.

Political economy of village panchayats

Experience shows that village panchayats have not been able to successfully manage social forestry projects. While the initial phases of planting are managed by the government departments, as soon as the project is handed over after a period of three years, grazing and the felling of trees begins. The issue arose whether villagers are at all capable of managing social forestry programmes. Some participants felt that the whole process of involving the village panchayat was incorrect. Except for the Sarpanch and one or two other members, no one in the village is aware of the details of the programme, species to be planted, responsibility of looking after the saplings, etc. That is to say, there is no involvement of the people. As a result, as soon as the forest is handed over, it tends to disappear.

The question whether there are structural barriers to community action has attracted differing hypotheses. One social science view is that rigid stratification of village society often inhibits development of institutions representing a common will. Grossly unequal land tenure and access to markets ensure that only a powerful minority gains in the name of the community (Eckholm 1979).

An opposite view, however, states that the management of village commons has been a historical reality for two reasons. First, whereas private resources in India were governed by individualistic and class dominated norms, there have been communally shared norms when it comes to community resources. Second, the self-sufficient nature of the traditional village economy guided the exploitation of common resources through a system of self control. Therefore there are no structural barriers to achieving community participation in social forestry projects.

Experience of protection of village commons by the people has been both negative and positive. Studies of villages in the arid and semi-arid regions of the country (Jodha, 1987, 1991) reveal that none of the villages used control measures such as grazing taxes or penalties for violation of norms on the use of common lands. Only a few villages resorted to rotational grazing, provided for a watchman or undertook protective measures such as fencing or trenching for the upkeep of common lands. Experience from states like Rajasthan and Gujarat reveals that whenever management is handed over to the people, fences break down and the deterioration of resources begins. In MP, casteism and political factionalism led to the poor being totally excluded from the programme. In multi-village panchayats, only the interests of the main village are considered, other villages get ignored. These views were further reinforced by a study of four villages from the states of UP, HP, MP, and Tamil Nadu (Saxena, 1989) which revealed that village organisations were weak, not trusted, dominated by the rich and had no experience of forestry programmes. People seemed to have more faith in the coercive authority of the state rather than in their own participatory institutions.

But the picture is not a totally dismal one. On the positive side, success stories have been reported from a few regions, particularly from the hill and tribal districts (Saxena 1993).

The answer to why collective action succeeds in some cases and not others can perhaps be sought through empirical evidence. Firstly, it has been noted that effective local institutions develop in small communities where there is actual user association, and the area managed is a small one with well-defined boundaries. Also a single village unit avoids the mistrust felt in multi-village panchayats where the Sarpanch who controls the commons may belong to another village. Secondly, purely physical constraints in terms of size and topography also have a role to play. Mountain villages have a topography which makes their common land visible from most of the dwellings so that any poacher can be spotted immediately. On the other hand, large and widespread plains villages are more open to illicit fellings which cannot be detected. Thirdly, villages with better natural resources have a stake in conserving them, while once degradation sets in people become indifferent to protection. Thus a vicious cycle syndrome operates. Fourthly, remoteness from the outside world fosters a closeness in village society and also discourages poaching by outsiders. Fifthly, the old system of authority of the village elders persists in remote villages thus deterring too frequent abuse of common resources. Sixthly, upland villages are more homogenous in terms of caste which facilitates social control. And lastly, common property management is more likely to succeed when all the families in the village including the rich are dependent on forests for their requirements of fuel and fodder. If this is not so, the rich tend to shift to growing fodder on their own lands as the productivity of the commons declines and lose interest in the upkeep of the commons, while the poor lack the power and organisation to manage the commons themselves.

Experience of NGOs

In contrast to the Forest Department, the NGO experience in securing people's participation was, much more positive. The SPWD experience in Rajasthan was cited where people were involved from the planning stage, so that when the take-over comes, there is no break down in management. Similar experiences were reported from Jammu and Kashmir. The successful cases have used the principle of equity - equal rights over or equal distribution of benefits from the commons through collective or participatory management. A prominent example in this respect is that of Pani Panchayats in Maharashtra where water was considered a

community asset, with all households having equal but transferable rights over it irrespective of the size of the private holdings of land and livestock. A similar principle was applied in other instances of regenerating community grazing lands where all households were given equal rights to their produce. To operate the principle of equity, it required a socio-political environment in villages wherein the villagers could meet, talk and settle matters of management of community assets on an equal footing. Such an environment could be achieved inspite of inegalitarian agrarian structure through local leadership, and in its absence by voluntary agencies and forest officials who acted as catalytic agents to create Village Associations and orient them to take up management of community assets. Therefore inequality in asset holding must be countered with adequate mobilisation of the poor so that their voice is represented in the village institutions. It is also important to note that in almost all cases of success, eco-development activities were taken up as part of overall rural development covering particularly informal education and health care. Since the benefits of education and health care largely go to the poor, they also contribute to empowering the poor to demand equity as regards the commons at least, if not total equality.

Often villagers are able to organise themselves without the aid of any external NGO, because of strong village leadership. We describe below a well-known experiment in a village of Maharashtra.

Watershed Development in Maharashtra - Ralegansiddhi, a village in Ahmednagar district of Maharashtra, was a drought-prone village characterised by poor soils, inadequate rainfall, monocropping, seasonality, low yields, and out migration. Out of the total geographical area of 971 hectares, 651 hectares was cultivated, 129 ha was culturable wasteland, 51 ha was grazing land, and 138 ha was government forest. Although there were 68 dug-wells in the village, they gave water only in a few months of the year due to receding water table, as a consequence of ecological imbalance in the watershed. Crop productivity was very low, between 3 and 5 quintals per ha.

In 1975, Anna Hazare, a resident of the village, returned after his army service and commenced a social reform programme to stop the consumption and brewing of liquor in the village, and to initiate the construction of the local temple through community labour. Though it began as a moral movement, the programme soon became a community development programme, covering a variety of sectors, including watershed development, which is being described here.

Ralegansidhhi is situated in a narrow valley, surrounded by hilly outcrops. A small stream flows from the hills to its eastern side, which loops around the village, and drains westwards. Before 1972, small and temporary earthen dams used to be put along the stream, which provided some irrigation to the neighbouring fields. However, these activities were not always successful, as there was hardly any recharge of ground water resources, farmers could not always be persuaded to put up earth bunds in the middle of their fields strictly according to the distance dictated by the contours, and there was little public involvement in forestry. In fact, both during and after the drought, there was large-scale cutting of trees for sale.

Maharashtra suffered severe drought conditions during 1972-74. During this period construction of a percolation tank was taken up in the village to provide employment. Even after the drought, work on the tank dragged on till 1983, due to intermittent stoppages of funds. Although the tank was declared to have been constructed in 1983, impounded water could not be retained for more than a month due to technical flaws.

At this stage, Anna Hazare led several delegations of the villagers to the authorities pleading for more funds, so that the tank could be properly constructed. A further grant of Rs 100,000 was sanctioned by the government, on the understanding that labour would be contributed by the villagers. By 1986, extensive repairs of the tank were completed, and it could successfully impound water. This opened up the possibility of investment in new irrigation wells down stream. Not only peoples' participation lowered the cost, it enabled people to acquire technical knowledge, gave them a sense of ownership of the asset, and built cohesiveness within the group. It also fostered the principle of equity, and sharing of benefits.

While the percolation tank work was in progress, Tata Relief Committee, a voluntary organisation, took up the construction of 11 earthen check dams. Government undertook construction of 27 bunds, and land

shaping and grading over 168 hectares in farmers' fields. About a hundred hectares of private degraded lands were afforested and developed as pasture lands and 211 ha of public lands were brought under social forestry. This village seems to have received favourable treatment from authorities in allocation of new schemes due to the efforts of Anna Hazare, and the impression that he created upon the authorities. They in turn were keen to take up activities in this village, as success in the village due to the cooperation from the village helped in achieving their targets.

Because of these activities, the process of soil erosion was reduced, and there was considerable increase in the recharge of underground water reserves. As a consequence, several farmers constructed private dugwells downstream. Fifty three small farmers came together, and constructed 11 community wells in the benefit zone of the percolation tank. In 1986, another 103 farmers organised themselves into a cooperative society to set up a lift irrigation project on one of the canals. More recently, a number of inverted bandharas in the nala bed (bunds) have been constructed which have further helped infiltration of water in the catchment area, and also provided flow irrigation to 50 ha of land. Due to these measures, use of fertiliser increased from 8 to 70 tonnes, pumpsets from nil to 59, biogas plants from nil to 34, irrigation from 56 to 465 ha, and millet sorghum productivity from 3-5 to 7-15 quintals/ha. There is a commercial bank in the village, with deposits of about Rs 23 lakh from this village alone.

The programme of forestry and watershed development succeeded in this village because of Anna Hazare's initial mobilisation of the villagers, arousing their consciousness and sense of moral obligation to the community. Before a new enterprise was begun, potential beneficiaries worked out the economics, and cut the cost by contributing labour. They also contributed capital for the running and maintenance of the system. They agreed on rules for the sharing of the water, including on cropping pattern. Water absorbing crops like sugarcane were forbidden. Social forestry has succeeded because of `social fencing', and consensus about the use and benefits to be shared from the assets created. When marginal crop lands owned by the poor were converted into grass lands, the problem of food security was solved by constituting a `grain bank', a buffer stock of cereals contributed by the better-off farmers. Villagers also realised that common lands had to be closed for regeneration. Many goats were sold off, and cattle gifted away, till the number was reduced to half. The right to exploit the common grasslands was given only to the landless families, who had no land of their own. Even they were charged Rs 15 per month for the right to cut and carry grass from the common pasture lands, and each one was allowed only one headload a day. This gave a modest income of Rs 3000 annually to the panchayat.

Alcohol and smoking is banned in the village. Community marriages are organised without dowry. However, when girls are married to outsiders, dowry is still given. All major decisions are collectively taken in an open meeting which is generally attended by 100 to 150 residents. The total investment in the village between 1975-76 and 1986-90 has been Rs 114 lakh, out of which 47 lakhs is from government and 41 lakhs from Bank of Maharashtra.

While many of these schemes have been tried elsewhere too, these have succeeded in this village because of local leadership, involvement of the beneficiaries, and the detailed working out of the consensus on the management aspects. Watershed approach brings out the linkages in the chain of economic activities, of fodder production, animal husbandry and dairy. Sharing of common resources, especially in the fragile environment of a degraded watershed, is the key to developing sustainable agriculture in this region. Although government financial help was available in this village, it succeeded because it was matched by viable institutions for community participation, and local management.

It is worth appreciating that a majority of examples of success involved no charismatic leadership of single persons, but dedicated work of several and participation of many (Nadkarni 1993). It is only the cases under dominant leadership of single persons which have attracted a lot of publicity. But the other cases are of greater interest from the point of replicability. The success of Seva Mandir in Udaipur, Rajasthan, is worth citing here. Seva Mandir had a group of dedicated people who undertook to spread informal education and health care, and with the rapport thus established, mobilised village communities to take care of community irrigation and regeneration of village grazing lands and other CPRs. Homogeneity in terms of caste or class was not a key factor in the success of community management and equitable distribution of the usufruct. No

grazing was allowed in protected areas, which as a result had luxurious growth of grass over which every household had equal right. The grass could be cut only during specified days as decided by the village committee and only one person from each household could do it. The excess grass could be traded by households, but within the respective villages. Since this arrangement involved a rationing of fodder, the number of animals was restricted to what is possible to sustain from the fodder available. The 'Tragedy of the Commons' could thus be avoided. There were similar examples of success in villages taken up by another voluntary agency - Magra Mevad Vikas Sanstha in Kabra in Rajasthan. Another important feature of community management in these Rajasthan villages was the insistence on contributory labour from all households. A worker accepted only half of the prevailing wages, i.e. Rs 7 out of Rs 14 per day. Those who did not work as voluntary labourers had to contribute Rs 7 in cash. The village committees organised in Rajasthan seemed quite self reliant, capable of carrying on their routine tasks on their own and of taking decisions and resolving conflict situations without much outside help.

There is often a strong impression that NGOs are more successful as catalytic agents in mobilising community efforts and their participation than 'paid government officials', as if the NGOs are not paid. The fact is that many large NGOs employ staff who work as paid employees. NGOs have of course the advantage of flexibility of operation.

Corrections applied by the Forest Department

Several participants described the recent changes in the implementation of social forestry through government agencies. The first attempts were of course officially sponsored programmes by the Forest Department (FD) without any participation of the local communities and the species grown were also commercial like eucalyptus and casuarina. This meant actually depriving the locals of their CPRs, and generated a lot of protest movements, particularly in Karnataka. It must be said to the credit of the FD, however, that it has been responsive to this criticism and has shown a marked tendency to learn from the past mistakes and to correct them. This correction was in two main ways. First, the FD started actually consulting people and wherever possible even trying to organise local village committees for the management of social forestry projects. Where such committees could not function in their own, the FD started convening meetings of local people, and consulted them about the type of species to be planted. This led to the second correction, namely, the adoption of a model of mixed species instead of a mono-culture commercial species. A variety of trees for fruit, fodder, fuelwood, and small timber bamboo were planted in project areas. People's cooperation was sought and more easily obtained in stopping free grazing of cattle in lands taken up for afforestation. The term social forestry thus acquired greater legitimacy, although still controlled and managed by the FD.

These social forestry projects were taken up mostly in cultivable waste and such other uncultivated lands under government ownership other than the Reserved Forests. Considering the large need for fodder, there is need for balance between fodder and wood species. More nutritious and palatable varieties of grass have to be introduced so that they are more worthwhile to produce. In most of the social forestry projects under FD, raising grass is not given much importance probably due to their low economic return, and also because of the risk of quick spread of fire. These problems have to be solved in consultation with local people, and obsession with timber species need to be corrected.

Another lacuna in the working of social forestry projects under the FD is that there is as yet no clarity about how the timber is to be shared with the local people, if and when the trees are cut. The local people do not feel that they are their trees. If the FD and its watch and ward are withdrawn, the village panchayats have no confidence that the trees would be maintained by people and not cut stealthily. The community organisations have not yet so developed in these projects that they can take over the task of distribution of timber or its sale proceeds to the satisfaction of all. It could also be said that they have not grown because such responsibility has not been entrusted to them in social forestry projects under FD. Where, however, there is more clarity about the sharing of forest produce by the local communities including timber, the level of community participation and management is much higher even under the auspices of the FD.

Ultimately, the test of success of NGOs or government officials acting as catalytic agents consists in whether they enable the people to be self-reliant through their own organisation and efforts, so that when the catalytic agent leaves, the programme can go on unaffected. In managing the commons equitably and sustainably on their own, the people would find a satisfaction, self-respect and a feeling of strength that cannot come from any top-down approach and would constitute a noble path to democracy at the grass roots level. The empowerment of people which comes about in the process and the inculcation of the spirit of cooperation and sharing instead of competition and racing, would be in larger interests of the environment and peace.

Recommendations for future action on community lands

Based on discussions, we can now summarise our suggestions.

Continued involvement of the Forest Department discourages local bodies from taking over; and encourages them to opt for extending Forest Department management. Handover arrangements commonly empower Forest Departments to exercise a considerable degree of control and involvement, and to retain a share of the revenue. As this is often allied with pressures on Forest Departments to meet very ambitious Social Forestry planting targets, they are frequently reluctant to hand over effective control. Had village organisations been able to control and spend funds right from the beginning of community forestry projects, there would have been better chances of their taking an active part in decision-making and management. Therefore the present practice of 'taking over' common lands by the Forest Department should be stopped, or drastically reduced to experimental projects. Even in latter cases, people's wishes should be the guiding principle in species selection. There is a good case for non-rotational `low' market value trees and grasses in community plantations, so as to reduce problems in distribution.

Model afforestation schemes should be prepared for implementation by the village councils. These should be widely circulated, and village councils should be encouraged to apply for funds. Such village councils which are capable of looking after plantations should be given funds in the first instance. Their example and good work should then be publicised so as to encourage others to take advantage of the schemes.

Funds for afforestation should be transferred to the village community right in the beginning of the scheme. The role of the Forest Department would be mainly extension and technical support. Generally only a small area is available in the village. If afforestation is left to the village councils, it would take up only a small portion, and thus plenty of area would be left to be used by the poor for grazing. Often more degraded lands are available in larger chunks, but these are not taken up as the cost of reclamation would be higher. However, in the long run, it is better to afforest these, as they have better demonstration effect, satisfy local demand, and offer better management possibilities.

As production of grass increases through afforestation on public lands, greater attention should be paid to its storage, so that fodder is available in lean months too.

Appropriate legal models for benefit sharing and usufruct rights should be worked out with the communities. They have been verbally assured in some places, but there is no legal document to guarantee the benefit sharing. Hence the people are not really involved (USAID/World Bank 1988). Where village councils represent several villages, single village organisations should be created.

Finally, distribution of produce is better done on the basis of one household one share. There are views, valid enough, that excluding certain socio economic categories and confining access of benefits to those directly dependent on forests would provide greater coherence of common self interest but alienated sections could generate counter pressures. It is better that every household is given an option to participate in management.

In some villages, consensus may be in favour of informal partitioning of the commons. An experiment carried out by the LBSNAA, Mussoorie under the Nehru Rozgaar Yojana was cited. Common lands were divided amongst selected families. These were, however, mainly barren rocky lands which people were willing to

give for afforestation. The villagers were asked to select a member of the gramsabha to look after the plantation on a stipend of Rs 200/- per month. However, the project did not meet with success because the Forest Department could not supply the seedlings in time, or the species required for the area, and technical knowledge was also insufficient within the village. On the whole, there are problems with privatising village commons and forests, even in favour of the poor, which are discussed in chapter 7.

We have already pointed out certain legal problems which need to be addressed. Once the authority to plant and protect trees is given to the village bodies, much of the confusion regarding who should initiate action against encroachments will be removed. Local management will ensure that the village body will be responsible for all action to safeguard the interest of village plantations. We will also recommend a review of revenue and other laws pertaining to village lands, as these were framed when fuelwood and fodder were not important problems for the village community. For instance, many village communities fear that once these lands have tree cover these would be entered as forests in the revenue record, and thus attract the stringent provisions of the Forest Conservation Act of the Government of India. To overcome this problem and to preserve the control of the village communities over their lands, as regards its land use, it may be advisable to create another category in the nine-fold revenue classification and call these lands by some name other than forests, such as groves or agro-trees.

Community forestry is in the ultimate analysis a programme for community action for the benefit of the community. Precisely because community woodlots are difficult to manage, with the twin dangers of tragedy of the commons if no control is exercised, and of appropriation by a few if protection and survival are good, it is vital that the positive lessons of experience should be learnt. Effective community forestry needs not only funds and the right kind of policies but also political support. There has been little evidence of political commitment to strengthening community control and management. It must be admitted that political will in India in favour of creating communal tenures has been rather weak. Land settlements carried out in the last 40 years have recognised communal tenure only in the Northeast Indian states. In many states, such as AP, the transfer of even non-forest government land to the panchayats has not taken place. Both the land distribution policy of the 1970s and the community forestry of the 1980s (which virtually amounted to take-over of village commons by the Forest Department) seem to have been influenced by Hardin's ideas (1968, 1971) that there are only two sustainable policies: either commons should be privatised, or they should be brought under the control of government. Now that the failure of these policies is widely recognised, the time is ripe for the government policy to favour communal tenure and village organisations. In addition to enlightened bureaucratic leadership, this will need political support too. Without such a commitment, there is a danger that even new schemes like the Joint Forest Management, which are being tried now and discussed later in this book, may not have the desired success.

Chapter 3: Farm and Agro Forestry

Role of trees in farm economy

Social Forestry Projects in India were originally designed to reduce pressure on forest resources by increasing tree production on presently unproductive government and community lands and to make fuelwood, fodder and small timber available to the rural communities. While this objective dominated the early structure and approach, the emphasis shifted by the early 1980s away from government managed plantations to farm forestry, whereby the farmers plant trees on their own lands. The success of this approach in some states, notably in Gujarat, the Punjab, Haryana, western UP and Karnataka, opened up a vast potential for helping the farmers through the new activity of tree farming.

Theoretically speaking, there are several advantages in encouraging farmers to practice agroforestry and farm forestry on their lands. First, it saves marginal lands from further degradation and maintains or increases site productivity through nutrient recycling and soil protection. Second, it increases the value of output per unit of land through spatial or inter-temporal inter cropping of trees and other species. Third, by supplying raw materials (such as leaf compost) to agriculture directly and indirectly, and by producing food and forage for human and animal consumption, it complements and supplements agricultural production. Fourth, it diversifies the range of outputs from a given area which increases self-sufficiency and reduces the risk to income from adverse climatic, biological or market impacts on particular crops. Fifth, it spreads the needs for labour inputs more evenly seasonally, thus reducing the effects of sharp peaks and troughs in activity characteristic of tropical agriculture. Sixth, the technology is simple, labour intensive, and requires little outside technical or financial support. Seventh, trees have many useful characteristics as `assets' for the poor - low investment cost, rapid appreciation, divisibility, flexible harvesting time, etc. - and are available to meet unforeseen contingencies. Eighth, if there are strong and growing market for tree products, a market oriented approach could enhance substantially the incomes of the poor farmers too. Ninth, it can be taken up as a part-time activity by households and does not require a change in the occupation of the landholder. Tenth, it promotes value-added activities in rural India, as several communities have traditionally been involved in supplementing their incomes through processing tree products. Eleventh, the programme of tree growing does not invite hostility from the rural rich, which is inherent in land reforms and other distributive programs. And last, but not least, as rural women are involved in meeting daily survival needs of their households by collection of forest produce, decline in the country's natural vegetation has directly affected the rural poor women. An increase in fuelwood and fodder production through multiple nature trees on their own farm and leased lands will certainly reduce drudgery and save their labour for other productive occupations.

Features of the farm forestry programme

Trees are protected and planted on farm lands in India in a variety of situations, of which three seem to be fairly extensive and well researched. First, in arid and semi-arid regions, trees are protected because they complement agricultural production by increasing soil productivity and land sustainability through nutrient recycling and by providing mulch and shade for crops. Second, trees provide subsistence products, like mulch, fodder and fuelwood in the Himalayan and other hilly regions, and hence are important in the hill farming systems. The third is in regions of high fertility and steady rainfall, like in Kerala, where farmers maximise returns from land through multi-storeyed cropping. Here, perennial crops such as coconut, arecanut, rubber and pepper are inter-cropped with seasonal and annual crops like tapioca, bananas, pulses and vegetables.

However, elsewhere trees did not form an important component of the farming systems. Tree density on farms has declined over the years, the area under privately owned tree crops and groves falling from 2.77 per cent in 1951-52 to 1.15 per cent by 1980-81. This indifference of the Indian farmer to trees led to the belief that they would plant only a few trees on homesteads or uncultivated lands for fuelwood and fodder to meet household demands. The tree planting programme, called farm forestry, was planned accordingly. It

was introduced in the late seventies with a view to fulfilling subsistence needs of rural households for fodder and fuel. However, farmers in the agriculturally surplus and commercial regions of the country saw in the programme an opportunity for substantial cash income as well as considerable savings in terms of labour and supervision inputs. This led to the eucalyptus boom in the early eighties. Eucalyptus grew straight, had a small crown, which allowed more trees to be planted per unit of area, and caused little shading when planted on field boundaries. It did not attract birds, was non-browsable, hence easy to protect, and yielded straight poles which were perceived to have a good market.

Against the original target of distribution of eight million seedlings to farmers in UP, in the period 1979-84, actual distribution had to be stepped up to 350 million to meet the farmers' demand (World Bank, 1988). In states like the Punjab, in the course of ten years, over three per cent of the net sown area came under eucalyptus. In Haryana, the farm area under trees grew at a rate of 53 per cent per annum (NCAER 1987), while in Gujarat, in 1983-84, farmers planted 195 million trees as against the existing 49 million mature trees in the state (GOG 1986). In the country as a whole, as many as 10,550 million trees were planted on private lands between 1980-88 (Chambers et. al. 1989). A survival rate of sixty per cent was estimated.

Regional variations in the farm forestry programme were sharp and clear cut. As opposed to its vast acceptance in green revolution areas, it succeeded only in some backward regions (Table 9). The northern states of Punjab, Haryana and western UP with fertile soils and assured irrigation which took most enthusiastically to tree farming concentrated their trees on boundaries retaining the cultivation of annual crops, while in the commercialised cash crop growing states like Gujarat, Maharashtra, and Tamil Nadu trees were planted in woodlots in place of risky crops like groundnut or cotton.

On the other hand, success of the programme in south-west Bengal was due to different reasons. Here tree growing was carried out on lands unsuited to crops which were allotted to poor agricultural labourers and became an additional source of income for them. In the semi-arid districts of Kolar and Bangalore of Karnataka, eucalyptus was planted due to suitable market conditions and low productivity of ragi. As regards purpose, in Orissa , Bihar and the uplands of HP, only a few trees were grown primarily to produce goods for use within the family and in various agro-forestry combinations in which the trees complemented or supplemented other crops, rather than replaced them. Most farm-level tree cultivation was of a kind which was low-risk, requiring only marginal adjustments to existing farming practices. In South Bihar, a subsistence region, trees were planted more as a response to obtaining short term government subsidies, rather than to the longer returns from investment in trees (SIDA 1990). But the picture was radically different in the north-western states, where an increased farm income was the driving force, as the farmers felt that by growing trees they could get a better return on their land, labour and other inputs.

Thus one could generalise that despite eucalyptus being planted in very diverse social and ecological conditions, the programme made little impact on the vast subsistence regions, like the paddy growing eastern India, the Himalayan uplands, other mountains and hills, the Chotanagpur plateau in South Bihar, and almost all tribal and heavily forested districts of central India, as also on much of the millet growing Deccan plateau. Together, these regions may account for more than two-thirds of the country's land mass.

Table 9: Regions where farm forestry was a success in India

Index	Western UP, Haryana & Punjab	Gujarat	Karnataka	West Bengal
Districts	almost all districts	South Gujarat, like Kheda and Mehsana	restricted to Kolar, Bangalore and parts of Tumkur	restricted to Midnapore, Bankura and Purulia
Rainfall in mm	700-900	800-1000	700-800	1000-1200
Per cent of land irrigated	80-100	40-70	20-30	20-40
Main crops in the	wheat, sugar, potato	groundnut, cotton &	sorghum and paddy	rice, mustard,

region	and rice	sorghum		and paddy
Productivity of land on which trees were planted	very high	high	low	very low
Main species	eucalyptus	eucalyptus	eucalyptus	eucalyptus
Objective of planting	cash income	cash income	cash income to buy paddy lands	cash income to buy borewells
Pattern of planting	bunds by resident farmers, woodlots by absentees	woodlots and bunds by all class of farmers	mainly woodlots	only woodlots
Government's contribution	subsidised seedlings	free seedlings	free seedlings	degraded land was allotted to the poor
Constraints sought to be overcome thru' tree planting.	shortage of labour, falling returns in cash crops	shortage of labour, uncertain production of groundnut	low productivity of sorghum & foodgrain crops	land unsuitable for crops, labour required for wage work
Participation by poor farmers	negligible	low to medium	high	very high
Proximity to forests/ paper mill	remote from forests, 3 paper mills considered insufficient by farmers	remote from forests, no paper mill	remote from forests, paper mills buy.pulpwood from farmers	degraded forests in the region, little support from paper mills
Present status in 1991	stopped planting since 1987	stopped planting since 1985	still planting, on a reduced scale	still planting, on a reduced scale.

However, farmers' enthusiasm to plant eucalyptus declined after 1986, as the tree failed to generate the kind of returns farmers were expecting from its sale. Some farmers removed the tree roots, and went back to annual crops (World Bank 1990; Saxena 1993). A study commented, "Eucalyptus is practically dead in Haryana today. Farmers are uprooting it today with the same vengeance as the love with which it was planted. It is a curse. it eats into agricultural production and its prices are unremunerative" (SIDA 1990). In contrast to other agricultural innovations (e.g., high yielding variety of seeds) which, after a fast initial growth, stabilised at a high level of adoption, the popularity of eucalyptus farming shot up quickly during 1981-86 but declined equally fast afterwards.

Causes for the success of farm forestry

Tree planting on farm lands may be viewed as a long gestation capital investment with recurrent costs, but no recurrent output. Unlike seasonal crops a long gestation period for trees delays benefits and reduces a family's income from land in the intervening period. Trees grown for cash need to be marketed, and hence the farmer has to locate the market, gain access to it, and obtain permissions from government offices in order to transport and sell his trees.

Such an investment is therefore likely to be undertaken by farmers and in regions which generate marketed surplus, where there has been a long tradition of growing crops for the markets, where other forms of capital investment in land, like installing tubewell or buying farm machinery, is common, and where profits from land are ploughed back into agriculture. Moreover, the rising wage in the surplus agricultural regions of the country led to labour shortage which may also have contributed to the success of tree farming which was labour extensive and also demanded less intense supervision making it suitable for absentee land owners. The perception that wood prices would be more stable than the volatile prices of other cash crops gave a further edge to farm forestry.

Therefore, farm forestry succeeded in regions characterised by larger holdings, assured irrigation, owner cultivation, higher surplus and its re-investment in agriculture, a higher risk-bearing capacity and better enterprise. Such conditions exist in regions of commercialised agriculture, such as north-west India. In fact many businessmen and some senior government servants in the Punjab and Haryana bought degraded land with a view to use it for eucalyptus farming. Some financial companies too bought land, with a view to large-scale eucalyptus farming with capital borrowed from private individuals. This may be the only instance in India in which private urban capital was sought to be directly invested in rural areas.

Trees and backward regions

On the other hand, the agrarian structure of the eastern and tribal India is characterised by heavy dependence on grain production, smaller holdings, low overall incomes, a less marketed surplus, imperfect credit markets, more dependence on the village merchant for marketing the small surplus, inter-locked credit and output markets, less monetisation, less diversity of rural incomes, greater debt bondage, a less developed infrastructure for the supply of agriculture inputs, greater insecurity of land tenure, and on the whole poor human capital as far as enterprise is concerned. These conditions can at best promote low intensity tree growing strategies for home consumption, and are not conducive to market oriented high intensity tree planting.

Subsistence regions do not accept cash crops easily, and when these are introduced indiscriminately, poor farmers may be harmed rather than helped. For instance, in Rajasthan, where there is no paper mill or other large buyer of eucalyptus, and poles are generally imported from Haryana, small farmers found that there were no buyers for eucalyptus trees, and hence they suffered losses from planting eucalyptus, whereas the large farmers with 10,000 or more trees to sell had to locate buyers from other states through newspaper advertisements (USAID 1990). Cases of distress sales by the poor peasants to contractors at a throw away price a few years before the crop matures are reported from other states too. In West Bengal the poor farmers sold their trees to a village school teacher at about 30 to 50 per cent of the price which the school teacher obtained. A case study of district Midnapur, West Bengal described how two middlemen of the village cheated the tree growers and offered them very low prices. Even the supply of farm inputs, irrigation water, crop loan and other services by the village council was given to those who sold their trees to these two middlemen (Singh and Bhattacharjee 1991). It may be speculated that such cases would be more common in regions where credit and output markets are inter-locked.

Tree growing has been constrained in the monocropped millet growing peninsular India by a number of factors. First, much of peninsular India is semi-arid, characterised by intense competition for moisture between crops and trees. Unlike khejri (Prosopis cineraria) in Rajasthan's arid zone, suitable species which may have strong complementary effects between crops and trees are still to be identified for the region. Second, young trees require protection from cattle, especially in the fallow season, when the village livestock is let loose to browse agricultural residues and stubbles. During these months in a monocropped village cattle is generally not accompanied by a herder. Semi-arid areas have villages spread over a large area in which individual fields may be far away from village huts, making protection further problematic. On the other hand, in irrigated villages a tradition is slowly emerging of herding cattle during the cropping seasons. Despite ecological necessity and the easy availability of marginal and degraded lands, protection of young seedlings is difficult in monocropped villages compared with irrigated villages. Thus, unlike annual crops in which crop decisions are autonomous of similar decisions by other families, a farmer's decision to plant trees has to take into account herding practices of the village, availability of irrigation for double cropping, distance of the fields from his hut, and the cropping pattern of other farmers. Conditions prevailing outside the farm become as important as simple costs and benefits from the preferred landuse options.

Tree growing by farmers in Mohanpur (Tripura)

In 1977, a few migrant families from Bangladesh brought some rhizomes of a special variety of bamboo called Bambusa affins or popularly known as Rangoon Bamboo or Kanak Kaich and began cultivating it on their own land in Kamalpur block of West Tripura District, Tripura. Being used in the manufacture of fishing rods, javelin handles and pole vaults, it has a good market outside the state. Some people realised its

economic worth and a small-scale venture was begun. Today, over 550 families in 16 Gaon Sabhas (village bodies) of Mohanpur block are involved in its cultivation. Observing the interest shown by the local people and realising its worth, in 1981 the State Forest Department included Bambusa affinis under the Social Forestry Scheme and started giving cash subsidies to its cultivators. The programme however remained confined only to a few villages, as the Forest Department did not provide any technical assistance to the beneficiaries in the management of the plantation. High transportation cost of the products has also proved a deterrent. In the absence of proper marketing facilities at the local level, beneficiaries were exploited by middlemen, who sell the product outside the state.

In order to promote the scheme in the area, loan facilities should be made available to the beneficiaries on group guarantee basis from commercial banks. The Forest Department should help set up proper outlets for marketing the produce and arrange for adequate transportation facilities so that the beneficiaries can derive better returns.

Third, most of India's forests are located in areas of backward agriculture. Villages in this region of low productivity often have vast, though degraded, open access lands. Unlike annual crops which are grown on private lands, trees also occur on forest and other public lands. Open access to public lands may vastly reduce the cost of obtaining tree goods for a gatherer, which may work to the disadvantage of a grower. Thus, the concept of trees as a free good to be obtained from public lands inhibits investment of personal labour, land and capital in tree planting. Proximity to forest lands affects private tree growing in other ways too. State often restricts farmers' right to freely harvest the trees on private land in the interest of either conservation or of checking theft from forest lands. These create rigidities in the free flow of products, and increase differences in the prices obtained by different farmers for a similar product. This, combined with differences in yield from farm to farm, may make planning of likely incomes from trees extremely difficult for a farmer. Lastly, if similar products are raised on forest lands, which are marketed through the state machinery, farmers may find it difficult to compete with the state and get a remunerative price, particularly because the traders may be less interested in buying from dispersed producers, and may prefer to deal with the centralised bureaucracy. Evaluation of Orissa Social Forestry Project noted that raising of eucalyptus on forest lands by the FD was one of the reasons why farmers did not feel attracted to grow commercial trees on their plots.

The above factors have limited the spread of market oriented farm forestry to the subsistence regions. A different approach - as suggested later - is required, which would be in harmony with the ecological characteristics of these regions.

Decline of farmers' interest in eucalyptus in commercial regions

Even in surplus regions the enthusiasm for eucalyptus did not last long. Instead of a usual S-curve of adoption, what was witnessed for eucalyptus was an inverted V-curve, a fast rise in popularity followed by an equally fast decline.

In the Punjab, a 7 to 8 year-old tree could not be sold for Rs 15 compared to the expected Rs l00 hinted at by the FD and of the Rs 150 realised during initial sales (Das, 1988). The situation is summed up by Aulakh (1990), ‘The prices offered by the traders are no longer remunerative. There is virtual panic amongst the farmers about the future of eucalyptus plantations raised by them. Some have even started cutting down the young plantations’. In Haryana, a slogan among the farmers in the early 1980s was: `plant one acre under eucalyptus and pocket Rs 100,000 after 6 years, or earn upto Rs 100 a tree'. These hopes were not realised, as many farmers did not obtain even Rs 15 per tree (Athreya, 1989).

As farmers could not make the anticipated profits, they stopped growing eucalyptus. In Gujarat only 12 million eucalyptus seedlings were distributed in 1988, a year of very good rainfall throughout the country, as against a peak distribution of 134 million in 1984 (GOG, 1989). In Haryana, only 4 million plants from nurseries could be sold in 1988 against a peak distribution of 43 million in 1984 (Chambers et al., 1989). Due to glut of wood, the planting targets under farm forestry in the Punjab had to substantially reduce from 47.5

million seedlings in 1983-84 to 13.5 million seedlings in 1990-91 (Kapur 1991). According to the Punjab FD, the state was surplus in wood by 2 million tonnes annually, and farmers were compelled to sell their produce at a throwaway price of Rs 250 per tonne.

Disenchantment of farmers with eucalyptus is due to four main factors (Saxena 1994):

1. Production problems- Most farm forestry plantations planted over 4000 eucalyptus seedlings to a hectare, or the distance between two adjacent trees in case of bund plantation was just about a metre, which led to poor quality of produce good enough only for fuelwood. Second, due to rapid increase in demand for eucalyptus seedlings in the early 1980s, seed collection was not done properly by the FD and private nurseries, and poor quality seedlings were allowed to be planted. Third, the genetic status and composition of the eucalyptus hybrid has deteriorated during the last 150 years, which has reduced yields. Improvements could be achieved by bringing in pure strains and careful matching of species to match specific site conditions. And last, the intensive weeding and soil working necessary in many areas was frequently neglected.
2. Lack of demand- Because of these factors, eucalyptus grown by farmers remained thin, and had little use as timber, which required bigger, higher density trees than were available from farm lands in a short rotation period of 5-7 years. The output was suitable for pulping, but paper mills get subsidised wood from the state Forest Departments (see chapter 7). Many have recently started collecting eucalyptus from farmers too, but there are organisational problems in buying wood from scattered farmers and transporting it over a long distance. It was thought that the farm-based eucalyptus crop would be used as scaffolding poles, but demand for poles is far lower than demand for pulpwood or timber, and the market was unable to absorb the production. Much eucalyptus wood is now being sold as fuelwood at lower than expected prices. These problems were not foreseen, as there was a lack of reliable studies which could have anticipated supply and demand imbalances arising from large numbers of farmers adopting tree-planting.
3. Market imperfections- Wood markets are still not fully geared to receiving farm production. Farmers rarely bring their produce to the markets, they wait for the buyers to come to them. Legal restrictions on the transport of wood, designed to prevent illicit felling from government forests, work against the interests of producers by acting as a barrier between the producer and the market. Farmers have little information about buyers, prevailing prices, and government rules. As a result, middlemen margins are large and there is a large gap between what producers get and what consumers pay. Producers are thus deprived of the true market potential.
4. Loss in agricultural production- Many farmers planted eucalyptus on farm bunds, hoping to get a good income after six years. They were not advised that trees could reduce agricultural output. Foresters often denied that crops would be affected by competition from eucalyptus roots. A World Bank evaluation concluded that cultivation lost because of trees on bunds was negligible. The reality was different and many farmers lost upto a quarter of the crop after the third year, depending on soil and water conditions, spacing and location of trees, and other factors.

Looking into future

In the mid-Eighties the Indian press and environmentalists voiced alarm at the rapid spread of eucalyptus on private lands, which was seen as symbolising private gains at public cost. Since 1986 many farmers are uprooting eucalyptus stumps and going back to annual crops. Does this mean that eucalyptus remained "a five-year wonder", an innovation that failed? Should this experiment be seen as an aberration in the long chain of cropping patterns that the north Indian farmers have tried?

Many cash crops follow a cyclic pattern of supply: small supplies come to the market, selling at a handsome profit. This raises hopes, and farmers devote larger area to the crop, leading to bumper supplies, a decline in prices and finally a reduction in area. Thus the cycle continues. It took about four years for eucalyptus to

begin being used for a range of purposes, by which time supplies in the markets started declining. Farmers stopped growing the tree some four years back, and prices have started rising again.

Looking ahead, some absentee landowners may continue planting eucalyptus as a way of avoiding encroachment and making labour management easier. But for resident farmers concerned with returns, flirtation with eucalyptus seems to be over. However, the agrarian conditions which prompted farmers to plant eucalyptus in the first place (such as labour shortage, absentee land lordism, etc.) are still present. Farmers are keen to experiment and many have shifted to poplar in the north-west, teak and jatropha in the west and horticulture elsewhere. Some 18,000 farmers in the north-west India have planted 18 million poplar trees are supplying raw material to 200 odd plywood industries in the region (Economic Times, 24th October, 1994). This shows that there is plenty of unrealised potential of farm trees.

Discussion

The discussion highlighted the following issues:

Rules and regulations for felling and movement of timber

One view was that the simplification of transit permit rules may ultimately result in planting of more trees. It was felt that the present cumbersome rules for felling of trees even on farm lands and the restrictions on movement is the cause of the lack of interest in farm forestry. An opposing view point, however, was that the relaxation and simplification of procedures may result in the loss of even more forest land. Giving complete relaxation, specially in heavily forested states like MP or AP, might increase theft from government forests. Consensus was in favour of gradual relaxation in stages. First, species popular with farmers, like eucalyptus, should not be grown on forest lands, which should give more priority to multi-purpose trees. This will also help in reducing competition between farmers and government, and help the producers in getting a better price. Second, relaxation in rules may be attempted in such areas which are remote from government forests. Third, relaxation may be given only for certain modes of transport, like headloads and bullock carts, so that farmers may take their produce free from fear to the markets, and not be dependent on traders. If the will to help farmers is there, a way can surely be found.

One may add that in several states the relaxations on harvesting and transit were effected too late (in UP these were lifted in October, 1991, when most small farmers had already sold their produce), and it did not help in reviving the markets. Even field officials are not aware of these relaxations, and therefore it is futile to expect that farmers would be aware of them. In MP, many senior officers were under the impression that farmers are free to sell their social forestry produce of four species, including eucalyptus, to any one they liked and there were no restrictions. However, Revenue laws prohibit cutting, girdling or otherwise damaging trees in areas prone to soil erosion, fragile ecology; and areas close to water resources like streams, rivers, rivulets. Thus if felling relates to this restricted category, written permission of the Collector will have to be obtained irrespective of the species. However, the implication of this law is that in all other cases, the tree owner has to obtain a certificate from the revenue officials (which they will give after making due field enquiries and referring the case to forest officials too for their opinion) to the effect that the case does not fall under one of the conditions mentioned above. The net result is that in all cases the tree owner has to go through a lengthy procedure.

In any case, relaxations are a necessary but not sufficient condition for removing market imperfections in the free flow of wood. One needs to take an integrated view of extension, market information, publicity, government support and laws.

Present incentives for farm forestry

The following incentives were provided by the state governments to promote farm forestry:-

- · Subsidised seedlings
- · Increase in the number of government nurseries, mostly temporary
- · Extension through motivators
- · Survival incentives
- · Increase in supervisory staff
- · Subsidy to private nurseries

Incentives varied from state to state in emphasis and focus. For instance, survival incentives were provided in Bihar and Orissa, but not in the World Bank-USAID assisted states. Motivators were appointed in AP, Tamil Nadu, West Bengal, MP, Bihar, and Orissa, but not in north-western states. A separate Directorate of Social Forestry was created in Maharashtra, but in other states the programme was supervised by the existing Forest Department. As regards the subsidy to private nurseries, there were two patterns. In some states, like UP, private nurseries were given a subsidy of about Rs 0.40 per healthy seedling raised by them, and then they were free to dispose these off in the open market. The idea was that they should make extra profit, and in the process develop a demand for seedlings. In many other states, where the government was distributing free seedlings, and no private market existed, there was a buy-back arrangement with the private nurseries, whereby the FD would buy the healthy seedlings, and either use these on public lands, or distribute them to the farmers.

Some incentives, like the increase in the number of nurseries did have a positive impact on tree growing by farmers and led to fast diffusion, as seedlings were available within a short distance from the villages, and the enterprising farmers could learn from the nursery staff the technique of tree planting. But there was no consensus in the Workshop regarding subsidy on seedlings. One view was that although free supplies should stop, subsidised supplies should continue. A criterion must be outlined to ensure eligibility for cheap seedlings. It was felt that pricing, even if at a minimal level, ensures more careful use as people generally tend to be careless about anything which is too easily available. The other view was that the success of farm forestry in some regions, and indifference of the farmers in others, was almost totally unrelated to subsidies, and had more to do with the particular farming conditions prevailing in those regions. Several arguments were given in favour of this logic.

First, in UP, seedlings were priced (and no survival incentives were given), but this did not dampen farmers' enthusiasm for eucalyptus. On the other hand, between 1981 and 1986, due to shortage of seedlings in the government nurseries, farmers bought eucalyptus seedlings from private nurseries, often at a price ten times the official price. This showed that the craze for eucalyptus seedlings was unrelated to its price.

Second, the real cost of most farm forestry seedlings (like eucalyptus) is about Rs 0.50 per plant at 1989-90 prices, whereas other costs in raising a tree, like pre-planting operations, transport of seedlings, planting, irrigation and fertiliser, and protection may vary from Rs 2 to Rs 10 per seedling, depending upon the density of planting, quality of land, and inputs applied. In north-west India, what appeared as an irritant to farmers was not the price of seedlings, but the loss caused by bund trees on annual crops, which was the largest factor in costs, and the poor growth of trees, due to which they did not get a good price in the market. Thus, the actual cost of a plant is quite insignificant when compared with total costs, and subsidy does not act as a decisive incentive for planting. A farmer takes a large number of factors into account while shifting to perennial crops, like uncertainties in yield and price, loss in crop production, etc.

As the total number of seedlings distributed under the farm forestry programme in India has been to the order of 1.4 to 2.0 billion a year during 1985-89 (Chambers et al. 1989), the total subsidy on this account has been about Rs 700 to 1000 million a year (ignoring small revenues raised by sale of seedlings in a few states). This accounts for almost 20 to 25 per cent of the total budget of community and farm forestry in India. Although these programmes have been beneficial in many ways, including increases in wood production, the causation between seedling subsidy, survival incentives and subsidy to private nurseries, and final results appears to be weak. Such an expenditure would have been better incurred on more priority items, spelled in later sections.

Third, there was a mushroom growth of private nurseries offering eucalyptus seedlings during the first phase 1982-86 of the programme. Anticipating high demand in future too, the GOI started an ambitious scheme, called decentralised nurseries scheme, for increasing the number of nurseries through huge subsidies. It is ironic that by the time the scheme got into ground, the demand from farmers slackened, and many such nurseries disappeared. Those which still functioned were captive nurseries for supplies to the FD for government plantations. They supplied little to farmers. The scheme provided employment, but did not create new assets. This also establishes that the number of private nurseries had more to do with market forces, rather than the subsidy offered by the GOI.

Fourth, the extension infrastructure in the north-western states was almost non-existent, as compared with states like Bihar and Orissa, where a large number of motivators were appointed. No incentive money was given to farmers for survival of plants, in the green revolution states, unlike in Bihar and Tamil Nadu. However, despite heavy investment in extension staff in eastern states the programme did not take off, notwithstanding the fact that rainfall and soil conditions were more favourable to trees in the east rather than in the semi-arid western and northern India.

Fifth, the real reason behind the insistence of the FD to continue with seedling subsidies is because targets fixed were unrealistically high, and could not be achieved unless each seed/seedling distributed was counted towards achievement. This was not possible if the seedlings were priced, and only genuine planters lifted seedlings. The participation of the small farmers was not related to the price of seedlings, as asserted by the FD. The main constraint faced by small farmers was uncertainty and risk associated with trees, little control over quality of seedlings, long maturity period, loss in production of annual crops due to root competition, and problems in marketing. These constraints could not be overcome by the subsidy on seedlings, survival incentives, or by increase in staff.

And last, farmers' enthusiasm for eucalyptus in the north-western states declined after 1986, as the tree failed to generate the kind of returns farmers were expecting. As resistance among farmers to buy seedlings increased, state government of UP started distributing free seedlings, and yet actual planting by the farmers did not pick up, establishing once again poor correlation between the price of seedlings and farmers' response to farm forestry. The argument that free seedlings provide the most efficient way of encouraging farmers, including small ones, to plant a large number of seedlings, is untenable, at least in the commercial areas, where even small farmers are used to making considerable cash investment (averaging Rs 5000 per hectare annually) in crop inputs.

On the whole subsidies are on the decline. In Haryana, the distribution of free seedlings has been stopped from 1993, but there is still some subsidy for the poor and the needy. In West Bengal, five seedlings per industrial unit and 100 seedlings per institution are given free of cost. Subsidised seedlings are also given to small landholders with upto one acre of land and upon the recommendation of the gram panchayat. In Karnataka, seedlings of valuable species such as teak are not supplied free but are priced, with prices being fixed slab-wise.

Thus it was felt that the subsidy on seedlings is unnecessary. The main thrust of government's intervention should be to remove uncertainty and reduce risk, which farmers face while planting trees. Further, a tree is likely to occupy a farmer's land for 20 years or so for a number of rotations, and hence his losses would be tremendous if proper seedlings are not given to him. It is therefore essential in regard to all species selected that pedigree seed is used; where procedures are not established yet, farmers should be advised as to the potential shortcomings of such nursery stock.

Recommendations

Commercial regions - In regions facing a glut of eucalyptus wood it is possible to provide succour to the farmers to some extent by removing market constraints. First, a great source of market imperfections in wood markets is the legal and procedural framework which makes cutting and selling privately owned trees difficult, irksome and complicated, besides unremunerative. Therefore these restrictive laws could be

abolished. Second, government could stop subsidies on government supply of wood to industries, thereby forcing industry to buy from the farmers at a remunerative price. Third, it could also initiate schemes for linking farmers with industries, in ways similar to the linking of poplar growing farmers with a Swedish match factory in north India. Fourth, improvement in extension could result in production of thicker logs suitable for sawing. Fifth, new uses of wood could be promoted such as utilising wood for power generation through gassifiers. And last, research is needed to identify other short-rotation, high-value species besides eucalyptus which suit farmers' requirements of planting on marginal lands and bunds.

While planning for wood production on farms in commercial regions, one must keep in mind the likely requirement of marketed wood. A World Bank report, quoting FAO figures, states that the total extraction of wood in India in 1988 was 264 million cum, of which 240 million cum was consumed as fuelwood. Thus, of the total wood consumption in the country, only 10 per cent is industrial wood. Most fuelwood is collected, both for consumption and sale. The gatherers can always beat the producers over the pricing of fuelwood; the producers would be price-takers, rather than price-makers. This means that the market price of fuelwood would always be lower than its social cost for replacement of growing stock through investments in plantations. Therefore the market price of fuelwood does not make its production on farms an attractive financial proposition in countries with large open access lands and vast poverty. Further, the entire arable land in green revolution areas is devoted to high cost commercial farming. Thus the opportunity cost of diverting land to tree crops is very high, which is not likely to be compensated by returns from growing fuelwood. If farmers are to grow pulpwood and industrial wood on their farms, which fetch better prices, these species should not be grown on forest lands, otherwise a glut situation cannot be avoided. Thus we recommend that subsistence and consumption should be met from forest and common lands, and market demand should by and large be met from private lands.

Therefore it appears that the measures suggested in this section, though important in themselves, may not be able to revive the interest of farmers in trees in commercial regions to the same extent as existed during the first phase of the programme. If farmers too took to tree planting on a large scale, problems of a glut in market might arise again. This fear has greatly reduced the popularity of growing eucalyptus as a cash crop. One could also argue that the State should not encourage diversion of area from annual crops to perennial crops, which demand less labour. The main compulsion of farmers in these areas, which pushed them away from agriculture was the desire to minimise labour and supervision costs. Therefore, although landuse in India will continue to be decided by the farmers, nothing should be done by the State which increases rural unemployment. There are better social returns in promoting agroforestry models in the rainfed or semi-arid regions, which contain most of India's wastelands.

Subsistence regions - For promoting indigenous agro-forestry models in rice and millet growing regions a great deal of research needs to be done to identify species which complement agricultural production, as farmers' primary landuse continues to be crop production. Thus the objective should change from "how can farmers be persuaded to grow trees" to "in what manner technology can help in increasing overall production from marginal lands by meeting farmers' priorities?" Ultimately the programme must improve the productivity of degraded private lands, if it is to be sustained over a long period. There are some known indigenous practices, which use trees to improve land productivity. Similar practices have to be introduced extensively in these regions. For instance, the most commonly noticed tree in the arid districts of western Rajasthan is Prosopis cineraria, which is a multi-purpose tree, providing fodder, mulch and even food (its leaves are eaten). Every part of this tree is used by the farmers. It is planted both on field boundaries and in the fields itself. Apart from improving soil fertility, the tree also binds the soil, decreases the velocity of hot summer winds, and provides shade to livestock and birds in the summer months.

In Thanjavur and Tiruchirapalli districts of Tamil Nadu, Acacia nilotica trees are cultivated on the rice bunds. It grows rapidly, as it is water tolerant, and benefits from fertiliser and irrigation applied to the field crops. In the summer months farmers pay a nominal sum to herd owners to pen their animals in their fields. The goats eat tender shoots of Acacia nilotica and crop stubbles. In return, the farmers fields are manured by the animals. Thus the traditional system involves sufficient ecological and economic interaction between the tree, crop and animal components.

It is difficult to rehabilitate degraded lands without introducing moisture conservation and water harvesting measures. Such measures are needed for all rainfed areas put to biomass production. The soil conservation technology in India has so far focussed primarily on structural works for controlling and disposing of run-off rather than capturing the maximum amount of moisture in the soil and retaining it for as long as possible to support crop growth. It is better to adopt in-situ moisture conservation practices through planting of suitable grasses and trees which may also provide sufficient protection against erosion.

Equally important are institutional constraints in watershed management programmes. Studies of similar other programmes show that planning, organisation and management have been issues of major concern in all projects. In particular, the impact of watershed treatments has been impaired by poor coordination between line agencies, and there has been a marked absence of land user participation in treatment planning and implementation.

Unfortunately, watershed approach and agroforestry research for different agro-ecological regions has remained a neglected discipline so far. Due to a tradition of competition for land between the Agriculture and Forest Departments of the government, both have viewed agroforestry with suspicion. The Forest Department has even gone to the extent of banning agroforestry on forest lands by law!

Growing trees on private wastelands (as opposed to good quality land, which can support more labour intensive annual crops) is both socially and economically a desirable activity. This could substantially enhance the incomes of farmers, in addition to producing the much needed biomass and giving a cover to barren lands. Therefore the emphasis should change from production of wood on good quality lands to rehabilitation of degraded lands. This would require a great thrust in research, as species complementary to crop production for each eco-region are yet to be discovered. Commercial production of wood will perhaps continue on the lands of absentee and large farmers in green revolution areas to meet the industrial demand, which forms a small proportion of total wood consumption in the country. But the attention of government and donor agencies should shift now to wasteland development and complementary agroforestry in millet and paddy growing rainfed regions of India.

Chapter 4: Joint Forest Management

The limited success of social forestry on non-Forest lands in India led the planners and donor agencies to shift attention to Forest lands, which form the bulk of uncultivated (but capable of supporting vegetation) lands. Fortunately, the old timber-oriented forest policy was radically changed in 1988. According to the new policy, the requirements of fuelwood, fodder and small timber such as house building material of the tribals and other villagers living in and near the Forest are now to be treated as first charge on Forest produce. In pursuance of this objective the Government of India issued a notification in June 1990 to various State Governments encouraging the involvement of village communities and voluntary agencies for the regeneration of Forest land. Already a number of Indian states including West Bengal, Bihar, HP, Jammu and Kashmir, Haryana, Rajasthan, Madhya Pradesh, Maharashtra, Gujarat, Orissa, HP, Karnataka and AP have accepted these guidelines and have initiated action to start what are now called Joint Forest Management (JFM) programmes. The new donor assisted forestry programmes in these states are likely to depend heavily on JFM concepts. Thus funding support for Forest lands is likely to be much better than it was during the last fifteen years.

Success of community action in Orissa

Recent evidence shows that much before the official programme of JFM, there were many areas where people on their own were involved in protecting Forest lands without the expectation of any official benefit from government. The most extensive examples of success in community action are from the poorest region in India, Orissa and South Bihar. In these hilly, upland and tribal regions poor communities have shown a remarkable capacity for managing their land resources (ORG, 1985; Jonsonn and Rai 1994). In some cases initiative for doing so was taken by forest officers; in others it was local. It is interesting that the Orissa Circular in 1988 was couched in a language believing that government would initiate a new movement, not realising that already a large number of societies were in existence, as people had been actively involved in protecting Forests even before the official policy started in 1988.

An important factor behind the success of community action has been the long term association of these villages with "their forests" and heavy dependence on these, and the loose control of the FD over Protected Forests. A recent research (Jonsonn and Rai 1994) studied five successful protection areas in Orissa. The results are summarised in table 10, showing the range of socio-economic conditions under which protection had taken place.

Table 10: Summary of villages involved in protection (as in December 1992)

	Kudamanda	Kantapalli	Dangarmunda	Budhikhamari	Kaimati
District	Sambalpur	Bolangir	Bolangir	Mayurbhanj	Dhenkanal
Cluster type	hamlet	hamlet	3 hamlet + one village	55 villages	village
No. of households	110	55	78	na	293
Population mix	heterogeneous	heterogeneous	homogeneous	heterogeneous	heterogeneous
Start of protection	1980	1984	1988	1983	1962
Legal status of forest	Protected Forest (PF)	Reserve Forest (RF)	PF	RF	private, village forest (VF)
Area under protection in ha	80	240	200	3250	100
Forest type	sal	sal	bamboo mixed	sal mixed	sal mixed

Local institution	Youth Club (YC)	FPC	YC	several FPCs & a joint committee	FPC
Other functions of the committee	management of all CPRs, schools, roads etc.	resolution of inter-village disputes	sale of bamboo culms	inter-village coordination	managing school, club, street lighting
Material contribution from households	1 kg rice per family per month	na	entry fee of Rs 51 from each new member	2 Rs per person per day from other villages for collection of sal leaves	2 kg rice per annum, only from landed families
Benefits	NTFP	NTFP & fuelwood	bamboo & NTFP	NTFP	NTFP, pole, fuelwood
Women participation	nil	nil	nil	nil	nil
Main shortcomings	encroachments not removed except one;	lack of income to support the salary of watchman; fuelwood pressure shifted to a distant Forest	fuelwood pressure shifted to the neighbouring reserve Forest	encroachments not removed	panchayat elections in 1992 divided the village in two groups, each accusing the other of illegal felling
Protection mechanism	watchman, fines	watchman, fines	thengapalli, fines	thengapalli, fines	watchman, fines
Whether recognised by the FD	No, as protection is by a hamlet, and not by the village	yes	Yes, the YC was given the state award of Rs 5000 in 1991 for protection	Actively encouraged by the Range Officer; was given the state award of Rs 5000 in 1992	yes

Inter-village disputes in Orissa - As can be expected, increase in the value of resource through protection often leads to conflict between neighbouring villages. For instance, Kantapalli, shown in table 10, was not in charge of the protected area before 1981, which was being managed by the village Kutasingha, although the Forest is closer to Kantapalli. The old management pattern followed since 1962 was to protect for five year, and then to clear-fell to obtain firewood for sale. Fellings were carried out in 1967, 1972 and 1977. In 1981 a representative from village Kantapalli was brought to the management committee of Kutasingha for the first time. The MLA from that constituency organised the people of Kantapalli, and convinced them to stop felling for firewood, and let trees grow. The conflict between the two villages continued for four years from 1980 to 1984, when the chairman elected was from village Kantapalli itself. This village had several strategic advantages in its favour; proximity to Forests, road for the other village passed through Kantapalli, so it could cut-off the movements of the people from the distant village, greater unity, and political as well as FD's support.

Thus Kantapalli started the protection of 240 ha of Reserve Forest in 1984. There were clashes between the two village groups for the first nine months, which required intermediation from district administration. Finally, the claim of Kantapalli was accepted, and the responsibility was formally shifted to this village. The FPC formed is different from the village council, as the resource for management is big in area, although in 1992 they had a common chairman. Election to FPC is always by consensus, so that conflicts can be avoided. The

village FPC has earned Rs 23914 upto December 1992 from sale of cleaned material, which is sold within the village at a subsidised price.

Conflicts with neighbouring villages still continue. Carpentry is a major occupation of another neighbouring village, for which they steal wood from the patch protected by Kantapalli. Women from a fourth village also try to collect fuelwood from this patch. Now they have been permitted to collect dead and fallen twigs after paying a royalty of one rupee per headload (the market value would be between Rs 17 to 25), whereas local people pay nothing. There is on-going fight with a fifth village about demarcation of the Forest boundary. There were also complaints against the FD for not allowing thinning, delaying the grants of cleaning permits, and not taking prompt action on offenses reported by the village.

Despite these problems there has been immense improvement in the vegetative cover in several villages. A realistic estimate is of 1.5 to 2 lakh hectares being successfully protected by 3000 villages in Orissa, although government figures are higher.

People's participation in Haryana

Similar to Orissa and South Bihar, in about 40 villages of Haryana too, protection of Forests had started before the official guidelines of 1990. However in Haryana, Forest Department played a catalytic role, which is unlike Orissa where committees emerged due to local initiative. The success of the Sukhomajri project in Haryana in achieving people's cooperation is well known, but merits being recalled.

Due to over grazing and consequent soil erosion in the catchment area, the lake Sukhna in Chandigarh was silting up. To control this, a number of earthen dams were built in the uplands, from which each household was assured an equal amount of water, irrespective of whether it owned land or not. In their own self interest the village people sold their goats, and kept their grazing animals away from forest lands which provided the catchment for the dams. The area sprang back to life, and is now full of grasses, shrubs and trees. The value of Acacia catechu trees alone, which have come up because of people's protection, is estimated to be several million rupees. In addition, people have benefited from improved agriculture and dairy development.

Several critics argued that what was possible in Sukhomajri was not easily replicable, as unlike other villages Sukhomajri was a homogeneous village, being practically a one-caste village of Gujjars. Also land distribution was not too unequal and this made it an atypical, non-conflict situation. To explore the viability of the model the project was extended to about 40 neighbouring villages.

During the period 1983-88, this remained essentially a Dam and Lease Programme, that is, the FD constructed a dam for harvesting of rain water, got a village society registered, called Hill Resource Management Society (HRMS), and transferred grazing and collection rights on Forest lands to the village society. The principles of equal rights and responsibilities, villagers commitment to protection, and regeneration of the Forest areas were overlooked. At some places the problems of dam breaches, and poor distribution of resources emerged. In some other villages, powerful leaders took over the management of Forest lands, and started acting as contractors for the sale of fodder and bhabbar (a valuable grass which is used both by the artisans for making ropes and by the pulp industry) grasses. These problems were not only due to inadequate attention on the part of Forest Department, but due to inter- and intra-village conflicts over forest utilisation.

However, after 1988 the Forest Department, aided by some NGOs including the Tata Energy Research Institute (TERI), has become more active in equity and participatory issues. Despite problems, there has been overall improvement in the forest cover and in the productivity of crop lands. Forty Hill Resource Management Societies (HRMS) are working in the Morni-Pinjore range of the lower Shivalik hills of District Ambala, Haryana. In the three societies studied in 1994, TERI claims that the tree density has increased from 91 to 472 trees per ha in ten years. The effect of protection on stocking of trees in five different sites with varying periods of protection is shown in table 11.

Table 11: Effect of protection on the number and girth of trees in Haryana

Protection	No. of trees per ha in girth class (cm)					
period in years	<20	20-40	41-60	61-80	>80	Total
0	6	63	20	1	1	91
1	17	70	30	3	2	122
3	33	100	42	-	-	175
6	73	205	117	27	10	432
10	93	187	130	47	15	472

Thus most of the increase in stocking had taken place by the 6th year itself. The stocking of Acacia catechu increased most favourably whereas the number of Acacia leucophloea declined. The total population of shrubs increased significantly for the first three years, but showed no increase after that, in fact declined from 9000 to 7000 per ha from 3 to 10 years. Similar behaviour was noticed for grasses. If grasses are considered more valuable, wider spacing for trees and species with lighter foliage would need to be included.

Weaknesses of Haryana JFM

The Haryana experience is unique, as in no other state the FPCs manage Forest lands and enjoy the exclusive rights of disposing of fodder and bhabbar grasses. However, the villages follow different systems for distribution of the two grasses. Fodder grass, which is a subsistence item required by all, is protected by all households and distributed equally. The rights of protecting the more valuable bhabbar grass, on the other hand, are auctioned, and a contractor gets the right of its disposal after making a certain payment to the FPC. The contractor protects the Forest during the production cycle of bhabbar, leaving the Forest to open grazing during other months. The villagers argue that the harvesting of bhabbar being a specialised activity requiring high skills, is best left to a contractor, who then hires banjaras, a community which has specialised in extraction of the grass. Not every one is skilled enough to supervise and monitor this activity. FPCs thus through subcontracting can maximise their income, which is then used for community purposes.

Forest Department is unhappy with this arrangement, as FPCs were given powers of management and disposal in order to do away with the system of middlemen, but despite the formation of the committee the system of middleman continues, although now the middleman is from the committee itself. However, it is not that the FPCs are mismanaging resources or have become greedy, but technology of production determines which activity is suitable for communal management and which needs to be privatised.

The Dhamala Hill Resource Management Society in Haryana

We describe below the functioning of the HRMS in one of the studied villages (AFC 1994).

There are 105 households, with Jats, Brahmins and SCs (scheduled castes) being the main castes, in village Dhamala. Most of them are small to medium farmers. 65 families use kerosene and 5 have LPG connections, the rest of the poor families collect dry and fallen wood. Protection of 260 ha of shamlat uncultivated lands (village commons) has been undertaken by the village. There is extensive infestation of lantana (a weed), and the crown density of trees after ten years of protection is about 20 to 25 per cent. FD constructed two dams which irrigate the lands of 100 households. Water is shared on an equal basis by the villagers.

The Dhamala Hill Resource Management Society was registered in 1983 and the Executive Committee consists of 9 members, out of which 3 are women. The villagers are entitled to collect grass, for which they pay Rs 200 per year per household to the Society. The yield of fodder grass has not declined, which is an indication of effective protection. The Society has sublet its rights of collecting Bhabbar grass to a sub-contractor for Rs 28000. He however makes allegations of illegal removal of Bhabbar by the villagers. In

addition, the reservoir of both the dams are being used for pisciculture by a private contractor who pays Rs 4000 to the Society.

The overall management by the villagers is passive, they merely restrain themselves from illicit removals. There are no measures against fire, which causes loss of vegetative cover. There is also overgrazing during winter months. Despite these weaknesses there is a high level of awareness and enthusiasm amongst the villagers. Despite the village being multi-caste, there are no caste tensions. There is considerable social pressure against forest offences, and violation of rules leads to social boycott. There has been improvement in tree cover, although the pace has been slow.

Secondly, in many villages land degradation is high and mere protection is not enough. However there is no provision for communities undertaking soil and moisture conservation measures, or gap filling and enrichment planting, or of reseeding of fodder and bhabbar grass. People are willing but there is no government scheme for sharing of benefits and costs.

Thirdly, problems of breaches of dam, siltation, clogging of pipe lines and poor distribution of water have emerged. In some cases, the original construction was faulty, in others negligence, poor maintenance and lack of collective action regarding sharing of water have been the reasons for general failure. Further, the construction of dam has not been preceded by extensive planting in the catchment area (except in Nada and Sukhomajri) which has led to erosion of catchment and siltation of reservoirs.

Finally, no arrangements exist for marketing of processed good such as baskets.

Inter-group conflict - Where more than one village have traditional rights on the same Forest patch, inter-village disputes arise. These get more complex because different groups with different interests and occupations live in different villages, and demarcation of the Forest patch becomes difficult. In village Kalka, people can take out bamboo, but not stones, which they require for their occupation. Forests have to be thus maintained for multiple products, and the rights of the people should be extended to all outputs. In Meerapur, very good Acacia catechu trees exist, but people have no right on the trees or on katha (a valuable NTFP), which is extracted from the tree. On the other hand, because of good Acacia catechu trees and lantana the production of grass is almost nil, and the village society is almost extinct. A strategy of integrated resource appropriation is lacking. Also, the key question of maintaining grass yields have been neglected.

Conflicts also arise between the panchayat and HRMS (such as in Lohgarh). When there is shortage of funds in the panchayat, it expects the society to pitch in funds, which is resented by the society. The panchayat is a power sharing body, where as the society is resource managing body. The two are often at conflict with each other, an issue which is also touched upon in chapter six.

In principle, the villagers' interests are quite simple. If they can be assured of better satisfaction of their needs of forest produce, they will be willing to cooperate with the improved management of Forest areas. But, in practice, the simplicity ends there. This is because, unlike the FD, villagers have diverse needs and priorities. These vary with the economic status, cultural traditions, caste, division of labour between sexes, and with the occupations of different groups of villagers. Generally, the greater a group's dependence on forest produce, the greater is its intrinsic interest in assured access to forest produce, improved productivity and sustainable management of Forest lands.

In Haryana's Shiwalik belt, villagers dependent on forest produce fall into three categories (Sarin 1991). First, there are grazier communities like Gujjars, who are dependent on open grazing. The graziers cannot shift to stall feeding, which implies considerable availability of family labour per livestock for hand harvesting grass. It also requires more capital for buying animal feed. But the tradition of open grazing often damages forest vegetation. The second category is of such occupational groups, like the bamboo basket makers and rope producers from bhabbar, whose dependence on Forest lands is not intrinsically damaging to forests. Their conflict with forest staff is normally over existing rules preventing them from meeting their requirements of raw material, or FD policies giving priority to contractors or industry.

For these two communities, direct consumption of forest produce or processing it is the main or only source of livelihood. Due to their near-total dependence on forest produce, both such communities live very close to Forest lands, and use these lands intensively. Their social and economic status tends to be low. Other communities also tend to see them as backward and primitive. Often there has been a tradition of mistrust and hostility between these communities and the FD, due to which it is difficult to start a dialogue with them.

The third group consists of such communities who have shifted to commercial buffalo milk production, and obtain grass from Forest lands as a backup fodder support. In addition, they collect fuelwood and small timber. The poorer members of such communities are more dependent for such products than the well-off farmers.

The problem in arriving at a consensus becomes even more difficult when different groups with different interests, described above, live in different villages, all having traditional rights in the Forest. This adds a third dimension to the other two cleavages along caste and occupational lines. The main issue to be resolved in such a case is whether each village should have its own society, or all villages should have a common society, which would then get the lease from Forest department. The other issue, no less important, is whether Forests should be managed for production of bhabbar grass, to be utilised in rope making, or for fodder grasses. In such villages, despite best efforts of the NGOs, Ford Foundation, and the Haryana FD, a lasting consensus has been almost impossible to arrive at. Although, efforts must continue to prepare villagers towards total self-management of forest resources, one should also be conscious of the problems.

Evolution of JFM in West Bengal

The guidelines issued by the Government of India are based on the success achieved in a pilot project begun in the 1970s in Arabari, in southern West Bengal. Vast areas of Forests of the southern lateritic tracts of West Bengal had been virtually unproductive on account of commercial exploitation, unregulated fuelwood collection by poverty stricken people and grazing by village cattle. In the year 1972, Divisional Forest Officer, Midnapore, West Bengal, took over a block of 1272 ha of denuded Forest for rehabilitation. Until then, the stumps left in the area had thrown up vegetative shoots every year which local poor people used to cut down and sell in the nearby market for subsistence. The value of the Forest in terms of commercial timber in 1972 was nil.

The rehabilitation scheme focused on generating sustained productive employment in the Forest area, so that people did not have to sell fuelwood in the market. The project also grew fuelwood so that people could get it on a token fee, at cost price and arranged cattle grazing on a rotational basis. The project permitted the people to raise paddy on Forest lands, which was sold to the same people at cost price. Thus all immediate requirements of the people were taken care of. It was also promised that people would get 25 per cent of the final produce if the scheme succeeded. In the period 1972-1985, people's cooperation was nearly complete. Productive employment was created by maintenance of shoots that grew on stumps over 700 ha, and plantation of Acacia auriculiformis, eucalyptus, cashew nut, Sabai grass and sisal over about 560 ha. People received their fuelwood and plough pieces at cost price and rotational grazing areas for their cattle. The government of West Bengal approved in March, 1987, the distribution of 25 per cent of the usufruct to 618 beneficiary families in view of their exceptional cooperation in the maintenance and protection of these Forests.

An erstwhile totally degraded government Forest has now become a luxuriant Forest, better than any other found in the area. The commercial value of the standing crop, which was nil in 1972, has been calculated at Rs 90 million in 1988. The idea was to make these people realise that they had a vested interest in the health of the Forests. This attitudinal change was possible by making them responsible for the protection and maintenance of the Forest tracts near their habitation and sharing the forest produce with them in a fair and equitable manner. This arrangement made it clear to the people concerned that they had a right to enjoy the enhanced benefits from Forests, but this right was accompanied by their duty to nurture and protect the Forests. Senior foresters in the state were so impressed with these results that by the mid-1980s they advocated extension of the project to similar ecological zones throughout south-west Bengal.

JFM in West Bengal today

Despite shortcomings, the Arabari model has shown the greatest potential for replication, specially in areas where sal is the dominant species. Whereas the Sukhomajri model of leasing rights in Forest lands could not succeed beyond a few dozen villages, the Arabari model, in which villagers protect Forest lands and help in natural regeneration in anticipation of rights of collection and 25 per cent share in timber, has already spread to more than 300,000 hectares of degraded Forest lands, leading to immense improvement in their productivity. A survey of 12 FPCs conducted in 1991 in the Jumboni range of Midnapore district revealed a considerable increase in bio-diversity due to protection. Altogether 214 wild plant species were observed in the regenerating sal Forests. Of these, 155 species (72.43 per cent) are used by the local communities for a variety of purposes - fuel, fodder, medicine, commercial purpose, household articles, religious use, ornamental use and recreation. The most important commercial NTFPs are sal leaves and seeds, tendu leaves and fruits, fuelwood, fodder, mahua flower, discoria, tubers, medicinal plants, tassar and mushrooms. Some ethnic variation was observed in the use of NTFP (non-timber forest products). For example, mahua flower, bakhar root and the karkut ants were exclusively consumed by the tribals. Tree products showed wide seasonal variation in their availability. A large number of products are, however, available throughout the year. On an average about 66 products are available during the whole year, except in the months of June and July when the number reduces to 38. The annual flow of income generated from NTFP are highly note-worthy. The mean annual NTFP incomes for a tribal and caste household were Rs 2,523 and Rs 2,738 in 1991 (SPWD 1992). The NTFP incomes in a tribal and caste household contribute 22 per cent and 16 per cent respectively to the total family income.

Using a sample of 42 Forest Protection committees (FPCs), studies by IBRAD, a research Institute in West Bengal, found that:-

1. 74 per cent of the FPCs were functioning reasonably well;
2. There was considerable heterogeneity of ethnic composition, number of villages, and proportion of participating households among FPCs;
3. The smaller the number of villages participating the greater the FPC effectiveness;
4. The greater the proportion of tribal composition in the FPC the greater the effectiveness; and
5. The greater the proportion of households in each participating village included as FPC members, the better its management of the forest.

The West Bengal government is considering merging SF and territorial wings, so that the same wing could look after all forestry programmes in a village.

Chances of JFM succeeding in sal (Shorea robusta) based Forests are greater as sal and its associates give many NTFPs, which sustain the interest of the poor villagers in protection. In West Bengal, the traditionally used technologies and treatment models were modified to facilitate the regular flow of these products. Giving a share in final produce is not enough to attract people to make sacrifices, as promises of income in distant future do not appeal to the poor. It is the increase in their immediate incomes through enhanced supplies of NTFPs, which may induce people to give up grazing in Forest lands, or invest their labour in its protection. Thus, in order to seek peoples' cooperation, it would be better if they can be guaranteed more output to gather from Forest lands.

Regenerating Forests also creates expanded employment opportunities as the productivity of grasses, leaves, and seeds allow for small cottage industries to develop. The presence of an NGO who provided improved sal plate processing and marketing support allowed village producers to improve incomes. Sal leaf plate producers working with the Chingra NGO, who made large, better quality plates were able to receive Rs 11.52 for an eight hour day equivalent versus Rs 5 to 6 for other communities dependent on middlemen.

The greater availability of a range of NTFPs is also allowing some forest communities to reduce their dependence on commercial fuelwood headloading. After six years of protection in Raigarh village of

southwest Bengal, men had reduced their labour allocation for fuelwood cutting from 47 per cent to 14 per cent, while increasing their labour inputs for NTFP collection from 12 per cent to 41 per cent.

Replicability of JFM

While Joint Forest Management has been a big success in West Bengal, it is too early to pass a definitive judgement on its implementation in other states. The critics of the programme point towards peculiar conditions prevailing in southwest Bengal; favourable political climate, commercial value of Forests being almost nil since the 1960s, Forests being sal dominated which not only coppices well but gives useful non-timber products on a recurrent basis, topography of Forests which makes each forest coupe identifiable with only one village and being quite remote from other villages, ethnic homogeneity of population in many villages, and peoples' fuelwood demands being met from the eucalyptus plantations done by them on private lands and thus reducing their dependence on Forest lands.

On the other hand, supporters of the programme argue that there is no need to be unduly pessimistic about its success in other states. There are many instances through out India where people on their own initiative started protecting Forests, of which CHIPKO, Raleganshindi and Sukhomajri are well-known examples. In some other areas, growing resource scarcity has spurred many communities to protect their disturbed environments to allow natural regeneration, which is independent of government initiative. The view that community participation is an empty slogan, or can work only on very small areas in exceptional circumstances, or that rigid stratification of village society in India inhibits development of institutions representing a common will, appears simplistic and over-stretched in the face of positive evidence of community action from diverse agro-ecological zones. Even if it is assumed that most effective local institutions develop in those small communities where people know each other, it should be remembered that most Forests in India are located in the hills, uplands and tribal regions which have ethnically homogenous communities living in small and less populated villages. For instance, as opposed to West Bengal and Gujarat where JFM has been initiated by government agencies, in many parts of South Bihar and Orissa people have been protecting forests on their own, and only recently the government has taken notice of these informal and viable committees, presumably to show progress under JFM for fulfillment of targets. The reported progress of JFM in some of the states is given in table 12.

Table 12: Progress of JFM in the states until 1993

State	Number of villages	Area in ha
Bihar	1242	654259
Gujarat	300	54000
Haryana	38	15000
J & K	617	3827
Orissa	1181	180900
Rajasthan	447	na
West Bengal	1804	235760

Constraints of government policies

Rather than trying to locate barriers to community action in structural and sociological factors, greater attention needs to be paid to governmental policy, which has often hampered such initiatives. Some of these are listed below.

Legal Issues- The legal and organisational framework for joint management remains weak and controversial. Although the old rights and privileges of the people continued, such rights often include free access to expensive timber. This breeds corruption, as only the powerful in a village are able to get free supplies of trees like deodar and teak. Privileges without corresponding responsibility are counter-productive. Often more than one village have their rights in the same Forests, with the result that it becomes difficult to promote village protection committees. A large number of new settlers in a village (they may be the poorest)

have no rights in Forests, as their ancestors did not live in the village at the time of forest settlement. They thus get deprived of benefits, and are compelled to obtain these illegally. Sometimes people living several hundred miles away from the Forest have rights in that Forest, which they have never seen! On the whole, the way rights and privileges are implemented, it is a serious disincentive towards evolution of sustainable policies in forest management. There is an urgent need to bring rights in harmony with efficient forest management by the people themselves.

Thus, a forest patch does not have a well-defined and recognised user-group, admitting the rights of the entire population of that region or the entire forest area. This kind of a `right-regime', which makes forests open-access lands, is not conducive to successful protection, as rights of contiguous villages protecting forests may come in conflict with those of distant villages, not protecting but still having rights to enjoy usufruct. Therefore, at least in JFM areas, use rights should be reviewed in order to put them in harmony with the `care and share philosophy' which is the basis of JFM.

FPCs and panchayats - Another legal problem concerns the status of village communities. The state government resolutions recommend village level committees as functional groups. However, these committees have no legal and statutory basis, and it may be difficult for them to manage resources on a long term basis. Their relationships with the statutory village Panchayats will need to be sharply defined.

The 1989 West Bengal GR stated that the local panchayat land management committee shall select beneficiaries for constituting the FPC. This indicated that the panchayat, which is outside the user group, would determine who could and who could not participate. Although in 1990, the West Bengal government allowed every member in the village to be a member of the management group, the hold of the panchayat remained strong. The Orissa order prescribes that the Sarpanch (Chief) of the local panchayat will be the head of the FPC, but the panchayats are not working well.

There is also some concern that if JFM groups were absorbed by village panchayat, vested interests might exert control over decision making. Since small user communities may comprise of less powerful groups, they may lose authority to elites if the management becomes a direct adjunct of the panchayat. FPCs are recognised only by the Forest Department, all other government departments recognise panchayats making them much more powerful than the FPCs. On the whole, there is need to clarify the relationship of local forest management groups to panchayats, simply subsuming them as part of the panchayat could threaten their effectiveness.

Where multi-village forest protection committees have been formed, field experience shows that the component communities keep their independent identity within the large group, maintaining clear boundaries of their area and by retaining exclusive control over harvests in their territory. Although the larger group may facilitate joint protection and dispute resolution, informal partitioning of the resource has no validity in law and may not be sustained over a long period.

Experience over the last 20 years from Indian social forestry programmes indicates that in many cases panchayats had difficulties effectively managing community woodlots due to their inherent political nature and often diverse constituencies. As already discussed in the context of Haryana HRMS, panchayats are political organisations based on electoral system, whereas conflict can be quite harmful for the effective functioning of the FPCs. Protection can work only if there is almost unanimity and consensus amongst the user group.

Unlike panchayats, powers to the FPCs are not given under any law, which may affect their powers to check free-riding in the longer run. Thus, most successful FPCs charge a fee for collection of forest produce, although this practice is against the Forest Act. Allotment of forest land to the FPCs should be done under section 28 of the Forest Act, at present it is done administratively.

It is interesting that people's initiatives have been most successful in the states of Orissa and West Bengal, where the number of villages per panchayat is more than ten as shown in table 13, whereas in most other

states the average is only between 1.2 and 2. It is likely that the very big size of Orissa official panchayats ensured that the cohesiveness at the hamlet level was not destroyed.

Table 13: Number of villages per panchayat in the states

State	No. of villages per gram panchayat
Haryana	1.2
Tripura	1.2
Kerala	1.2
Punjab	1.2
Delhi	1.3
Gujarat	1.4
AP	1.5
UP	1.5
Maharashtra	1.6
Sikkim	2.9
Arunachal	4.0
MP	4.1
J.K.	4.7
Rajasthan	5.1
Bihar	6.6
HP	7.3
W.B.	11.7
Orissa	11.8
Assam	29.1
All-India	2.8

Working Plans and JFM - Most government resolutions envisage preparation of a village plan. As such a microplan developed for a Forest patch will also be a part of a particular Forest block, range and division, there is a need to dovetail micro plan to Working Plan prescriptions. The integration of village plans with Working Plans will require changes in the philosophy and contents of the Working Plans, which at the moment are steeped in the old philosophy of maximising production of timber rather than of biomass suitable for local needs.

Overhauling Forest Policy at State level - It is not known whether any state government issued any directive revising its state forest policy after the radical overhaul of Forest Policy by the Government of India in 1988. The new National Forest Policy of 1988 laid down that the forest-based industry should meet its raw material needs by establishing a direct relationship with the farmers rather than depend on Forest lands, which would henceforth be maintained primarily for ecological functions, and for meeting the subsistence needs of the people. In keeping with the new Policy species choice and silvicultural practices will perhaps need a change in favour of usufruct based trees and multiple outputs. Where a large number of people have claims to forest produce, low management and low value output (but high in biomass) solutions have perhaps a better chance of success. However, ‘business' seems to be as usual in state governments, and commercial trees are continued to be encouraged and planted on Forest lands.

Women as JFM motivators - Given the sex segregated and hierarchical nature of Indian society, separate women's organisations and staff are needed to work among women, to instill confidence in them, so that they can fight for their rights. Therefore, whenever there is recruitment, more women need to be recruited in the Forest Department. The village level committees should have adequate and equal representation of women. Forestry staff should be sensitised on gender issues through orientation programmes. As women in many societies still feel inhibited in expressing themselves in mixed gatherings, each committee should have a separate women's cell for raising their consciousness and for improving their skills. The quality of women's participation and the control they exercise over decision making processes is more important than the sheer number of women present in such bodies.

Balance of power between Forest Department and communities - In many states, the FD can cancel or dissolve the FPC. The mechanism of this dissolution may be worked out in more detail so that the order does not appear as arbitrary. While FDs will require some statement in the resolution to dissolve the management agreement if their community partners fail to uphold their responsibilities under the JFM programme, it is also important that the identity of the user group is respected. In Rajasthan and Haryana, where the government resolution (GR) require that the user group become registered societies, these would have greater independence, and will continue even if their relations with the FD are severed. Once the user group has a separate legal status this can be used for several purposes. For instance, in Haryana 14 groups met together to request the Haryana FD to modify the terms of the grass lease pricing and payment system. The need for autonomy and democratic process at the community level is currently not reflected in the state resolutions, but should be given careful consideration when these documents are revised.

Coordinating JFM with other Departments - Relationship of JFM with the Social Forestry Programme has to be spelled out. Within one forest department, there are likely to be separate divisions for social forestry and territorial forestry. Since JFM is under the jurisdiction of the territorial division alone, it is possible that two different rangers and their respective staffs could be working in the same village with different mandates: JFM on Forest land, and social forestry on non-forest land. One would like to advocate a merger of Social Forestry and Territorial Divisions. The reason is that mere protection of a not-so-degraded area may transfer biotic pressure to some other area. Therefore production of biomass through quick growing shrubs, bushes and grasses must be undertaken on more degraded lands, so that peoples demands are met in a sustained manner from these bushes and shrubs, while people protect Forest lands in anticipation of more valuable NTFPs and forest products. The issue of how to meet the economic needs of the people for the first few years, during which they have to reduce their dependence on the protected land must be faced squarely. It is impractical to expect that people will give up grazing or reduce their consumption in the "national interest" without expecting any tangible gains in return.

There is also need to coordinate the JFM related efforts with the activities of other departments, such as Animal Husbandry and Cottage Industries. As a result of the presence of community active Forest Protection Committees grass production may go up, or there may be a potential for development of local cottage industries for adding value to the produce. It may therefore be desirable if such activities are taken up in the same area as the JFM for better results and multidimensional development of these villages.

Administrative ethos - The problematic relationship between JFM and social forestry is just one of the reasons for making the forestry bureaucracy itself a topic for study programming. One aspect of this bureaucracy that demands greater understanding is its "culture" - something that is highly relevant to the success of JFM. For example, while the principle of JFM assume a participatory/ consultative framework, the government bureaucracy that is charged with its implementation operates in a decidedly non-participatory/ non-consultative fashion. Bureaucratic regulations regarding release of budget, physical targets, development of working plans, all act against the more flexible adaptive process needed to successfully implement a JFM programme. What is needed, therefore is an effort to identify the key points of leverage through which the forestry bureaucracy could be incrementally moved toward more open working practices. Change in bureaucratic structures takes time and continued support: it cannot be imposed from outside but must evolve from within - but this evolution could be accelerated with appropriate training.

Need for Training - While innovative courses are being run by a few NGOs for forest officers, the National Forest Academy and the Rangers Colleges responsible for the education and training of the foresters continue to teach a curriculum that has changed little in the last 100 years. Until these institutions modify their curriculum to incorporate the social skills and the changing silvicultural and administrative concepts evolving, forest officers will continue to have to be re-trained for joint forest management.

Need to develop strategies for conflict resolution - Capitalising on this potential of joint management on a large scale will require significant shifts in investments and strategy, and some of the constraints have already been discussed above. Where regenerating Forests are already beginning to increase in value, conflicts will increase between contending resource users such as adjoining villagers, migrating herders, or more distant and periodic forest users. As a more lucrative range of non-timber products begins to mature, and the sharing of timber harvests becomes regularised, questions of equity and the distribution of benefits will create new management challenges and conflict resolution skills. Strategies to deal with these problems are yet to be evolved.

Decision making by consensus and the Panchayati Raj Institutions - Traditionally, the decision making system in India has been by consensus, where the elders of the village get together to decide village welfare. With the introduction of elections for selecting village representatives, the whole system got politicised and led to an erosion in accountability. The JFM in a small way seeks to restore the traditional system of decision making by consensus. Rather than depend on the initiative solely of a few leaders, JFM puts greater faith in communities, in their own management systems, skills and abilities. These abilities need to be enhanced through adequate training programmes, and given legal recognition in the new Panchayati Raj institutions being created by the states.

JFM in MP

Thus on the whole it can be said that administrative constraints are far more important than structural barriers. As an illustration, we describe below some of the problems which were observed with the functioning of the JFM in MP The state government order enabling JFM in Madhya Pradesh was issued in December, 1991, and is thus more than three years old. The following specific problems/ deficiencies in its implementation were noticed during a field visit by the author in 1993.

1. Although some DFOs on their own initiative have formed committees, there is no monitoring of their number, of progress or no lessons learnt from the implementation, and no communication sent from the head office to other field officials. Thus JFM is still not high on the agenda of a supervising officer. Similarly, no evaluation seems to have been done of the pilot experiments tried in the state (the only study done of Harda by the IIFM is more in the nature of a PR exercise - that too has not been widely circulated), with the result that a field officer desirous of initiating JFM has to 'reinvent the wheel' every time. A JFM cell headed by a CCF may, perhaps, be the beginning.
2. Both ecodevelopment and Joint Forest Management are not yet supported by the state Forest Department's plan outlay, indicating that these activities are not considered priority items by the state government, or that other activities are considered to be giving greater returns. The State Government should therefore indicate, in no uncertain terms, how ecodevelopment and Joint Forest Management activities are to be financed.
3. In Madhya Pradesh, communities already have considerable rights over Forest produce under Nistar agreements. Joint management agreements, while claiming to give usufruct, are thus not giving any thing extra. Therefore, one needs to address the question as to how to provide greater security to communities so that they benefit from protection related work. Some workable suggestions are therefore: -
    - give full nistar requirements of building material etc. to the protecting village, not from the depot, but from the protected area itself, and that too free;
    - include bamboo in the category of NTFP, and give its full production (and not merely 30 per cent) to the people;

- change silvicultural practices to improve understorey and production of grasses and underwood;
- formalise and sign agreements with the community within three months of the forming of the community, and keep its copy with the village, so that the credibility of the Forest Department improves;
- incorporate in such agreements the fact that people from other villages have no right of entry in the earmarked Forest coupe. People of other villages will have to be given other coupes, in order to make the scheme workable and politically acceptable; and
- this will also require a cluster approach, as opposed to 'one range-one village' proposal that has been mooted so far.

4. The present formula of giving a share out of net income should be replaced by a share of gross income, which is easily understandable by the people. The village communities should have the freedom to decide whether this will be individually distributed or deposited in the village fund. Para 3 of the government order under the heading 'Responsibility and Duty of the Forest Department' provides for detailed instructions to be issued by the department, but this has still not been done.
5. The instructions provide that 30 per cent of the net income obtained from the nationalised MFPs will be given to the committee, but nowhere has a share out of tendu leaf or bamboo or sal seeds incomes been given to the people.
6. There are no funds at present for training of village communities, nor for their visits to the successful areas.
7. In a state-level meeting held on 25-8-92 and presided by the Principal Secretary, Forests, it was stated by the Principal Secretary that Forest Protection Committees can be given a share from revenues only after approval in each individual case from the Finance Department of the government. This is strange, and such a tedious bureaucratic procedure has not been prescribed by any other state in India. This will cause great delay, and will surely inhibit peoples' enthusiasm as it makes flow of benefits to them uncertain. Rather than announce uncertain benefits, it is much better to give only a few but certain and well publicised benefits. The minutes of the meeting also mentioned almost all 300 village societies, purported to be formed by the field officials, were only on paper. The Principal Secretary, Forests, commented that most field officers did not understand the difference between Village Forest Committee and Forest Protection Committees. Obviously, if officers do not understand the difference, the people will be even more confused.

Discussion

The following issues were debated by the participants.

Joint Forest Management and ecodevelopment

Many participants were very enthusiastic about eco-development, that is, carrying out development works in fringe areas. Others felt that it needs to be combined with JFM. Eco-development, which in India is taken to mean economic development of villages close to Forest lands, is different from social forestry in one respect, that is, it is implemented in fringe areas, whereas social forestry was generally in areas remote from Forest lands. However, the two share a common assumption - if resources outside Forest lands become more productive, people will give up gathering from Forests. There are some success stories, Nauradehi to name one, but these are mostly pilot experiments, and their large-scale replication is still to be tried.

Ecodevelopment is based on the belief that if foresters support village development in the broadest way - resources, cattle, veterinary inputs, schools, health, water, roads, etc. - then the people will appreciate the role of Forests and help in its protection. This is reminiscent of the older social forestry philosophy that creation of fuelwood reserves outside forest lands will make people give up gathering from forest lands. This assumption too may prove in future to be rather naive. Empirical evidence linking prosperity with reduction in

gathering is not very conclusive (see Figure 1 in chapter 6). By itself, poverty alleviation does not reduce dependence on open resources. Besides, there may be other problems if ecodevelopment is made the main programme for forest regeneration, such as;

a. overall cost per ha - Ecodevelopment may turn out to be very expensive, Rs 10,000 to 25,000 per ha of forest lands at 1993 prices.
b. appropriateness of the FD for carrying out some schemes, for which they are not trained, as there are other administrative departments to do that job better than the Forest Department. It is not clear whether the Finance Department of the states would permit the FD to undertake livestock development or carry out irrigation works.
c. viability of schemes - As the landless and poor farmers depend more on forest resources than other categories of people, for ecodevelopment to be effective, the economic programmes must be targeted to improve the incomes of this class of people. The experience of the last twenty years of rural development schemes (starting with Marginal Farmers and Agricultural Labourers Programme of the late 1960s) shows that it is very difficult to conceive of programmes on a large scale for this target group. Besides, there is no evidence that the FD is aware of the past mistakes made by the development blocks in implementing these schemes. In the absence of this knowledge, the Forest Department may repeat the same mistakes made by the Rural Development Blocks.

As already stated, there is considerable naivety in the belief that because villagers are getting the possible benefits from government led schemes then they will be more positive to forest conservation, and to production of timber. By itself, poverty alleviation does not reduce dependence on open resources. However it may facilitate, if combined with other measures, like the Joint Forest Management. Here too, Joint Forest Management should not mean just giving a share from forest produce to the people. Only when people are given greater security of access to the forest products that they depend on and a sense of partnership in forest management, then they will have a greater motivation to ensure that the forest resource is not degraded. They themselves will then assist or undertake the protection of the resource through regular patrolling and regulation of use.

Other administrative issues in ecodevelopment

An enormous range of activities is to be tackled all at once in the initial years. Activities cover social inputs such as improved health, improved drinking water, improved school facilities, street lights and electricity, and better access roads. There should be great stress on biomass increase through plantations on degraded land and the development of fodder resources. There are cattle and veterinary issues including fodder, veterinary medicine, improved breeds and water development. There is emphasis on improved agriculture through horticulture, soil and moisture conservation activity, improved fields, better crop varieties etc. There are alternative energy schemes with improved stoves, solar cookers, and gobar gas plants. There would be alternative income and employment opportunities through schemes ranging from weed eradication to training inputs for cottage industries.

The scale of activity contemplated under ecodevelopment raises the question of the practicalities of management and implementation. Who will do it? Does the present staffing level and infrastructure have the capability to implement a scheme which in some cases will double annual budgets and so presumably work loads? There are several parts to an answer to this question.

Firstly, to what level will the FD subcontract implementation to other agencies and departments (will they need further resources in vehicles and staffing?) and how much will the FD do itself?

Secondly, where there is greater emphasis on forestry activity, then to what degree will JFM reduce the workload? Note that in the JFM experience there is already the feeling that staffing levels are inadequate, especially at guard level, and that lack of vehicles is seen as a major constraint. JFM, setting up the

institutions, agreements, persuasion, monitoring etc. all require greater inputs, and cannot be entirely left to village communities.

Thirdly, to what extent are different sections of forest bureaucracy already overloaded? Some like social forestry and FDC staff may be underworked but Territorial may be overworked.

Fourthly, to what level of speed, detail, etc. are we envisaging the creation of ecodevelopment and Joint Forest Management activities and inputs?

In conclusion, I strongly suggest that the Government thinks very hard on these issues. One suggestion could be that social forestry and production divisions (wherever they exist, such as in MP) may be merged, and called afforestation and exploitation divisions, and they may be given the charge of ecodevelopment and Joint Forest Management, as regular territorial forestry staff cannot cope with this as well as protection and tendu leaf collection. He cannot easily be out patrolling all day and then come back in the evening and sit in village councils! Another issue is of getting the engineering staff on forest pay-roll for stop dams etc.

There is need to involve other rural development agencies in the implementation of these highly specialised activities. However so far there is no evidence of any prior discussion by the FD with such agencies and their willingness to cooperate. There may be a need for a coordination committee at District level under the auspices of the Collector.

NGOs

The role of NGOs in joint forest management was a hotly debated issue, some participants feeling that it is unnecessary to involve them, except in certain problem areas, others contending that they have a major role to play, albeit a complementary one. The proponents of NGOs felt that the role of NGOs is complementary to that of village protection committees. Their objective is to disseminate information, to act as a channel of communication between the forest department and the people, and to provide training and technical inputs and resolve conflicts. They do not aim to usurp the role played by VFCs. NGOs generally function within a two-tier system consisting of an apex level for investigative research, and a second, or district level where they develop an affinity with the local people with whom they intend to work. With regard to finance, the larger NGOs have their own independent sources of funding, the others may have to be funded by the FD with provision for funding being inbuilt into each project.

The anti-NGO group felt that the re-orientation of the forest department could quite well be achieved without the help of NGOs. Since most villages in the country do not have viable NGOs, informal village committees for forest protection function effectively on their own. From actual experience, it was felt that a mere 20 per cent of government aided NGOs are functioning really effectively. Experience from the National Wastelands Development Board, which funded some three hundred and thirty five NGOs, has shown that funds are not being effectively utilised. In several cases, the second installment of funds was not collected, because of unsatisfactory progress.

Need for a cautious approach

Several participants expressed concern at the speed at which JFM was sought to be implemented in the states without the necessary preparatory work. One problem with over-promotion of JFM is that it can lead to massive donor interest and funding support, which may exceed the capacity of the forestry bureaucracy to absorb. JFM may indeed have been promoted beyond the capacity to implement it. JFM is process oriented and does not lend itself to becoming a target oriented programme. Apart from the lack of institutional capacity, the technical skills to develop different silivicultural systems (to fulfill the varied objectives of management) also are insufficient. For instance, research on economic and ecological impact of protection shows that although people's main concern is with fodder, protection beyond six years tends to close the tree canopy and reduce grass production. Perhaps a much wider spacing is called for to maintain grass production which is one of the major incentives for community protection and management. Similarly, most

silvicultural research in India so far has been done on commercial species, and techniques for large scale regeneration of multi-purpose species such as mahua and neem are still to be developed.

A development concept faces very different constraints and opportunities when it is new, unproven, and unaccepted, compared with when it is long-established and widely accepted - and the role of those who are in charge of its promotion must vary accordingly. For example, much of the effort of the `sympathisers' of the JFM to date has concentrated on promoting the principles of JFM to the government, NGOs, and local communities. Such promotion may be valuable in the early phases of a programme, but there are potential problems in sustaining it for too long. The nature of promotion results in too much emphasis on positive aspects of the programme and too little critical analysis. At the outset it is important to be able to persuade key actors of the merits of JFM, but it eventually becomes important to temper this with critical appraisal, long-term strategies, and the building of capacity to implement such policies. Care will need to be taken to ensure that JFM does not just become the next development bandwagon.

Chapter 5: Equity Issues in Forestry Programmes

Peoples' choice - share in management or share in usufruct?

The programme of JFM is likely to be undertaken first on degraded Forests which are close to villages. This leaves out a vast area of natural Forests, mostly Reserve and in better condition. Often policies for such Forests have a greater impact on the lives of the poor. Further, in many regions of degraded Forests, the poor may be politically too depressed to assert themselves and confront the powerful bureaucracy. Here again the policies have to be analysed independent of the management inputs from the people.

It is curious that none of the three programmes discussed in the previous chapters (social forestry, ecodevelopment and Joint Forest Management) seriously question the existing objectives for which Forest lands should be managed. Change in management should follow, and not precede, a change in the objectives for which Forest lands are managed. In the long run, it is not management which attracts people to Forests, nor rights in Forests, but the lure of obtaining livelihood products (which mixed forests can give on a continuous basis). It is the drastic increase in their incomes through enhanced supplies of NTFPs, which may induce people to give up grazing in Forest lands, or invest their labour in its protection. Thus, in order to seek peoples' cooperation, it would be better if they can be guaranteed more output to gather from Forest lands. In other words, rather than try to deviate peoples' demands to other lands, why not catch the bull by its horns and make meeting peoples' requirements as one of the important objectives of managing forest lands?

Some field officers concede that fringe areas should be developed for the people, while interior forest lands should continue to be developed for production and traditional timber-oriented forestry. But the new Forest Policy does not endorse this distinction in objectives of fringe and interior areas, and all forest lands are now to have a changed objective of environmental benefits, bio-diversity and meeting local peoples' demands. Besides, it may be recalled that the concept of social forestry was based on the above model, of distinguishing between fringe and interior areas and, as discussed in the chapter two, it did not achieve the desired results. One should not invoke a failed model under a new name. That would be old wine in a new bottle.

Thus it is important to consider the policies which have been followed so far for Reserve and better stocked Forests. This chapter discusses the impact of Forest policies and programmes on two groups of the poor and disadvantaged people, tribals and women. Many of the issues and suggestions discussed in the section on tribals are equally applicable to women, as both are involved in subsistence economies and would benefit if policies are shifted to suit their concerns. In addition, women have some specific problems which are discussed later.

Forestry programmes, like any other economic programme, can help the poor in three ways:-

(a) **Wage employment** - In a poor country providing wage employment can bring immediate succour to the people. Without prospects of wage employment people may be reluctant to take interest in a long gestation project. However, wage employment alone cannot justify expenditure, unless it results in creation of productive assets.

(b) **Skill upgradation** - Had there been a component for imparting new skills in forestry projects, like running a nursery or grafting of fruit trees, the poor could have used the newly acquired skills in improving their incomes. As there is generally no emphasis on improving skills of the poor in forestry projects, the potential for helping the poor through training has remained unrealised.

(c) **Asset creation** - Trees as assets help the poor in three ways; by providing recurrent subsistence needs - of fuel, fodder, food, fibre, and many non-timber products through collection; as sources of income through sale of these seasonal items; and as capital stocks or savings banks to be cut and cashed to meet

contingencies. If assets are on private lands, all these three options would be open to the poor, but if these are on public lands, the question of nature of assets, and of access to and control over the assets becomes the determining factor. Given the socio-economic realities, it is unlikely that such assets will be felled and sold by the poor (at least not legally), at best these can provide low-grade fuel obtained from gathering of leaves, fallen branches and twigs, NTFPs, and leaf fodder in times of grass scarcity. NTFPs include fodder and grasses; raw materials like bamboo, canes and bhabbar grass for artisan based activities of the poor; leaves, gums, waxes, dyes and resins; and many forms of food, including nuts, wild fruits, honey, and game. These often play a vital part in the livelihood strategies of the poor. Collection has the advantage of requiring skills which can be taught and passed on by the poor themselves. And much of it is done in the lean agriculture months of March-July when other forms of wage employment are not available. Therefore gathering of low value items becomes almost the only way in which the poor are helped through trees on public lands.

Constraints in gathering

Poverty in India is generally considered to be linked with lack of private arable land, or its low productivity. Changes in collection of free items from forests go largely unnoticed, and are not accounted for in GNP. Rights and access which the people, especially tribals, earlier enjoyed over Forests, have often remained uncurtailed, but two processes have constrained and diminished them. The first is deforestation, and the other is industrial plantations. Much of the misery of tribals and forest dwellers is due to deforestation which removes the resources on which much of their livelihoods have been based (Dasgupta, 1988). For instance, tribals in Koraput District of Orissa used earlier to depend for eight months of the year on forest products, but now with the depleted forest resources, their survival is threatened. (Indian Express, April 3, 1988). Loss of forests has also increased the pace of migration of tribals to the towns where they become low paid wage labourers (DN, 1988).

Deforestation has increased the drudgery of rural women who generally collect forest produce, as they have to go further. Two decades ago, when the Orissa forests were lush and abundant, collection of forest products took only 1.7 hours. This had increased to 7.0 hrs by 1986 due to receding forest line (Chambers et al. 1989). In semi-arid areas of Sabarkantha women spend upto 6 hours a day in collecting dead branches of trees (Nagbrahman and Sambrani, 1983). A study described the working conditions of women in South Bihar as follows:-

"Everyday some 300 women firewood pickers disappear into the Forests. They cut timber and greenwood, which is illegal. Sixty eight per cent of them have been hurt either by the axe or by wild animals while collecting wood. They earn around Rs 120 a month, and half of them are always in debt. They have a two-day cycle, walking as much as 12 km to collect fuelwood and then travel by train to the town for sale - along the way others make money off them; the railway man who allows them free on trains, the village headman who takes a cut, and the forest guard who looks the other way when Forests are being axed." (Ninan, 1981).

The receding tree line means that only adult members can now go to forests to collect. Diminished supplies force them to cut down on their consumption of NTFPs, as they must market a greater proportion of their collection (Fernandes et al, 1988).

A study (Agarwal and Narain, 1985) of 170 households in nine villages of district Ranchi (Bihar) showed that headloading had emerged as an important profession in the previous 15 years; and more than a fifth of the households in the surveyed villages reported headloading as their major occupation. Another study (Agarwal, 1987) estimated that at least 3 to 4 million people were involved in this profession, making it India's biggest source of employment in the energy sector. It is a low paid and a high risk occupation, as pilfering wood from Reserved Forests for sale is an offence (collecting wood for self consumption from protected forests is permitted on paper, but frowned upon by the forest staff in actual practice). It was ironic that tribals, who for centuries lived in harmony with forests, were today forced to eke out a living by further destroying their forests.

Industrial plantations - Whereas the effect of deforestation on tribal economy is well understood, the impact of industrial plantations is not so well documented. For their part, plantations have usually been single species, or involving only a few species, equally entailing loss of diversity and access, and often on a large scale, and in practice hardly pursuing an objective of benefiting the local people, beyond wages. This was recognised even by the Inspector General of Forests, Sri Dalvi, who while addressing the 1981 International Conference on tropical forest management at Dehradun illustrated the inherent conflict arising out of forest plantations in the following terms:

'Let us consider another example of a natural forest predominantly of sal. This forest represents to poor forest-fringe-dwellers a source of livelihood yielding seeds for sale, branches and leaves for fuel and manure. The decision to convert this sal forest to industrially more valuable species like teak may satisfy the needs for higher revenues which may or may not be used for the welfare of these same people, but would certainly deprive them or an output from the forest which they were enjoying'.

Other writers have been less charitable about the intentions of the government. An ex-Forest Secretary of MP writes, 'This (the policy of subsidising industrial raw material) is clearly discriminatory. The rights of a huge section of society cannot be wiped out in order to benefit a few industrialists. For instance, the Orient Paper Mills was promised one lakh tonnes of bamboo per year from 4 districts of the state. This eliminated all bamboo from Rewa, Panna, Satna and Shahdol. When such a situation arises the FD tells the villagers to fend for themselves because there is nothing in the forests for them' (NCHSE, 1987).

Tropical forests support complex ecological chains while playing an essential and salutary role in the earth's climate and atmosphere. They can return as much as 75 per cent of the moisture they receive to the atmosphere. Thus they have a profound effect on rainfall. Yet these vast natural forests, surrounded by poor populations, are being rapidly diminished not only for the immediate needs of those populations, but are also being converted into plantations to meet market demands. Turning a complex forest into a genetically simplified plantation may help produce industrial raw material, but certainly converts the local tribal into a second-class inhabitant. To a vast number of the tribal people a mixed forest, containing usufruct-based trees, is their well-loved home, their livelihood, their very existence. It gives them food, fruits of all kind, edible leaves, honey, nourishing roots, wild game and fish. It provides them with material to build their homes and practice their arts. By exploiting its produce they can supplement their meagre incomes. It keeps them warm with its fuel and cool with its grateful shade. Their religion leads them to make special sacrifices to the forest gods; in many places offerings are made to a tree before it is cut and there are usually ceremonies before and after hunting. It is striking to see how in many of the myths and legends the deep sense of identity with the forest is emphasised. From time immemorial the tribal people enjoyed the freedom to use forest and hunt its animals and this has given them a conviction, which remains even today in their hearts that the forest belongs to them.

A plantation loses the old character of the forests. For instance, mahua is of no significance to the Forest Department, nor have any efforts been made to increase its number in Forests. No doubt, mahua is also not felled by the Forest Department, but its significance for them is not the same as for tribals. Compared with the needs of the government, tribal involvement in mahua is pervasive to a profound degree. In addition to collecting flowers and seeds for sale at the weekly market, or for exchange for salt or cloth, tribals use the wood to support the canopy at wedding celebrations, the dried flower to add bulk to their food or to feed their animals, the seeds and the flowers for preparing liquor and for religious ceremonies.

Therefore any strategy for reforestation must try to create mixed forests which would provide usufructs to the poor on a seasonal basis. This will necessitate changes in the hitherto followed silvicultural practices and choice of species. This has been discussed later.

Exploitation in marketing

In addition to access, incomes of the poor are conditioned by the adverse marketing environment that they face. Products collected by tribals and others from forest lands are sold to businessmen or government

corporations. The terms of the transactions are often severely to the disadvantage of the sellers. This is due to several inter-related factors.

Nationalisation - Almost all important NTFPs are nationalised, that is, these can be sold only to government agencies. The nationalisation of these NTFP commodities, done in different states in various years from 1960s to the end of 1970s, presumably with the intention of helping the poor, has affected their interests adversely. Before nationalisation, the tribals could sell the produce of their own trees to anybody, but under the new system produce from trees on private land has to be sold to the Forest Department only. Nationalisation reduces the number of legal buyers, chokes the free flow of goods, and delays payment to the gatherers, as government agencies find it difficult to make prompt payment. This results in contractors entering from the back door, but they must now operate with higher margins required to cover uncertain and delayed payments by government agencies, as well as to make the police and other authorities ignore their illegal activities. This all reduces tribals' collection and incomes.

A Government Commission was told (Bhatt, 1988) by the tribal women in MP that when they walked a long distance to the office of the Forest Corporation to sell their produce, they often found it closed, or were told to come the next day. This forced the tribals to sell to the traders at only 20 per cent of the government price.

In almost all cases the Forest Department has appointed agents formally or informally (GOI, 1987). This has put the tribals at the mercy of two different sets of people, the contractor as well as the government department, and whatever payment that tribals get has to be routed through both of them. Private trade in sal seeds is illegal in MP, but shopkeepers manage to exchange it with tribals for daily necessities at a low price. They then sell it to government bodies, thus defeating the very purpose of nationalisation (GOI, 1988). This results in delay, and makes tribals indifferent to trees on their own private land. In 50 out of 68 villages of Orissa it was found (Fernandes et al., 1988) that government agencies had not managed to eliminate middlemen. On the other hand, the same middlemen who till recently exploited the tribals as moneylenders and merchants, continue their work in the garb of agents of government bodies.

No value addition - The sale of most NTFPs is done without any processing or value addition. These are collected within a short period with no storage facilities, and hence must be sold to the nearest buyer. The gatherers' access is thus limited to the sale made in local villages and weekly markets to intermediaries like contractors and commission agents. Thus, although these products reach a very large market, the market is geographically very limited as far as primary suppliers are concerned,

The limitation in access to market is more pronounced in the case of items like handicrafts made from wood and bamboo, toys, lac products and leaf plates. Except for a small demand in nearby villages for specific items the rest of the market is geographically dispersed over a wide area and for most of the small manufacturers remains inaccessible. This is more true for women entrepreneurs. Burdened with other roles within the family traditionally assigned to women, their ability to look for far-off markets is restricted. The small size of production further aggravates the problem forcing the producers into a vicious cycle of a small market, low production and (leading to) small surplus. The limited surplus makes them more vulnerable and makes their exploitation possible because it continuously erodes their bargaining capacity as their need for conversion of small production into cash becomes more acute.

The limited access to markets and the dependence on intermediaries have a direct effect on prices. The prices of produce - whether sold to consumers or to the intermediaries - bear no relationship to the cost of labour, input and transportation. In the case of direct sales, three factors combine to depress the prices. Localised activity for localised markets create a supply position in excess of local demand. Traders in the same commodity control the market and dictate the prices during the season and in the off-season. The third factor is the selling of the produce during flush season and the purchase of same produce in the off-season.

Lack of programmes for NTFP regeneration - Regeneration of NTFP has attracted only a token effort so far. There has been little or no place for NTFP in social forestry schemes. The 7th Plan target for NTFP planting was only 85000 ha, as against a total afforestation target of 9 m ha for the five year period. In Orissa, where

dependence of the tribals on NTFPs is quite high, only 4 per cent of the trees planted during 1986-87 were NTFP species (GOO, 1988). Large scale propagation techniques for important NTFP like neem and mahua are still to be developed. Many NTFP require a period of 18 months to 2 years at the seedling stage, as opposed to 3 to 4 months for eucalyptus and Acacia nilotica, which are the main social forestry species. This discourages the social forestry staff burdened with targets to achieve from promoting NTFP species.

Possible solutions

Of the several roles tribals, women and the poor have in forestry, the most important is as gatherers of forest produce. They would therefore be greatly benefited if opportunities for collection from Forest and public lands are enhanced. This would require:-

- a change in the silvicultural practices of managing Forests
- a change in the nature of species from timber to usufruct based trees,
- sharing of management and protection with forest dwellers,
- publicity about their rights in forest and community lands,
- changes in the marketing environment, and,
- a change in outlook to facilitate the above.

These are discussed below.

Silvicultural practices - Forests have been traditionally looked upon as a source of revenue and not as a means of meeting the genuine needs of the people. That is why the entire thrust of forestry has been towards the high forest system, which calls for clear felling and ruthless cutting back of all growth, except of the species chosen for dominance. This has the major defect of creating a bias in favour of coppice origin plantations which, in the long run, are more amenable to biotic and climatic factors, and secondly, it results in the removal of all the material which could serve gathering needs. The high forest system has resulted in pure forests being created, but with gathering falling a casualty in the process. It is in this context that a major policy change is required.

A start could be made by deciding that gathering is a legitimate and genuine expectation of the people and that if they are not allowed to gather, they will treat the forests with hostility. What is now termed as biotic interference, i.e., foraging for fuel and fodder, grazing, removal of bamboo and small timber, should be looked upon as a logical and appropriate working of the forests. This calls for an abandonment of the existing silvicultural practices, not so much to achieve high forest as to restore to the forests an admixture in which the appropriate level of vegetation would be available to meet gathering needs. For instance, FD's present management of sal seems to be for timber, and hence only one shoot is allowed to grow. Since sal is an excellent coppicer we suggest that degraded forests and hills close to a village should be managed to maximise biomass, with many shoots, which can be pruned occasionally to produce fuelwood, besides giving sal leaves.

Only over-mature, mal-formed, dead or dying trees should be removed, with no particular reservation by species. Ground flora and the understorey should be largely left undisturbed, except for the improvement of hygiene of the forest flora through removal of noxious weeds (Buch 1992). Canopy manipulation, tending, and thinning etc. should be so adjusted as to optimise gatherable produce. The crop would be representative of all age groups because no attempt would be made to achieve an uniform crop in terms of variety or age. In those areas where teak and sal are the naturally dominant species, they would continue to predominate even without silvicultural intervention to achieve an uniform crop. However, because of age and species mix the forests would be able to maintain a continuous supply of miscellaneous small timber and fuelwood for use in gathering. Commercial working would taper off because clear felling by blocks would be totally abandoned, but there would be some production of timber from the over mature trees that would be felled.

From the people's point of view, crown based trees are important for usufruct, but forests still remain largely stem based. Norms for silvicultural practices were developed in times prior to the current scenario of high biotic pressures, and must now be adjusted accordingly. If the national objectives have changed to prioritise people's needs, there must be an accompanying change in silvicultural practices and technology.

Timber is a product of the dead tree, whereas NTFPs come from living trees allowing the stem to perform its various environmental functions. Moreover, gathering is more labour intensive than mechanised clear-felling. Local people living in the forests possess necessary knowledge and skills for sustainable harvesting. Lastly, NTFPs generate recurrent and seasonal as opposed to one-time incomes, making its extraction more attractive to the poor. Thus if access to NTFPs can be assured, standing trees can generate more income and employment than the same areas cleared for timber, and also maintain land's natural bio-diversity.

Regeneration vs. planting - The success of JFM is generally seen as proving the superiority of regeneration over plantation as a technique for improving land productivity of and bio-diversity in forests. While this is no doubt true, there are several circumstances where plantation cannot be avoided. Three such situations could be: creating a fuelwood reserve before beginning protection by the community; planting on lands incapable of regeneration; and thirdly where desired species do not come up as a result of protection. These situations are explained below.

Mere protection of a not-so-degraded area may transfer biotic pressure to some other area, as people have to meet their daily requirement of fuelwood somehow or the other. Therefore production of biomass through quick growing shrubs, bushes and grasses must be undertaken on degraded lands before the beginning of community protection, so that peoples' demands are met in a sustained manner from these bushes and shrubs, while people protect forest lands in anticipation of more valuable NTFPs and forest products. The issue of how to meet the economic needs of the people for the first few years, during which they have to reduce their dependence on the protected land must be faced squarely. Although the success of many JFM experiments is generally alluded to leadership or peoples' efforts, it is seen that in almost all such cases there was an alternative source of fuel available to them. In South-West Bengal, the task of peoples' protection of degraded forest lands became easier because the farm forestry programme in that area had been highly successful, increasing fuelwood supplies and incomes even for the poor. In Purulia and Midnapore districts the presence of eucalyptus and acacia can be seen throughout. A study of village Paljhari showed that about 50 per cent of the energy for domestic cooking was being met from eucalyptus plantations and had largely relieved women of the hardship of traveling 4 to 5 km and spending 4 - 5 hours in a day in collecting fuelwood from bushes and trees from public lands. The level of poor farmers' participation in farm forestry has been greater in this area than in all the other regions of India. By 1990, 129,554 ha of land had been covered with trees predominantly with eucalyptus and Acacia auriculiformis. Moreover, as most of the land planted with trees is poor quality land, the planting of trees has not reduced agricultural production of the region.

In Eklingpura, Udaipur, where community protection has been highly successful, plenty of prosopis shrubs in and around the village provide fuelwood to everyone almost at zero opportunity cost. On the other hand, in another village of the same district, Shyampura, which had no prosopis in its vicinity, a local NGO was struggling to promote protection, but was finding it difficult to prevent unauthorised removals from the area. These examples illustrate the importance of creating a fuelwood reserve before expecting people to start protection. There is need to take a comprehensive view and link JFM with other social forestry programmes.

The other situation warranting planting is where land is so degraded that regeneration is slow, or root stock is absent because of which regeneration is not possible. In such a situation, there may not be sufficient incentive for the people to give their time and labour for protection in lieu of the intermediate and final products, which may be available after inordinate amount of delay and waiting. In denuded areas, where severe over-exploitation has reduced possibilities for rapid natural regeneration, nurseries and plantations will be needed to provide employment, and provide fodder and fuelwood in the quickest possible time. The whole idea is to consider how a continuous flow of forest products can be ensured to the communities.

The third situation where planting may be necessary is where due to protection, species which come up do not coppice well. As peoples' demands cannot be curbed for a long period, some amount of harvesting becomes unavoidable after a few years of patient waiting. In case the species do not coppice well, harvesting leads to a non-sustainable situation, and land may become denuded again. A similar situation will be when the root stock is already quite degraded, and species likely to come up are not valuable in the perception of the people, and therefore they may be reluctant to give their labour for protection. In such cases the strategy of natural regeneration alone may not be enough to enforce the necessary discipline. May be, if plantation of species desired by the people is taken up the perception of the tract's value may increase, and every one may cooperate to keep livestock out. Enrichment planting could also increase the supply of raw material for the local craft or artisan based activity.

Choice of species - Having thus established the need for artificial planting in many situations, the question arises which species should be given priority. Species have been so far based on convenience of staff rather than needs of people. People have not been asked what trees they prefer, least of all the poor. Socially useful species producing fruit, fodder and other NTFPs have had little place. Market oriented species such as eucalyptus have been preferred (CIDA,1988), even in community forestry schemes as they are nonbrowsable, can grow fast, and require little management. Possible use of other species either in overhead mixture or as understorey has not been seriously considered. Spacing has often been reduced to avoid intermediate management operations, to reduce plantation cost, and to cut down on staff supervision time. In Gujarat, the density of plantation per ha on village woodlots was as high as 2554 (IIPO, 1988). As a consequence, spacing, thinning and pruning which could have produced intermediate yields of grass and tree products for the people have not been made use of (Banerji,1986). Felling for timber may produce income to the Government but village consumption of tree products is little increased. Technology for subsistence goods has to be different from large scale plantations for markets.

Therefore even on degraded Forest lands, if plantation is required, one should change the nature of species from commercial species to planting of usufruct based trees. These should be supplemented with grasses, legumes, shrubs and bushes to yield fuelwood and fodder in the shortest possible time. An immediate identification of quick growing shrubs with high calorific value, with their retention in the forest to serve fuel requirements, the development of pastures, i.e., giving over adequate forest land to grasses, and the development of massive fuelwood plantations around centres of high consumption and encouragement of silviculturally sensible exploitation of fuelwood species would also be important components of the new policy. This would strengthen tribals' access to Forests, and therefore benefits would be directly appropriated by them. Unlike commercial timber species, relatively low value non-rotational trees for recurrent products would not so much attract the attention of powerful panchayat leaders and contractors.

Foresters and foreign experts who advise the GOI and the donor agencies, because of their training and experience, have looked upon trees as timber, to be obtained after felling. Therefore, even in the social forestry programmes market oriented species were planted. The traditional Indian way of looking at trees has, however, been different. As opposed to trees for timber, Indian villagers for centuries have depended on trees for their livelihood. There has been little felling. Instead, trees have been valued for the intermediate products they provide, which sustain and secure the livelihoods of the people.

The difference can be understood by comparing how fuelwood species are viewed in the two perspectives. As per received wisdom, fuelwood is obtained by felling trees having a high calorific value, or as a by-product from lops and tops of timber trees. Casuarina and eucalyptus therefore seem perfectly justified on public lands. But the poor tribals obtain fuelwood from twigs and branches of living trees, and not by felling trees, and often get little from the felling of so-called fuelwood trees. Casuarina and eucalyptus may be justified on farm lands, if they improve farm incomes on a sustainable basis. But these hardly serve the poor, when raised on public lands.

Given the inefficiency of administration and `soft' character of the political system, one could generalise that out of a tree on public lands the stem goes to the rich and the towns, whereas branches, leaves and twigs belong to the poor. Therefore the strategy should be to opt for species which have high proportions of branches and twigs relative to stem wood.

This requires a complete reversal of the recommendations of the National Commission on Agriculture, 1976 which favoured commercial plantations on Forest land, and trees for consumption and subsistence on private land (Saxena 1990). "Scientific" forestry should therefore mean that wild fruits, nuts, NTFPs, grasses, leaves and twigs become the main intended products from Forest lands and timber a by-product from large trees like mahua and sal. The reverse has been the policy for the last 100 years. Although after the advent of the new forest policy in 1988 there has been some effort to involve forest communities in management, no thought has been given to make necessary changes in the technology which will be suitable to the changed objectives. The proposed changes are explained in brief in table 14.

Table 14: Technical options

		traditional	**suggested options**
1.	objective	reduce people's dependence on forest lands	increase supply of goods desired by people
2.	'look' of the forest	stem based	crown based
3.	client	market and industry	forest dwellers and local people
4.	timber	main product	by-product
5.	silviculture	conversion to uniform	improvement felling and protection
6.	species	exotics and commercial	grasses, bushes, shrubs and MFPs
7.	production through	planting	mainly regeneration
8.	usage through	harvesting	gathering

Primacy of rights - As already pointed out, tribals' rights of access and their right to collection of forest products are restricted, vague, or not known to them. Sharing arrangements in Joint Forest Management or community forestry schemes are ill-defined or not publicised, or poorly implemented. There appears to be general reluctance on the part of the government to define clearly what people are to get, at what time, and at what price, in exchange for the participation expected of them. But participation of the poor and tribals is improbable unless their benefits are secure.

Therefore, we suggest that outside each Forest coupe or social forestry plantation there should be a notice board publicising what rights people have as regards collection. The colonial tradition of secrecy must be given up. A simple notice that, "these trees belong to the community, and not to the Government", may in itself, change peoples' attitude towards village plantations. Agreements must be entered in writing with the beneficiaries informing them about their entitlement, and copies given to each village.

Marketing - Similarly, nationalisation of NTFPs, justified in the name of preventing tribal exploitation, creates excellent opportunities for private traders and bureaucracy to extract `suitable' rents for "services rendered". Practical considerations point out that the Government is incapable of effectively administering complete control. It is better for the Government to regulate private trade, and to act as a watchdog rather than try to eliminate it. Monopoly purchase by the Government requires sustained political support and excellent bureaucratic machinery. It is difficult to ensure these over a long period and hence nationalisation has often increased exploitation of the poor. We suggest that for marketing NTFPs the Government should not have a monopoly. The solution is to set up promotional Marketing Boards, as distinct from commercial corporations (which are inefficient, and hence demand nationalisation), with responsibility for dissemination of information about markets and prices to the gatherers. The Boards would help in bridging the gap between what the consumers pay and what gatherers get. We would be quite happy if government organisations could compete in the open market, as in the wheat purchase scheme, but the government should never acquire a monopoly. Nationalisation reduces the number of buyers and does not help gatherers in the long run. Setting up processing units within the tribal areas is also to be recommended.

A workshop on marketing of NTFP held in May 1979 at Hyderabad recommended that there should be competitive procurement and marketing by public, cooperative and private agencies. This would generate healthy competition. The reverse seems to be happening. Government agencies like to deal only in commodities where they have a monopoly and profit margins are assured. Ten years back, the number of

items handled by GCC (AP) and TDCC (Orissa) was more than twenty. Now it has come down to the two or three most profitable ones (GOI,1988). Where government alone does marketing it is inefficient; and where it is left to private trade, it is exploitative.

Change in attitudes - One problem which will be encountered, if the suggestions contained in this book are to be implemented, is the attitude of IAS officers, who associate "development" with spending of money, or with setting up of new organisations (which they head, of course!). Changes in policy or nature of species or laws are not seen as an integral part of the development process because these have no direct financial implication. Non-monetary inputs in policy have unfortunately no ready acceptability in government. The Indian civil servant has still to learn the difference between planning and budgeting. S/he is looking for a scheme rather than a new policy framework. The question, however, is whether we wish to help hundreds of tribals through projects, or millions of tribals through changes in policy.

This is possible only when, as Shiva argues (1988), `productivity', `yield', and `economic value' are redefined in terms of multipurpose utilisation and satisfying basic human needs. This requires a new outlook and a new strategy, in which tribals' interests, of secure rights of gathering, which are just as well the interests of all poor people, would be paramount. Livelihood needs of the poor are preconditions for sustainability of natural resources.

Gender issues in forestry

Between the three types of land - Forest, revenue, and private - women are most dependent on Forest lands, where they are gatherers of forest produce for subsistence and sale. These problems have already been considered in the previous sections. Women are also employed by the Forest Department and contractors to work as unskilled labour. They have similar roles as collectors and as wage-employees on common and revenue lands, though to a lesser extent, as these lands are more degraded. In community forestry and Joint Forest Management programmes, women are also supposed to participate in the management of afforested areas. Lastly, women are involved as producers in farm forestry programmes. Thus women have four distinct occupational roles in forestry - gathering, wage employment, management, and production. We shall now consider these roles other than gathering.

Women as wage employees - Women are preferred by the forestry staff and contractors for certain forestry operations, like nursery work, and tendu leaf collection. However, they often get lower wages than men for similar work, are not paid regularly, and are subjected to harassment if they complain (CIDA 1988).

An ILO study (1987) of the Social Forestry Programme of Orissa observed that nowhere in the Appraised Project Document was there any mention of the working conditions of women, they got no benefit of labour laws, no safety or health measures were being undertaken, whereas work was being performed outdoors, under exposure to changing weather, required heavy physical effort, sometimes in difficult terrain, and away from their homes. The Village Forest Committee was generally not involved in payment of wages, which in any case were lower than the minimum prescribed. Wages as stated by the Forest Department were higher than what women actually got. Wages paid to men were higher than to women, but women were not supposed to reveal this secret to outsiders. When asked why they didn't complain, they said that they were afraid of the consequences, or "what is the use".

It has been estimated that the total wage employment for women in the collection of forest produce is as high as 300 million women days (Pant 1980). Yet hardly any rules exist for regulating their working hours, safety precautions, provision of latrines, job recruitment, leave and other benefits, training policies, productivity-linked bonus, compulsory insurance against accidents, shelters, civic amenities, creche, arrangements for the care of children and infants and medical care. The same is true of forestry work undertaken under JRY budgets which flow from the Department of Rural Development, which supposedly looks after the interests of the poor.

Half of the block plantation by farmers in recent years has been on previously cropped lands (IIPO, 1988). A similar conclusion was reached by an ILO study (1988) which estimated that 50 per cent of the land covered under the farm forestry component was good agriculture land. How does this affect employment?

By planting trees on land previously used for agriculture crops female labour tends to get displaced (ILO, 1988; Arnold et al., 1988). A study of eucalyptus plantations in Tamil Nadu under the farm forestry programme (Malmer, 1987) on lands which were previously being used for groundnut cultivation, has found that instead of women's employment which groundnut cultivation generated, eucalyptus required digging pits and clearing felling trees, both of which are done by men. Averaged over a rotation cycle of ten years, total employment per ha per year dropped from 112 to 45. Female employment dropped from 100 days to nil, while male employment rose, but only from 12 to 45. Thus not only was total employment reduced when plantation trees replaced agricultural crops, but women were completely thrown out of employment.

Women as managers in Community Forestry - In community plantations, who gains and who loses has been affected by the choice of species. Fodder is crucial to the economy of Indian villages. Realising this, land laws of most of the states forbid the use of grazing lands for purposes other than producing grasses and fodder. Yet the Forest Department planted non-browsable species like eucalyptus on such lands in Gujarat (PEO 1988), Karnataka (Brokensha 1988), and other states (IIM 1985; Arnold et al. 1988), thus depriving the poor women from an important resource. Commercial species planted by the Forest Department on grazing lands tempt the Panchayats to sell these, rather than distribute them in the village (USAID 1988).

Women representatives in village councils are often taken for granted or are subject to strong domestic and community pressures to conform to the conventional norms of their societies. In Bihar a woman was not even aware that she had been elected as a member of the Village Forest Committee (GOB 1987:13). Shakuntala of village Nagrota Suriyam, HP had the following to say about the council of her village.

> "There is a village panchayat. For the last forty years, the Pradhan has been from the same family. Even the up-pradhan works for the welfare of affluent people. No one cares for the poor. Lila Devi is a member of the panchayat from a reserved constituency. She is not literate. She does not attend the Panchayat meetings. But she is made to sign some papers every now and then. But being a Panch is a status symbol for her (ILO, 1986)."

Thus it appears that if women have other priorities than men in the choice of species, these have little chance of getting articulated (Arnold et al. 1988). Therefore, given the sex segregated and hierarchical nature of Indian society, separate women's organisations would be needed in rural India for many years, until poor rural women acquire the self-confidence to talk in mixed gatherings. Realising this, some Social Forestry Projects provide for the appointment of women extension workers who are to help in approaching and involving women. A study of Madhya Pradesh showed that within the Forest Department there were only 9 women extension assistants out of the total of 273, and only 49 forest workers out of a total of 882 in that cadre. At the level of forest extension officers and higher, there were no women. But wherever women forest workers were active, village women not only knew about the general issues concerning social forestry programmes, but they were more cost efficient in nursery management. Even among the NGOs, those groups which had separate women staff were more successful in organising women's activities (USAID, 1985).

Yet the social forestry projects in India hardly consider the role of women at the project design or implementation stage. Women have remained "invisible" to planners and government officials, and have been "designed out" of projects by default (Fortmann, 1983; Fortmann, 1985; Molnar and Schreiber, 1989).

Women in JFM - Protection of a degraded area under JFM may transfer biotic pressure to some other area, as women have to meet their daily requirement of fuelwood somehow or the other. It may also increase women's drudgery as they have to travel a greater distance to collect their daily requirements of fuelwood and fodder. A few areas studied by Madhu Sarin, which are under community protection, confirms this, as shown in table 15.

Table 15: Time/distance for gathering one headload for women

Village	Before protection	After protection
Bankura, West Bengal		
Kamardanga	1.5 to 2 hrs	4 to 5 hrs
Bhadli	1/2 km	4 to 5 km
Barapaccha	1 to 2 hrs	3 to 4 hrs
Karapara	5 km	8 to 9 km
Panch Mahals, Gujarat		
Vena	1/2 hr	3 to 4 hrs
Chari	1 hr	4 to 5 hrs
Malekpur	1 to 2 hrs	whole day
Hazaribagh, Bihar		
Banaso	(Entry to protected area was totally banned for the first 5 years)	

Thus, despite the good intentions of forest protection, community forest management burdened women with additional hardships, or concentrated it on the shoulders of younger women. Recent workshops with 2 groups of 20-25 representatives of autonomous van samitis from Hazaribagh and East Singhbhum districts of Bihar confirmed the pattern of women switching to inferior fuels like leaves, husk, weeds and bushes or having to spend greater time and effort in obtaining firewood, or resorting to both. Many women in Patamda block of East Singhbhum district now go to the Dolma sanctuary area, spending upto an entire day to fetch just 1 headload.

Obviously, merely shifting the protection role from the forest departments to the community does not provide any immediate relief to women. Further, the gender-differentiated impact is not restricted to firewood - it applies equally to other forest produce. For example, protecting sal trees with the existing technology of multiple shoot cutting results in the leaves getting out of reach. This affects the making of sal leaf plates, which is a common source of income, primarily for poor women in many parts of West Bengal, Orissa and Bihar.

Table 16: Representation of women in JFM committees

State	Eligibility for membership in general body	Minimum number of women in managing committees	Benefit-sharing entitlements
AP	1 female and 1 male per household	3 out of 9-13 members	Unspecified
Bihar	1 representative per household	3-5 out of 15-18 members	MC to decide
Gujarat	Any interested person	2 out of unspecified total	To be "suitably" distributed
Haryana	All adults	2 women; all could be women	Equal access to loans for men and women
HP	1 female and 1 male per household	2-3 out of 9-12 members	For all villagers
Jammu &Kashmir	1 female or male per household	2 out of 11 members	Institution to decide
Karnataka	1 representative per household	2 out of 15 members	Among "beneficiaries"
Madhya Pradesh	1 representative per household	Not specified	Equitably among members
Maharashtra	Unspecified	2 out of 11 members	Among members
Orissa	1 female and 1 male per household	3 out of 11-13 members	Equally between households
Punjab	No general body	1 women	Per household

Rajasthan	Not specified	Not specified	Equal shares for members
Tripura	1 representative per household	Not specified	Distributed among members
West Bengal	Joint membership of husband & wife	Not specified	Either husband or wife
Tamil Nadu	1 female and 1 male per household	50 per cent women	Basis unclear

Another problem is of providing adequate share to women in management responsibilities. In this respect, women's rights and entitlements have been almost totally overlooked (see table 16). For instance, Bihar, Karnataka, Madhya Pradesh and Tripura provide for the membership of only one representative per household; Gujarat, Rajasthan and Maharashtra have left the matter open; Punjab has no provision for a general body at all, and in Jammu and Kashmir, it is unclear whether both a man and a women or either can represent a household.

Thus, in 9 of the 15 states implementing JFM, there is no clear provision for women's membership. In cases where one person can represent a household, it invariably ends up being a man (except in the case of widows with no adult sons). This happened in Sukhomajri and Nada in the early '80s, due to which Haryana's membership has now been opened to all adults. AP, Orissa and Tamil Nadu have attempted to overcome this shortcoming by providing for 1 male and 1 female representative per household and West Bengal for a joint husband-wife membership. Although these are improvements over the usual formula, they still exclude several women and men, as in the case of joint or extended families.

Women and farm forestry

Benefits to women from farm forestry are constrained by their own place in the family and the legal position regarding their ownership of private lands. A FAO study of farm forestry in Gujarat (Jain 1988) observed that all negotiations for selling the eucalyptus polewood are settled by men, whereas women continued to gather fuelwood as before. Agarwal documents that in most parts of India, women have had no customary land rights, and those that existed have been substantially eroded over time, with State policies playing a catalytic role. 131 out of 145 land owning communities studied had patrilineal pattern in land inheritance where women did not get any share. Modern legislation has yet to establish full gender equality in law or to permeate practice.

To give an example, according to the section 171 of the UP Zamindari Abolition and Land Reforms Act, 1950 after a landowner's death, his land will devolve to the male issues in equal shares, and in case he had no sons, to his widow and widowed mother. A married daughter would be entitled to a share in the absence of the above claimants, only when the deceased had no father, unmarried daughter, brother or unmarried sister. One wonders whether such blatantly unfair provisions of law are not violating the equality provisions of the Indian Constitution.

Women's right of access to land and other material resources is not a legal issue alone. As their control over loans, income and assets goes down, their access to social resources such as knowledge, power and prestige diminishes. Disparity in gender status gets intensified with the emergence and deepening of other forms of stratification. Subordination and seclusion of women is more noticed in communities where social differentiation and hierarchy based on ownership pattern or on prestige is more pronounced.

Just now rural women are not even aware of the necessity of getting separate legal rights over land. They are exploited by the husbands and even by their sons, but they do not think of themselves as competitors of men. They would generally like to view their husbands as helpers and friends whose good wishes and advice they would like to cherish. They divide men in the neat categories of good husbands and bad husbands, without realising the inherent exploitation in the very institution of patriarchy and property customs (Ellis 1988). Even where women have legal rights, they often relinquish their claims to parental land in favour of their brothers (Agarwal 1988). These norms serve as barriers to women's ability to exercise direct control

over the land they may inherit in their natal village. Thus along with initiating legal rights over land to women one would have to conscientise them about the existing realities of power inequities within the family.

While it would require a great deal of political courage to upset the existing power relations between the sexes through legal enactments, a beginning can be made by making women owners of land, where new tenurial rights are being created, as on wastelands. Such a limited measure is likely to escape male hostility as the distribution of existing wealth is not involved. It may be pointed out here that Section 3(c) of the Tree Patta guidelines, which states that "Minors and persons who are not capable of planting and looking after the plants themselves may not be considered," is capable of being interpreted against the interests of women (Saxena 1987).

Even in such states, where special provision has been made to confer tenurial rights on women under the patta schemes, it is feared that concrete steps to translate such a provision into action have not been taken so far. For instance, out of 57,546 pattas given in UP only 2,949 (5 per cent) went to women, despite government instructions that 30 per cent of pattas should go to women (Tripathi 1988). There appears to be a general lack of will on the part of field officials to treat women's interests as distinct from the family's interests.

Gender specific suggestions

Besides promoting usufruct based trees, sharing management with women, and giving publicity to their rights the following needs to be done:-

- · there should be strict enforcement of labour laws, especially as regards minimum wages, both when women work as wage employees on nursery and plantation sites, and when they are employed by contractors to collect tendu leaves and other NTFPs. Government should take a lead in this respect and be a model employer for its own departmental works.
- · given the sex segregated and hierarchical nature of Indian society, separate women's organisations and staff are needed to work among women, to instill confidence in them, so that they will fight for their rights.
- · each social forestry project should specifically consider the role of women at the project design stage, and state in what way the project is going to help them, apart from exploiting their cheap labour. Projects should aim at giving new skills to women, like training them in operating nurseries.
- · more women need to be recruited to executive positions in projects. Without this even the existing orders may not get implemented.
- · discriminatory land laws which prohibit women from owning land should be changed. A beginning can be made by making women owners of land, where new tenurial rights are being created, as on wastelands.
- · The Government should learn from the experience of such NGOs who have achieved excellent results in helping women to become self reliant through forestry. But the basic responsibility of providing equality of rights and opportunity to women through wastelands must rest with Government, and not with NGOs .

Chapter 6: Demand and Prices for Timber and Fuelwood

Several studies have tried to predict demand in future by taking into account factors such as general economic development of the country, rate of anticipated industrial growth, literacy, urbanisation, the availability of alternatives to wood, and cultural traditions (such as the use of cowdung in the northwest). However, the demand projections of these studies for future years have often been not matched by the figures of actual consumption in those years, and the predicted demand has been found exaggerated, often by a factor of 2 to 4, as compared to actual consumption. This suggests that the methodology followed in these studies for estimating demand should perhaps be put to critical scrutiny. Firstly, the term demand should be sharply defined and distinguished from needs and requirement. Secondly, the discussion on quantification of demand should take into account the prevailing or anticipated price. The present estimation process makes no reference to prices. Under normal market conditions where price is not controlled, there should not be any difference between demand and supply, as the price level adjusts itself to ensure that whatever is demanded is supplied at the price which covers the full cost of production. The situation where a difference exists between supply and demand will exist generally when the price is controlled by government or depressed due to gathering, such that the supply takes place at a price which does not cover the cost of replacement. The difference may also be because of wide timelags between particular price signals and the adjustment process (production, imports and evening out of regional differences) to spend itself out to reach a new equilibrium situation. However, each statistical (historical) price may be taken as an equilibrium price, which has come after the adjustment process. A dynamic economy may exhibit continuing or persistent gaps if underlying factors that determine demand and supply continue to change and are not seen by the suppliers. Yet, all these factors must express themselves in prices, if prices are not controlled.

Thirdly, forest product markets, which have not received the attention of researchers so far, may have a great influence in shaping demand. To the extent markets integrate producers with consumers, they facilitate commodity production as producers allocate their resources on the basis of signals they receive from markets. Thus the demand is communicated to the producers (and gatherers) through the medium of markets, and may have little relevance in a market economy, if it is shorn of the market context. If market conditions are changed, demand for the product will change, even if other conditions remain undisturbed. Thus demand and even supply is influenced by the nature of markets, and quantification of demand cannot be done in isolation to market factors. The experience of glut of eucalyptus wood in several north Indian markets whereas shortage existed elsewhere shows that the gap between supply and demand cannot be bridged by simply enhancing production, other constraints may be equally relevant. Thus the paper highlights the importance of discussing both demand and supply in the context of prices and market conditions, as in isolation the terms demand and supply may signify little.

Demand for timber

Estimates of timber requirements/demand vary widely. One of earliest calculations (GOI 1962) was that the then annual supply and demand of wood were evenly matched, both being equal to about 8 million cubic metres (mcum) of industrial wood and 85 mcum of fuelwood. The demand estimates for 1975 were made separately for each consuming sector, such as the construction industry, mining, transport and communication, wood working industry, packaging, pulp and paper, matches and sports industry etc. Factors like increase in population, national income, urbanisation, and use of timber substitutes were taken into account. By 1975 the annual demand of industrial wood was expected to mount up to 16 mcum and that of fuelwood to 184 mcum. A second attempt at demand estimation was made in 1965 by the Ministry of Agriculture and Irrigation which drew up an indicative plan for forestry in India for the period 1965-1985 as part of the Indicative World Plan sponsored by the FAO (GOI 1971). Accordingly, the total demand of industrial wood was predicted to rise from a consumption level of 14 mcum in 1970 to 22, 30 and 50 mcum in 1975, 1980 and 1985 respectively. The National Commission on Agriculture predicted considerable technological changes in the use of pulp mix for different grades of pulp and paper, leading to greater use of bagasses and other agricultural residues in the pulp and paper industry, and thus came up with a lower figure for future demand for pulpwood. According to the Commission the total demand of industrial wood

would rise to 25 to 27 mcum in 1980; to 30-35 mcum in 1985 and to 50-65 mcum in 2000 AD (GOI 1976). Even lower demand figures were given by the Asian Development Bank (ADB, 1987) which estimated the demand to rise to only 38 million cum by 2000 AD. Other studies for the years 1980-85 estimated the demand to be 19.52 mcum annually by the Ministry of Agriculture, and 23.30 mcum by the Central Forestry Commission. The last two estimates have not accounted for rural requirements.

Actually in all these estimates the word demand and requirement have been used loosely and interchangeably. In theory it cannot be justified. Demand has to be specified at a certain price for a single market. Different sub markets can form a national market if prices differ only by the amount of transfer costs. Requirement is, on the other hand, a need based concept and has public policy overtones. Presumably, requirement may be taken as a predicted demand for a future date on the basis of current price. If future requirement is predicted on the basis of a future predicted price, then it is very close to the concept of demand.

Rural demand - The demand for timber can be considered under two main heads; of the rural sector for house construction and agricultural implements, and urban demand for industry etc. The rural demand is influenced by the size of population, level of development, availability and information, price, rights and concessions, climate and general economic conditions. Increases in population and improvements in economic conditions result in a higher demand for timber. Availability of forest resources and rights and concessions of people living adjacent to forest areas also determine per capita requirements. In areas where forests are still in abundance and villagers have rights and concessions for timber extraction, per capita consumption is higher than in areas away from forests and where villagers are required to purchase timber at market prices. Timber requirements for house construction in temperate areas is higher than in tropical areas. Proper surveys have not been conducted to assess the demand of this unorganised sector. The one estimate this author could lay his hands on showed that although the per capita annual timber demand in rural areas varied widely from 0.012 to 0.208 cum, in most areas it was about 0.02-0.04 cum (FSI 1987). For a rural population of 525.5 million (1981), the timber demand was worked out to about 10.5-21.0 mcum. However, this method of demand estimation is valid only for a subsistence and non-monetised economy. Even in remote villages of India today markets and prices would determine whether a forest dweller would use collected timber for house repairs or would sell it in the market for generation of cash. If there are little constraints on collection from forests and on sale, a gatherer might sell timber many times more than that what is assessed as his annual requirement, and use a cheap substitute material. Thus demand would depend not so much on subsistence needs but on conditions of supply (whether collected free or bought), price and the nature of markets. These factors may also affect consumption in urban areas and hence deserve attention.

Timber production

Information on timber production is as incomplete as on its demand. Timber is normally obtained from Government forests, community and private forests, trees growing on farm lands, and plantations raised under social forestry programmes. Timber extracted from government forests is reported in the national statistics, but timber extracted from the remaining sources does not always get included in statistics of timber production. Trees growing on farm lands and other privately owned areas constitute an important source of timber. But wood harvested from them is not included in the country's production figures. Estimates of timber production in the country are, therefore, grossly underestimated. In case of out-turn from government forests, the unit of reporting is not uniform. Timber extracted is, in some case, reported in round wood and, in others, as sawn wood. Statistics of out-turn of timber, thus, suffer from many infirmities. Further, timber extracted from trees granted to right holders and concessionists is not always accounted for in the out-turn reported, as only the standing volume of trees so granted is recorded. The recorded production of industrial wood during 1979-80 was 13.50 mcum (GOI 1985). The out-turn of timber (excluding pulpwood) reported for 1984-85 is only 6.44 mcum (Chambers et al. 1989). A comparison of this figure even after adding pulpwood production will show that timber production from forest lands has decreased during these years. The recorded production of timber accounts for less than half of the industrial wood requirement of the country. But, as emphasised earlier, estimates of both demand and supply of timber and of the estimated gap between the two cannot be relied upon. A better indicator of this gap is the behaviour of prices which is discussed below.

Timber prices

According to Bentley (1984:17), timber prices increased by 14 per cent annually between 1970-80. When deflated by the wholesale price index real timber price rose in the above period by 5.8 per cent annually. The author collected data on price of timber during 1970-92 from the Ministry of Environment and Forests, which is given in table 17.

Table 17: Price index of timber compared with other commodities

Year	General index of wholesale prices	Index of wholesale agricultural prices	Index of timber prices
1970-71	100	100	100
1975-76	173	157	178
1980-81	257	211	407
1981-82	281	237	556
1982-83	288	248	740
1983-84	316	283	811
1984-85	338	303	946
1985-86	358	310	1089
1986-87	377	330	1418
1987-88	405	372	1840
1988-89	435	401	1840
1989-90	466	412	1933
1990-91	514	469	2048
1991-92	586	562	2198
1992-93	632	NA	2398

(Chambers et al. 1989 and collected from the Ministry)

The above table shows that during the five year period 1987-88 to 1992-93 wholesale prices increased by 56 per cent, whereas the increase in timber prices was only by 30 per cent. This needs to be contrasted with the earlier 5 year period of 1982-83 to 1987-88, in which as against a rise of 41 per cent in wholesale prices the increase in timber prices was 148 per cent. Evidence of a fall in timber prices has been forthcoming from several markets. It is informally learnt that the sal prices have fallen by 25 per cent in the last three years in South-West Bengal, causing a concern to the Village Forest Committees which had been protecting sal forests in the hope of earning good incomes.

Imports

The fall in timber prices after 1987 seems to be because of liberal imports of logs. The government has been encouraging import of logs and pulpwood by providing relief in custom tariffs. Timber (in log or sawn form) and pulp have been included under Open General Licence (OGL). On the whole the rate of customs duty is low. Since import of timber is under OGL, private entrepreneurs have been making their own arrangements for import. Hardwoods are mostly imported from the tropical countries of Malaysia, Burma, Indonesia, Brazil, Papua, New Guinea, Singapore and Vietnam. Import of coniferous wood, though in small quantities, has also taken place from temperate countries like USA, USSR, Canada, France, Austria and Finland. Pulp is being imported from Canada, Finland, Norway, Portugal, Sweden, USA, USSR, Brazil, Indonesia, Thailand, Chile and Australia. As imported timber is comparatively cheaper than locally grown timber, liberalised imports have helped to conserve forest resources and check prices in the timber market.

Imported timber is mostly used by the building and construction industry, plywood industries and by the railways for making sleepers. The imported timber has also benefited a large number of saw mills, particularly in urban centres and in the vicinity of sea ports. Since the saw milling industry in India is highly

unorganised and widely dispersed throughout the country, it is difficult to get information about their sources of raw materials, capacity utilisation and actual out-turn of sawn timber, and how it has been affected by the liberalised import policy.

There has been a quantum jump in recent years in the import of timber. In 1989-90, the total import was estimated at. 1.5 mcum (Singh, Ashbendu 1992: 72). The total value of imports in 1992-93 had touched Rs 4000 crores (pers comm. Ministry), and the quantity imported may well be 50 per cent of recorded timber production from forest lands. In addition, 1 to 1.5 mcum of newspaper grade pulp, which is almost 50 per cent of the total requirement, is imported (Khare and Rao 1991). The desirability of importing pulpwood in the face of its surplus indigenous production may be doubted.

In the markets of Gujarat, which has the advantage of several ports, the share of imported timber in the total market off take for all species was over 40 per cent (ORG 1990b). Even in western UP, where imported timber reaches after traveling more than 1500 km, it was seen at every saw mill and traders' godown during the field survey done by the author. The bulk of the import has been of hardwood logs from tropical countries. This may not continue very long because of the deforestation problems faced by most tropical countries. In future, imports of softwood from countries like Russia, Canada and USA may have to be encouraged.

Looking at the data of demand projections, indigenous supply, prices and imports it appears that the demand figure of near 50 mcum for the early 1990s seems exaggerated, and so is the belief that there exists a wide gap between supply and demand. Imports have, of course, added to domestic production and have brought supply nearer demand than it would have been otherwise. One of the reasons for the exaggeration in demand figures is the subsidised supplies, leading to high profitability and to creation of excess capacity in saw milling and pulpwood industry.

Fuelwood vs. other fuels in rural areas

In most rural areas of the Third World, non-commercial fuels are the primary source of energy for domestic cooking. In India too, between 80 and 90 per cent of the total domestic fuel consumed in rural areas is made up of fuelwood, agricultural wastes and animal dung. Of these, the use of dung and agricultural waste as fuel is widespread in agriculturally prosperous regions with fertile soils and controlled irrigation (see table 18), but wood continues to be the main domestic fuel in less endowed and poorer regions.

Table 18 : State wise per cent share of fuels in total domestic energy consumption in rural areas

Per cent share of each commodity in total domestic energy consumption						
State	**logs**	**twigs**	**total wood**	**dung cake**	**crop residue**	**Share of non commercial fuels**
A.P	22.4	47.3	69.7	8.4	10.4	88.5
Assam	45.0	23.6	68.6	neg	20.1	88.7
Bihar	4.3	25.9	30.2	41.1	19.9	91.2
Gujarat	14.9	34.6	49.5	14.7	2.7	66.9
Haryana	5.6	13.8	19.4	43.8	27.3	90.5
H.P	44.0	43.3	87.3	0.1	0.7	88.1
J.K.	23.6	30.9	54.3	22.9	3.0	80.4
Karnataka	22.8	51.5	74.0	1.6	14.7	90.6
Kerala	17.3	41.9	59.2	neg	29.5	88.7
M.P	26.1	55.9	26.8	12.3	29.8	95.0
Maharashtra	33.6	61.6	13.7	4.3	28.0	79.6
Meghalaya	63.7	77.7	neg	15.5	14.0	93.2
Orissa	15.3	61.2	23.4	9.6	45.9	94.2

Punjab	9.6	17.4	27.0	28.7	31.0	96.2
Rajasthan	22.8	47.7	70.5	21.0	4.0	96.2
Tamil Nadu	26.9	39.5	66.4	7.4	13.4	87.2
U.P	39.9	48.9	32.4	19.0	9.0	100.3
West Bengal	26.6	56.3	4.7	11.5	29.7	72.9
Delhi	14.6	13.5	28.1	14.7	13.4	56.2
All India	18.8	38.4	57.2	21.1	16.3	88.6

(NCAER, 1985)

One estimate is that the total consumption of these non-commercial fuels of 179.4 mT of coal replacement in 1976 was made up of fuelwood 116.6 mT (65 per cent), cowdung 26.9 mT (15 per cent) and vegetable wastes 35.6 mT (20 per cent) (Natrajan and Sundar 1985; Gupta and Ahuja 1992). Thus fuelwood accounted for 65 per cent of the total consumption of non-commercial fuels.

Demand and supply of fuelwood

Several estimates for fuelwood demand are available. However these are so disparate that a degree of agnosticism is in order. Estimates for the year 2000 AD. vary from 92 mT. by the Working Group on Energy Policy of the Planning Commission to 300-330 mT. by the Advisory Board on Energy. The Forest Survey of India (FSI 1987:46) estimated that there was a gap of 130 mT. in demand and internal production of firewood in the country in 1987. There are differences even in the figures of actual consumption estimated by different agencies. An earlier estimate (GOI, 1962) gave the consumption of fuelwood in 1960-61 as 60 mT. This was being met with 10 mT from recorded forest sources and 50 mT from private and community lands and from unrecorded removal from Forests. However, a NCAER survey estimated consumption of fuelwood in 1963 as 97.2 mT. As the latter figures would suggest that there has been no increase in fuelwood consumption during the period 1963-79, which is unlikely, we think the lower figure of 60 mT of fuelwood consumption in 1960 could be closer to reality. A survey in 1981 gave a figure of 94.5 mT as fuelwood consumption in 1978-79. Thus the annual rate of growth in fuelwood consumption between 1960-61 and 1978-79 works out to be 2.5 per cent.

The differences in various estimates of demand and consumption arise perhaps for two reasons. First, it is difficult to be precise about demand for an item which is mostly collected and where substitutions occur: smaller twigs and leaves can substitute for larger sticks and logs; and where fuelwood is easily accessible and opportunity cost of rural labour remains low, fuelwood can substitute for other non-commercial and commercial fuels, leading to higher estimates of needs. Second, there are difficulties in assessing direct and indirect impacts of various causal variables such as product price, prices of substitutes, size and location of user households, price and income elasticities of demand, and likely changes in the causal variables themselves. In spite of such problems, several attempts to estimate the demand for fuelwood and other sources of household energy have been made over the last three decades by the Energy Survey Committee of India (ESCI), NCAER (1985), Fuel Policy Committee (1974), National Commission on Agriculture (1976), Working Group on Energy Policy (1979), and the Advisory Board on Energy (1985). Table 19 presents a summary of their forecasts as regards the likely fuelwood consumption for different years, showing the range of predicted demand and perhaps the unreliability of any forecast.

Table 19: Demand forecasts for fuelwood in mT (1 mT == 0.95 mtcr)

Studies	1971	1976	1981	1983	1991	1993	2000	2005
ESCI	121	130	131					
NCAER		70						
FPC			132	131	122			
NCA	105	116	129	141			158	

WGEP				140	138	131	97	
ABE								300-330

Sources of supply

Fuelwood is generally gathered by the rural people, only 15 per cent of total firewood consumed in rural India is purchased, the rest being collected from public or own land. Thus firewood has been and still continues to be by and large a non-monetized commodity. Even when firewood is traded, studies show that rural wood markets are small, localised, lack capital and hence buying capacity (FAO 1987). Fuelwood is supplied to these markets generally by poor gatherers, called headloaders, who have taken to this profession in the absence of other meaningful occupations. Unlike timber, which has to be bought from the markets, fuelwood is generally gathered by the rural people and even by the urban poor, and only the lower middle class (the middle class use kerosene and the rich use gas) in urban areas and the very rich in rural areas buy fuelwood. A substantial part of fuelwood in semi-arid areas comes from natural regeneration of prosopis shrubs on wastelands, which provides easily accessible fuelwood, for consumption as well as sale, at almost zero cost to a very large number of the poor, who have surplus labour. In the semi-arid district of Anantpur, AP, gathering of fuelwood from degraded public lands has become a cottage industry, as much of it goes to the nearby metropolitan town, Bangalore. The source of supply is thus varied; farmers' produce as also supplies from head-loaders, bullock carts, and merchants who buy wood from forest auctions.

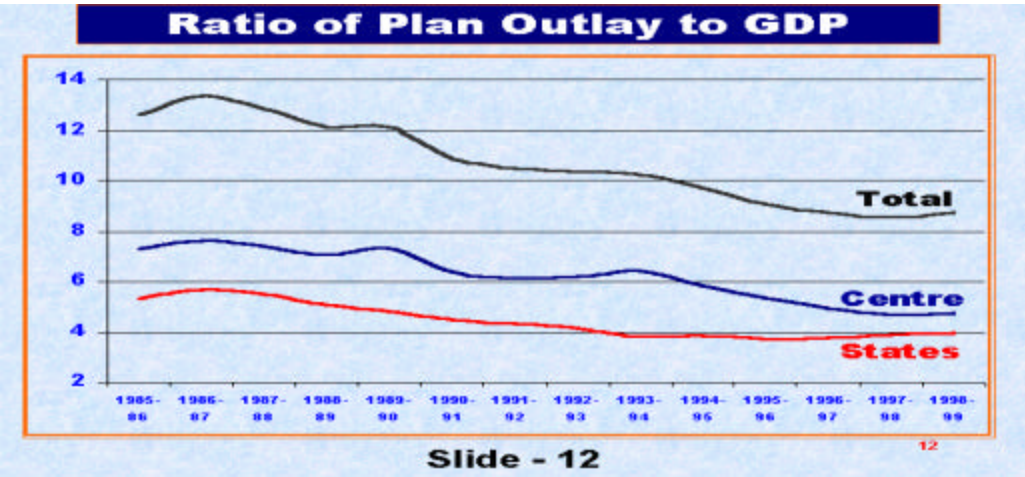
Future trends

In the past, biomass resources were virtually the only energy forms used in rural areas of India. This situation has changed significantly during the last 50 years, and there seem to be two main trends. One change involves the increasing use of modern forms of energy for productive and household activities, including irrigation pumping and lighting. A second change is that in some areas rural people, instead of switching up the energy ladder to modern fuels, are switching down the energy ladder to straw, leaves and twigs. The use of inferior fuels for cooking by some rural people have implications for their quality of life. It is also possible that their general purchasing power has gone down.

In urban areas, on the other hand, the energy use patterns are changing with greater use of LPG and kerosene. Between 1978/79 and 1983/84 fuelwood consumption dropped in India by 40 per cent in the urban areas, but kerosene consumption rose by approximately 57 per cent and LPG consumption increased by 98 per cent (Natrajan 1990). The extent to which this trend will continue is uncertain, and will depend to a large extent on government policies as regards the supply and pricing of kerosene and LPG. It is unlikely that fuelwood will be completely replaced, as poorer sections of the community may lack the cash resources to purchase the minimum amount of kerosene or LPG, or the appliances for these fuels. They may also lack the security to keep such fuels or appliances while absent from their living quarters, so that such persons may be forced to purchase more expensive small quantities of fuelwood regularly, perhaps daily, and use cheaper and less efficient cooking appliances.

In the context of a possible improvement in the poverty situation over the next 25 years, the question arises whether many people might prefer acquiring fuel from the market, rather than use their time and energy to collect it. This is however, not considered likely for several reasons. First, as figure 1 shows the share of purchased to total consumption of firewood and dung cakes presently does not change much as incomes increase. Rather, buying firewood signifies extreme deterioration of natural environment, and is not linked with household prosperity.

Figure 1 : Share of purchased to total consumption of fuelwood and dung in rural India



Second, the agriculture based rural economy has slack seasons, and lends itself to seasonal peaks in gathering. Third, as wood resources increase locally (either due to implementation of government policies or natural spread of prosopis shrubs) time taken in gathering and its opportunity cost will decline. And lastly, the share of crop residues in the household energy consumption has declined (UNDP, 1986:17) from 16.4 per cent in 1970-71 to 13.5 per cent in 1982-83, primarily because the new varieties in agriculture yielded less of husk and straw. Moreover, only rich farmers produce sufficient crop residues. Being a private resource, the poor have little access to it, specially in the context of monetisation of rural economy. Thus their dependence on fuelwood is likely to continue for a long time.

Prices

Like timber, the price of fuelwood has risen fast during 1975-85. According to Leach (1987), the real price of fuelwood increased by 34 per cent in 10 major cities of India during 1970-82, but another study of 41 towns showed 50 per cent increase during 1977-86 (Bowonder et al. 1988). The same study compares the movement of fuelwood prices with those of other commodities over the years, as given in table 20.

Thus the annual rise in prices during 1972-86 has been maximum for fuelwood and this has been 85 per cent higher as compared to the rise in prices of wheat and rice.

Inter-city variation in prices - Bowonder's study (1988) quoted above also indicates that in 1986 the price of fuelwood was more than Rs 600 per tonne in all centers with more than one million inhabitants and more than Rs 900 per tonne in all centers with more than five million inhabitants. This shows that the size of an urban center is a major variable in determining the fuelwood price, quite apart from the extent of forest area in the vicinity of the urban center. The proportion of population using fuelwood is higher in larger cities, since the proportion of population living in squatter settlements (low income) is higher (Bowonder, 1982b; Von Oppen, 1979; Agarwal and Narain, 1985). In India there has been a sharp rise in the number of people living in squatter settlements. Most recent estimates indicate that about 30 per cent of India's urban population live in poor squatter settlements. In other words, the issues of fuelwood use in urban centers are intricately connected to poverty, low income, unemployment and frequency of number of days of work, cash in hand, and rural migration.

Table 20. Trends of consumer price indices

Year	General consumer price index*	Price index of coal	Price index of fuelwood	Price index of kerosene	Price index of elect.	Price index of wheat and rice
1972	208	230	216	188	130	203
1973	241	259	236	196	135	254
1974	304	404	317	282	143	320
1975	312	345	356	313	153	375
1976	325	321	370	358	164	297
1977	331	352	392	357	166	299
1978	338	382	411	363	173	295
1979	360	498	497	393	178	306
1980	404	550	558	426	190	331
1981	458	683	664	481	199	364
1982	491	761	801	503	206	426
1983	552	823	846	532	228	513
1984	595	992	984	542	231	491
1985	631	1101	571	258	496	1066
1986	682	1169	626	262	525	1094
Annual growth rate (per cent) 1972 - 86	8.85	11.78	12.80	8.96	5.12	7.00

* Base of consumer price index 1960 = 100

The relative increase in price of fuelwood has implications for inter fuel substitutions. In reality, the consumers using fuelwood are paying more per unit of energy delivered (net energy consumed). In 1960 and 1977 the cost of unit energy for kerosene and fuelwood were similar. In 1987 the consumer had to pay twice as much per gigajoule of useful energy for fuelwood as for kerosene. Fuelwood is costlier since the efficiency of burning is of the order of 7 to 10 per cent (Bhatt. 1993; Gellar, 1983; Gupta, Rao and Prema, 1983), whereas a kerosene burning stove has an efficiency of 30 to 40 per cent. In Delhi the consumer has to pay four times more to get one unit of useful energy from fuelwood than from kerosene. This is due to a number of factors : (i) poorer sections of the population consider fuelwood to be a cheaper fuel; (ii) in a fuelwood burning stove, it is possible to use other biomass fuels and agricultural wastes and this is done by many poorer income groups; (iii) fuelwood stoves are very inexpensive and kerosene stoves are almost 10 times as expensive (capital market is very imperfect for poorer sections of society); (iv) kerosene is an item which is controlled by the government and the maximum quantity sold to one household is not enough to manage both cooking and lighting; (v) those residing in temporary squatter settlements prefer not to invest in items that have to be taken with them when they shift their squatter settlements, and (vi) real cost in terms of many visits required to government authorised shops, waiting period and its opportunity cost may be much higher.

Fuelwood prices after 1986 - Fuelwood prices are monitored by the Labour Bureau, Shimla. According to their records, the fuelwood prices in some of the major towns of India have remained almost constant between the period 1985-90 (Table 21).

Regional variation in fuelwood prices and shortages

Thus unlike the price rise during the period 1960-85, the price of fuelwood seems to have remained constant in real terms after 1985 in many towns. It is also likely that the fuelwood prices have behaved differently in different regions. In north-west India the glut of eucalyptus may explain the decline in fuelwood prices. In some regions the fall could be due to the natural spread of Prosopis juliflora shrubs on public lands, which

provide excellent fuelwood for both consumption and sale at almost zero opportunity costs to the poor. Actually each region should be taken as a separate market as the inter-state movement of lower quality fuel is hardly an economic proposition.

Table 21: Fuelwood prices for urban consumers in real terms at 1970-71 prices in Rs per 100 kg

Urban Centres	1985	1986	1987	1988	1989	1990
Kanpur	21	21	24	23	23	22
Saharanpur	20	24	21	18	17	19
Yamunanagar	24	22	22	22	21	21
Jaipur	19	17	16	16	17	17
Ajmer	18	19	19	19	22	22
Bhopal	18	20	20	18	25	24
Indore	19	20	20	18	29	30
Bombay	30	33	32	30	31	32
Sholapur	18	17	17	18	19	19
Ahmedabad	21	20	19	18	20	19
Bhavnagar	12	11	12	16	18	17
Gudur	12	13	10	11	13	12
Hyderabad	19	18	17	16	16	15
Coimbatore	21	20	20	19	18	18
Madras	18	18	18	20	20	19
Average	19	20	19	19	21	20

(These have been calculated at 1970-71 prices by using the all-India general price index. More accurate would have been to use the price index of that particular town, which was not readily available.)

As a consequence, to speak of a "fuelwood problem" in India is somewhat misleading. Land production capabilities and access to biomass vary from region to region and this has an impact on whether energy for cooking is a problem for people in the rural areas. One way to classify regions with respect to fuelwood availability could be :

1. regions with proximity to forests
2. fertile and irrigated cultivated land
3. areas with access to prosopis shrubs
4. areas where farm forestry has been success
5. areas where dung must be returned to fields for maintaining productivity

Although empirical data on each of these regions is sadly lacking, one could hypothesize on the basis of field experience that fuelwood is an acute problem more in the last type of region, which may cover roughly half of India's geographical area. In forest regions, the issue is not of physical scarcity but of lack of incomes, which leads the poor to do headloading. In regions 2 and 4, there would be a class dimension too, that is the poor and landless may face shortages, even when it is not an issue for the surplus farmers. Even if the poor have land, their immediate preoccupation is the need for quick solutions to desperate food and income deficits (Cecelski 1987), and they cannot be expected to use their lands for production of fuelwood. Thus the earlier social forestry projects, in focussing only on fuelwood, proved insufficient in defining what is needed at the project level.

Probably the most seriously affected region in India from the point of view of demand for fuelwood and fodder is in the Deccan Plateau. In this dry region with little ground water, people have used up most of the woody materials either for construction or fuels, and they are dependent on straw and dung as a fuel. Typically these regions have poor agricultural production, which may be partially caused by the diversion of straw and dung as a fuel. These regions deserve topmost priority in fuelwood production schemes.

Fuelwood production policy in perspective

In the 1980s two assumptions dominated the official thinking on fuelwood. First, there is a huge gap between the supply and demand for fuelwood, so much so that India may have sufficient food for its population, but not enough fuel to cook it. And second, planting of trees through the social forestry programmes on non-forest lands is the most appropriate response to deal with fuelwood shortage.

Over the past decade, understanding of the ways in which rural people use trees and forests has improved considerably. In addition, several fuel surveys and evaluation reports are available now. It may therefore be worthwhile to analyse the new evidence to re-assess the earlier assumptions.

Studies done by the NCAER, Leach and Reddy show that domestic fuel shortages were much less than had been understood initially. Part of the miscalculation was because official output from forests was assumed to be the major source of supply, and other sources of fuel like agricultural wastes and dung were forgotten. As both agricultural and milk production has increased at a rapid rate in the last decade, so must have the supply of fuel from crop and animal waste. Second, much of the wood used as fuel comes from twigs and branches, and that too from non-forest lands.

Third, sources of fuelwood change; in the past ten years, more fuelwood has come from Prosopis juliflora than from social forestry plantations. In Tamil Nadu alone, the total yield of prosopis for fuelwood accounted as a single species for 75 per cent of the total fuelwood consumption (SIDA 1992).

This should not be interpreted as an argument that fuel shortages do not exist in India; they still do in many parts for the poor, and in some ecologically fragile areas like the hills for many rural households. But it is necessary to understand the nature of the problem more accurately, if we are to define appropriate interventions. For the poor, the shortage of fuel does not generally feature high among their priorities, for if they are short on fuel, they are most likely to be even more deficit in incomes, cash and food supplies. The poor would certainly like better opportunities for gathering of twigs and branches, not because they burn it all, but these get sold and bring the much needed cash to the family. In the prosopis abundant districts, sale of prosopis twigs has emerged as a cottage industry for the poor, specially for women and children.

The problem is more severe in agriculturally depressed areas which do not have the benefit of either dense forest lands, or of natural vegetation of shrubs like prosopis. Why has social forestry done little to reduce fuelwood shortages for the rural consumers in these areas?

Although social forestry projects were designed to produce fuelwood, in actual practice market-oriented trees were planted which did nothing to improve the consumption of fuelwood by the rural poor. The main product of community and farm forestry was eucalyptus poles, which could never reach the rural poor. Then, half of social forestry has been on private lands. As fuelwood was not seen as income generating, farmers preferred income giving trees, and continued to collect twigs and branches from public lands as before. Farmers are least interested in using their scarce resources of land and capital to generate a low value product they could collect. It was unfair to load social concerns on farmers if they saw no economic returns. Actually in the states of Punjab, Haryana, Gujarat and UP, where eucalyptus glut has forced the farmers to sell their trees at fuelwood prices, they have stopped growing trees, as fuelwood prices are hardly remunerative for them to produce it as a commercial product.

What policy prescriptions follow from the above analysis? First, a distinction must be made between fuelwood from logs and fuelwood from twigs and branches. The former, even if produced on public lands is

out of the reach of the rural poor, as it gets marketed, and at best helps the urban poor. The rural poor have access to only twigs and branches, which require labour intensive process of collection and do not attract the contractors' greed. Second, such material is best made available to the poor through shrubs and bushes, and not from large trees whose value lies in their stem. Third, as fuelwood shortages are not as pervasive as was earlier thought, the objective of social forestry should be not only to produce twigs and branches, but also to generate self-employment for the poor through the gathering of consumption goods like minor forest products, wild fruits, and mulch. Fourth, the concept of social forestry must be extended to reserve forest lands, where usufruct based trees would be planted along with short gestation grasses, shrubs and bushes. And fifth, farm forestry should be geared to meet the farmers' priorities, rather than national priorities.

Market

Forest product markets in India have not been studied systematically so far. On the other hand, agricultural markets and their role in rural welfare have been widely discussed. Since our concern is with forest products as a commodity, concepts developed in the literature on agricultural markets are of relevance to the understanding of forest product markets too. Some of the issues about the nature of agricultural markets are briefly summarised below.

Comparison with agricultural markets

The Government of India commissioned a set of studies specific to crops and provinces in the 1930s, 40s and 50s which showed how complex markets were, and revealed quite commonly occurring instances of exploitative behaviour through monopoly, interlocked contracts, fraud and chicanery. However, several empirical studies done in the 1960s and 1970s and based on price behaviour challenged the traditional view, and concluded that markets were competitive, sensitive to the laws of supply and demand, and giving the undistorted stimuli to farmers and consumers (Jasdanwalla 1966; Cummings 1967; Mellor 1968; Lele 1971). By implication, markets were regarded as securing optimal welfare, but for trivial aberrations which could be corrected through improvements in infrastructure.

This view was challenged by many (for instance, Sarkar 1981; Rudra 1982), who held markets to be imperfect, and more so for small farmers. They hold that small farmers have a smaller surplus, they sell in the village itself soon after harvest, and get a lower price compared to large farmers (Elango and Baskardoss 1979; Reddy 1985; Desai 1985; Talukdar 1985). Large farmers obtain better prices due to greater scale economies in marketing, and the ability to hold grain off the market till prices improve (Singhal 1985). A poor farmer may also be involved in the inter-locked credit and sale market, which works to his disadvantage (Bharadwaj 1985).

There are, however, studies which contradict the above generalisations. Rudra and Mukhopadhyaya (1973) did not find that small farmers are discriminated against in the price obtained for their output. Mohan Rao (1979) noted that the average price received per quintal of cotton sold by various classes of farmers was almost the same. Another study of the sale of tapioca, paddy and cash crops in Kerala found no conclusive evidence to support the view that small farmers are paid less for their produce than big farmers, or that there is any conscious and deliberate attempt at price discrimination against them in the commodity market (Ninan 1988). Nadkarni (1985), studying drought-prone districts, found it difficult to corroborate that price advantage increased with holdings. However, the disadvantage of small farmers was higher in less commercialised than in more commercialised villages. On the whole, Rao and Subbarao (1976) concluded that losses suffered by the small farmers on account of various imperfections are not as large as is generally believed. Infrastructural under-development, which is common to all classes of farmers is probably the more important source of such losses. Disabilities which are common to both large and small farmers are more significant than those specific to the small farmers.

These empirical studies reveal diversity and complexity of agricultural commodity marketing systems in India such that they do not fit easily into the analytical framework of structure, conduct and performance borrowed from industrial economics. It may also be mentioned here that farming systems and production conditions

vary a great deal from region to region in India, and so does the level of information among the peasantry, their political clout, and infrastructure for marketing. Markets in eastern regions, and in regions of low productivity, which are generally both subsistence-oriented, are relatively underdeveloped as compared to markets in the commercialised wheat or cash crop growing regions (Kahlon and Tyagi 1983). Alagh (1991: 66-67) demonstrates the existence of backward exchange relations in many districts of eastern UP, where farmers from villages remote from the main roads did not get the correct procurement price for their grain, which was collected by traders at lower prices and sold to the procurement agencies. As forest products emanate more from backward regions one can expect greater market imperfections there.

Characteristics of forest product markets

Moreover, forest products are different from agricultural products in several respects. First, unlike foodgrains, no processing of forest product takes place on the farm or in the household, which increases the dependence of wood producers and forest product gatherers on middlemen. Second, unlike agricultural products which are supplied only from private farms, the government is a big supplier of forest products. Unlike private farms which are profit motivated, the government may have other objectives, often unstated, which distort markets. Third, in addition to government and private producers as suppliers, a third category of gatherers is involved in making supplies to the market, particularly of NTFPs and fuelwood. Lastly, lag effect of supply to respond to demand is much more in the case of forest products than for crops.

Seen from a policy perspective, the following are the main characteristics of forest product markets, which directly affect both demand and prices:-

1. Certain industries get subsidised supplies from the forest department. In addition, they have a priority in supplies, and in conditions of shortage this may be more beneficial to the industry than the element of subsidy.
2. Some forest products, such as sal seeds, are nationalised, and can be traded only by governmental agencies. Nationalisation reduces the number of legal buyers, chokes the free flow of goods and delays payment to the gatherers, as government agencies find it difficult to make prompt payment. Practical considerations point out that the Government is incapable of effectively administering complete control. The solution is to set up promotional Marketing Boards, as distinct from commercial corporations (which are inefficient, and hence demand nationalisation), with responsibility for dissemination of information about markets and prices to the gatherers.
3. There are legal controls on harvesting and transport of forest products, even if these emanate from private lands.
4. There is lack of knowledge among gatherers and producers about market information, rules etc.
5. Forest Corporations have been created in place of the old contractor - based system for felling in forest areas.

Some of these aspects have already been discussed in other chapters.

Summing up

A lot of literature exists in India claiming that demand for forest products, such as timber and fuelwood, is several times the supply. However, under normal market conditions where price is not controlled, there should not be any difference between demand and supply, as the price level adjusts itself to ensure that whatever is demanded is supplied at the price which covers the full cost of production. The situation where a difference exists between supply and demand will exist generally when the price is controlled, such that the supply takes place at a price which does not cover the cost of replacement. As much of forest products are collected, or supplied to industries on a subsidised basis or there are legal constraints in the free flow of the products, market conditions are far from perfect leading to an imbalance in demand and supply. Further, both supply and demand are influenced by the nature of markets, and quantification of demand cannot be done in isolation to market factors.

This chapter discusses some of these issues, and concludes that the way quantification of demand has been done so far does not serve much purpose. It would be more meaningful to discuss the inter-relationship of demand with prices and the nature of markets. For instance, the steep rise in the prices of timber and fuelwood during 1975-85 seems to have been arrested during the last five years. Although more research needs to be done on the behaviour of prices and the casual factors associated with this, it does indicate that perhaps the demand for marketed wood is not as high as many projections have predicted. Finally, distortions caused in market operations due to governmental laws, subsidies, and other interventions cannot be ignored in any discussion on supply and demand of forest products. Study of market conditions is imperative for any initiative to bridge the gap between supply and demand.

As regards demand, the future is difficult to foresee. Past price trends may not be sustained. Oversupply of a market can always drive prices down, at least for a time, as happened in Northwest India, perhaps only temporarily, with eucalyptus poles. Our best judgement is that continuing economic growth, world shortages of timber and tree products, resilient demand for many of the NTFPs, and diversification of tree products, presents a long-term prospect of large increases in demand for most, if not all, of the main tree products. Out of these the demand for gathered products is likely to be much higher than for those which are paid for.

Chapter 7: Leasing of Forest Lands to Industries

A new initiative from government

In an answer to a Parliament Question on the 2nd of August, 1994, the Minister of State for Environment and Forests, Government of India disclosed that the government was considering to 'involve industry in afforestation of severely degraded areas'. The proposal would be restricted to areas which are almost entirely denuded of forest cover, which in no way contribute fuel and fodder to local communities, and which are not under joint forest management schemes. Far from abridging the rights of local communities, the proposed scheme, according to the government, will seek to enhance those rights, giving them content and meaning, by increasing biomass availability as well as employment. Further, such an arrangement was being considered primarily for paper and plywood industry.

Uncultivated public lands can be put in two categories; where density of vegetation is less than 10 per cent, and where it is between 10 and 40 per cent. For the sake of clarity these would be called barren (or wastelands) and degraded lands respectively. This distinction is vital, otherwise there is a danger that better quality lands may be put under industrial plantations under the garb of 'afforestation of wastelands'. Although there is no scientific basis for choosing 10 per cent as a cut-off point, yet a limit has to set in order to distinguish lands which are almost devoid of vegetation and which have almost ceased to be of importance to the local people from degraded lands which support local livelihoods and provide fuelwood and fodder to them. From various statements of the Ministry it appears that the proposal is restricted to barren lands and there is no move to involve the industry on lands with higher density of present tree cover (see para 9 of the guidelines, though not yet finalised, prepared by the Ministry on this subject, given at appendix 1).

The proposal seems to be based on a number of assumptions, some of which are as follows:-

1. That the industry is keen to be involved in the afforestation of barren lands because it is an economically profitable venture;
2. That barren lands are technically suited for trees required by paper and plywood industry, there are no serious environmental issues in putting wastelands under industrial plantations, and that tree density is the only criterion for judging degradation of uncultivated lands; and
3. That there is a shortage of raw material required by the paper and pulpwood industry; the involvement of capital and technology by the industry would amount to additionality of efforts towards afforestation, and therefore will be socially desirable; and that farmers cannot be trusted to supply raw material to the industry, as farmers are essentially concerned with meeting their subsistence needs and have no interest in growing long-gestation crops.

These assumptions are being subjected to critical scrutiny in the following paragraphs.

Keenness of industry to afforest wastelands

It may be recalled that several state governments had in the past offered barren lands, such as desert lands of Rajasthan and saline lands of UP and Gujarat, on lease to industry but it showed no interest. The scheme by the Rajasthan government was advertised in the papers in 1990-91 and a minimum of 2000 acres was being offered on a long-term lease, whereas the scheme in UP was initiated in 1979, but given up after a few years for want of proposals. The Gujarat government is at present offering land upto 800 acres for reclamation, but again there has been no positive response from forest based industry.

These lands have the advantage of being available in contiguous patches and hence amenable to economies of scale. However the initial cost of reclamation may be quite high. At the request of the NWDB the Agriculture Finance Corporation in 1986 identified large chunks of wastelands in the country, and prepared model projects for their development. The cost of reclamation is summarised under table 22.

Table 22: Cost of reclamation of wastelands as estimated by Agriculture Finance Corporation in 1987

Name of district	Cost per hectare (in Rs)
1.Chittoor (A.P)	10,100
2.Srikakulum (AP)	9,600
3.Surat (Gujarat)	8,600
4.Sabarkantha (Gujarat)	8,900
5.Hassan (Karnataka)	10,300
6.Meerut (UP)	15,000
7.Raebareli (UP)	13,500

(Chambers et al. 1989)

The above costs need to be compared with the cost of block plantations on farm lands, which were estimated to be only Rs 2800 per ha by the World Bank in 1988 in UP Another study (Chatha 1991) found the cost of raising trees on farm lands in Haryana as only Rs 2100 per ha. The cost of raising eucalyptus on farm bunds was even less. One can appreciate the indifferent attitude of industry towards afforestation of barren lands which have little soil left, as the scheme is not economical when compared to the costs of obtaining the same raw material through other sources, such as government forests, imports and private lands.

Present price distortions - As the industry gets subsidised raw material from government forests, there is no incentive for them to turn over to barren lands. A report (CSE, 1985:91) has mentioned that in Madhya Pradesh in 1981-82, industrialists paid the Forest Department 54 paise for 4 metre bamboo, while forest dwellers paid a little over Rs 2 a bamboo supplied by the Forest Department. The UP Forest Corporation had calculated that during 1983-84 the actual cost of raising eucalyptus in government forests was Rs 220 per tonne, whereas it was supplied to the Saharanpur paper mill at Rs 140 per tonne, and to the Nainital mill at Rs 196. The market rate for equivalent quality of eucalyptus, as judged from the auction prices, was between Rs 500-700 per tonne during the above period (information based on government records, and all prices are for dry and debarked wood). Although the element of subsidy has been greatly reduced lately, it still continues in many forms. Bhabbar grass is sold by the UP Forest Corporation at Rs 72.50 per quintal to rope-makers, but to industry at Rs 40 per quintal. In AP, the price that FD got by selling bamboo in the open market ranged from Rs 800 to 1200 a tonne in 1990-91, as against Rs 550 at which bamboo was supplied to the industry.

Although the element of subsidy has been greatly reduced lately, it still continues in many forms. It is obvious that the market for industrial raw material is totally distorted by the present system of committed supply from government forests at concessional rates. Its impact can be summed up as under:

(i) It leads to creation of over-capacity and inefficient use of material by industry. It increases sickness in the industry and prevents its technological upgradation.

(ii) Price difference in open market and concessional rates leads to undesirable practices. There are reported cases of concessional supplies being siphoned off to open market for quick money by some concessionaries.

(iii) Arbitrary fixation of supply/quotas and prices to various units in similar business encourages corruption within the Forest Department at the cost of industrial efficiency. At the same time the state loses valuable revenue.

(iv) It discourages development of private efforts at tree plantation because of depressed market prices and low market demand from consuming industries.

(v) Since there is a lagged response of forest product supplies to the current signal of price, and expectation of change in government policy (such as allotment of forest land to industry, or new partnership arrangements with FDCs), there is a tendency on the part of industry not to take any initiative, and 'wait and see' becomes the safest policy.

To sum up, so long as these price distortions are not corrected, there will be no incentive to the industry to turn its attention to barren lands.

Technical and environmental suitability of wastelands

Barren lands have little soil to support trees, specially in arid and semi-arid areas. Tree growth is so slow that with best efforts barely one tonne of wood gets added per hectare per year. This is then not sufficient to cover the cost of seedlings, planting and protection. But such lands can often support improved varieties of grasses and shrubs (Nimbkar, 1988). Even with scanty and irregular rains 4 to 5 tonnes of dry matter from stylosanthes and Cenchenn (Anjan) grasses can be produced from one hectare of such waste land. Besides grass cover can reduce run-off of rain and soil loss. It also starts yielding income within two years. Despite suitability of grass plantation on degraded lands on technical grounds, an official paper from Maharashtra, presented in the seminar organised by BAIF at Poone in June 1988, admitted that trees were being planted indiscriminately even where soil was less than 30 cm. in depth. Only 45 per cent of land taken up under social forestry in Maharashtra qualifies for tree plantation as a technical solution. The remaining 55 per cent required re vegetation through grasses, legumes and soil bunding, yet only 3 per cent of sites were actually given this treatment. Rather, trees were being planted on such soils leading to further soil erosion. Such trees did not survive resulting in wastage of resources.

The objective of soil and moisture conservation would be better achieved through grasses and shrubs, rather than with tree plantations (Maithani et al.1988). In the latter case, there is progressive suppression of the grass growth by the closure of the tree crowns after the first few years of plantation. Leaf litter from plantations is collected by the villagers, and thus does not help in soil/moisture conservation. An understorey of shrubs, grasses and bushes is more suitable for site stabilization and reduction of run-off, given the practical conditions of acute shortage of fodder in India (World Bank, 1988). Thus barren lands are technically and environmentally not suited for tree plantation of the kind needed by paper and plywood industry.

It may be pointed out here that the discipline of forestry has always been obsessed with trees. Other forms of vegetation are often ignored. Even the scientific definition of tree 'a woody perennial with a well defined stem', shows bias against bushes and shrubs. Often in social forestry projects the existing shrubs and bushes which supported livelihoods of the poor and women have been bulldozed in the name of planting of trees, thus causing harm to the poor rather than helping them. This stem-based forestry conveniently ignores bushes, shrubs and grasses, although these may be not only more suited for barren and degraded lands, but may also serve the poor better. Therefore both on environmental and technical grounds, the proposal of the Ministry seems to be ill-conceived.

Shortage of raw material and farm forestry

The current utilisation of wood and bamboo by the paper industry is 3.2 million tonnes (mT), whereas the demand has been assessed as 6.4 mT by the industry. Considering that there is no shortage of paper in the country, and only about 1 mT of newspaper grade pulp is imported, the figures of 6.4 mT seem to be an exaggeration. Even if this is taken as correct, and assuming a low productivity of 3 tonnes per ha per annum, the requirement can easily be met from 2 million ha. As against this there is 141 m ha of cultivated land and 35 m ha of farmer owned uncultivated degraded lands. These lands have the potential of producing pulpwood, especially in view of the fact that both eucalyptus and bamboo are short rotation crops, eminently suitable for the farm sector. In fact the bogey of raw material crunch is no longer valid, given the vast expansion in farm forestry programme in the last twenty years.

It was unfortunate that in many farm forestry programmes, like in Orissa and AP, where bamboo could grow quite well on homesteads and other such lands with good moisture (such as tubewell enclosures), no special emphasis was given to bamboo. The area under bamboo, both on forest and private lands, must have gone down in the last 30 years. On the other hand, the area under eucalyptus has considerably increased. In several states, natural forests were clear-felled and eucalyptus planted in their place during 1960-80, as encouragement to man-made forests was the priority at that time. Seventeen per cent of the geographical area of UP is declared as government forests, and more than half of the total timber output from government forests consisted of eucalyptus in 1987-88, despite the fact that before 1960 its area in UP was negligible (UPFC, 1990).

As is well known, farmers too have shown great enthusiasm for planting eucalyptus. As the demand from other sectors for farm wood was not enough and industry preferred subsidised supplies from the government, prices started falling. This has been discussed in detail in chapter 4. In Haryana the total consumption of poles for construction by households in 1985-86 was 66,090 cum, which is only 2.3 per cent of the total supply of 3 million cu m wood from farm forestry (NCAER 1987). According to a study (Athreya, 1989), the Haryana paper mill was buying eucalyptus from the farmers at Rs 440-460 a tonne at the factory gate in 1986, but not only did the price come down to Rs 330 in 1988, but the factory also started imposing a quality cut of 10 per cent, reducing the effective price to Rs 300 only. If inflation of 8 per cent is taken into account, the fall in prices during 1986-88 amounts to almost 40 per cent.

A World Bank/USAID team assessed the retail price of eucalyptus poles in Feb-March, 1988 in the north Indian markets at Rs 400 a tonne (USAID, 1988), a fall from the earlier price of Rs 500 a tonne. In the Punjab, poles used to sell for Rs 200-300 per piece in 1984-85 but the price fell to Rs 40-45 per piece after 1988 (Khare and Rao 1991). If inflation of eight per cent per annum is taken into account, the price in 1988 was only 15 per cent of the price in 1984. In Chandrakona (West Bengal), one of the largest eucalyptus markets in eastern India, the price of eucalyptus pole of 30 cm girth fell from Rs 25 to 18 during 1988-90 (IIM, 1991). In the same area, the farm gate price for a similar product fell from Rs 26.70 in 1985 to Rs 10.20 in 1989 (Singh and Bhattacharjee, 1991). The decline in the price of eucalyptus poles in West Bengal in nominal terms (if inflation is taken into account, the fall in prices would be even more drastic) has been reported by the World Bank report (1993) and is given under table 23.

Table 23: Changes in the price of eucalyptus poles in West Bengal

Diameter (in inches) of 16 ft.long pole	**Market Price (Rs per pole)**				
	1985	**1986**	**1987**	**1988**	**1989**
3	15	15	13.5	12	12
4	28	28	25	24	22
5	58	58	52	50	48
6	100	105	96	90	82
7	125	125	110	105	100
8	160	128	125	115	115

These figures clearly show farmers' keenness and capacity to supply eucalyptus to industry. It is also learnt from the industry sources that the profitability of paper mills has considerably improved in the last five years due to a fall in price of eucalyptus.

If industry produces its own raw material, who would farmers sell to? Where is their market, if not industry? Sixty per cent of farm land is owned by rich and affluent farmers, who are market oriented, and can be trusted to fulfill the requirements of industry. They are even prepared to produce teak wood, if the government removes restrictions on the felling of teak trees from private lands and on its movement. Since the overall demand of the industry is limited, and if allowed to be met by leasing it would necessarily reduce

the size of the market for farmers. Leasing of forest lands will thus adversely affect the farm forestry programme, which is one of the cheapest and most sustainable methods of producing wood.

Thus the claim of the industry that it would create additionality of efforts and funds is not true, as any afforestation by them will be at the cost of tree planting efforts by farmers on privately owned degraded lands, tubewell enclosures, and homesteads, where the social cost of production is minimal, as these lands are of no use for cultivation. Farmers exploit their own family labour (which is unpaid), and therefore can produce wood cheaper than industry. Farmers harvest their trees during the lean agricultural season and thus are able to achieve further saving in costs by spreading family labour inputs more evenly throughout the year.

Industry and degraded forest lands (with tree density upto 40 per cent)

It may be pertinent to mention here that despite the efforts of the Ministry of Environment and Forests, Government of India, to convince everyone that only lands denuded of forest cover will be offered to industry, neither the industry nor the state governments of MP, Orissa, and Arunachal Pradesh, the states which have shown keenness to lease forest lands to industry, have categorically accepted this position. The industry has never clearly stated about the nature of lands of their interest, but these will have to be forest lands with a high tree density, may be ranging between 25 and 40 per cent. In the Workshop, the District Magistrate of Chindwara, MP disclosed that the paper industry was offered 5000 ha of forest lands, but they refused as they thought that it was too degraded and lateritic in nature. The industry, for good reasons, would like to invest their capital only on land which has a good soil texture and where the cost of plantations is less than the cost of alternative supplies. Such lands have to be forest lands, and not wastelands. These are also the lands on which the dependence of the poor is maximum. Using such lands for industrial plantations raises a host of environmental and economic issues.

Past experience of plantations - environmental impact - Conventional forestry based on clear felling disrupts the annual circulation of nutrients, and increases soil erosion (Spurr and Barnes, 1980:240). Monoculture plantation forestry is also prone to pest attack. Thus eucalyptus plantations in Kerala raised after clear felling dense green and deciduous forests have been devastated by fungal diseases, and the consequent low productivity defeated the very purpose for which they had been raised (Nair,1985). Similar was the experience of teak plantations in north Bastar, MP (Anderson and Huber,1988:63). On the other hand, mixed forests draw and give nutrients to the soil at different stages of their growth, and hence are ecologically far more beneficial than plantations. One of the main outputs from forests should be water, which is possible only when forests are considered more in the context of local rather than "national" needs.

Thus raising short-term and quick growing species in place of multi-layer mixed forests has serious ecological implications. For restoring ecological balance, mixed species should be encouraged through protection and regeneration, and not plantation of mono-cultures. Using degraded forest lands for growing raw material for industry will be setting the clock back to the 1960s, showing that we learnt nothing from the mistakes of the past 30 years of trying to create man-made forests, which were ecological disasters, besides completely alienating the people and leading to faster degradation.

Past experience of plantations - economic impact - One of the main arguments given in favour of involvement of industries in afforestation is that the government lacks funds, and with limited resources it is not possible to afforest degraded lands. It is conveniently forgotten that this same argument was given by the National Commission on Agriculture when it recommended in August, 1972 that Forestry Corporations (registered under the Companies Act) should be created to attract institutional finance. These were set up in each state to augment state resources; the logic was simple, for commercial activities banks will be too willing to lend money. Did the Corporations succeed in attracting bank funds? A simple answer is no. For instance, the Madhya Pradesh State Forest Department Corporation was registered in July, 1975, but its total paid up capital of Rs 16.30 crores is contributed entirely by the state government. The Corporation was created so as to attract bank funds, and create additionality of resources for the government. However, in the last ten years, the Corporation has been able to get bank funds in only one year. In other years, there was no additionality of resources. It depended entirely on government funds for its schemes. There were several

reasons for the Corporations in not having succeeded in achieving even the limited economic objective of raising commercially viable industrial plantations.

First, poor management. As in other sectors, the government's record has generally been poor in managing commercial operations. The tenure of the chief executive of the Corporations has been very short. IFS officers do not consider serving Corporations as of utility to them for their future prospects. The total number of months spent by the last eight incumbents in Madhya Pradesh from 1992 backwards has been 8, 12, 4, 16, 6, 29, 10, and 7 respectively, giving an average of less than a year per person. Long term corporate planning has suffered due to this. Since the management of forest lands cannot be alienated from the government (The section 2 of the Forest Conservation Act provides that no State Government shall make, except with the prior approval of the Central Government, any order directing that any forest land or any portion thereof may be assigned by way of lease or otherwise to any private person or to any other authority, corporation, agency or any other organisation not owned, managed or controlled by the government), it is assumed that even under the proposed arrangement, control and management of forest lands will continue to be with the FDCs. In that case, no increase in productivity can be expected, looking at the past record of these corporations. For instance, the MP FDC has now proposed to raise industrial plantations with 20 per cent funds coming from user-industry and 75 per cent from NABARD, but it is not understood why the FDC could not obtain bank funds all these years when its avowed objective was always to raise industrial plantations.

Second, most commercial species require the presence of mixed forests for adequate growth. Both the Sal Expert Committee and Dr. Ram Prasad, Director, S.F.R.I., Jabalpur, have commended that sal regenerated best when there is appropriate support vegetation. Sri R.S. Mishra, IFS, in the working plan of South Betul Division for the period 1973-74 to 1987-88, has appropriately remarked that it is in the mixed forest that invasion of teak is rapid, whereas in blank and under stocked areas teak makes slow gain. He states, "Mixed species found on the archaen soils are naturally deep rooted. In doing so they extend the zone of underground drainage and soil aeration to a greater depth. It is this..... which is responsible not only for spreading but also for good health, vigour and quality of teak, which requires both good drainage and good soil aeration for its pure expression. The removal of mixed species very soon leads to surface compaction.... This is how mixed species are ecologically important in relation to teak in the high forests of Betul district." Provided that the mixed forests are worked for gathering in a scientific manner, there is no reason why the very biotic pressures which now operate in the forests should not be used as a means of creating the best growing conditions for teak and sal.

The third reason for failure of commercial plantations has been the acute pressure on such lands, as well as the activities of smugglers. Commercial plantations increase hostility between the government and the local people. In some districts of Central India, tribals have organised themselves and resist planting of commercial species on forest lands. In a recent case, people (not naxalites) uprooted about a lakh teak seedlings planted by the Corporation in MP The experience of other states, such as AP, shows that awareness among the tribals is likely to increase in future (as it should), and that they can no longer be taken for granted in the matter of choice of species. Despite the popularity of teak in the Forest Department in AP, it was difficult to protect teak in natural forests, as it was being smuggled and stolen at a very fast rate. The experience of Maharashtra and Gujarat is that after teak is ten years old, villagers cut it illegally and take it away. The future of pure teak plantations, which take 60 to 80 years, is therefore bleak. Thus planting market oriented species encourages smugglers or indisciplined behaviour.

Thus, if public sector banks have not found the performance of FDCs inspiring enough to invest in them, it is difficult to believe that the private sector will lend money to the FDCs, unless of course there is a hidden agenda of reverting back to the days of almost free supplies from government forests.

Fourthly, degraded forests have rights of the people recorded on such lands. It will be impossible to extinguish such rights, or to reduce biotic pressure. Already, in many protected areas reserved for bio-diversity and wild life, the government is finding it tough to deal with people's rights of access. If land is used by industry (which is a less legitimate cause than preservation of wildlife), such problems will multiply many fold, and will attract the attention of the NGOs and the press, who will get a ready made battle field to fight

and criticise the government. One should not forget the intensity of public feeling and agitations sparked by the Silent Valley Project in Kerala, the Blue Pine Project of MP and the Harihar Polyfibre Project of Karnataka.

Lastly, degraded forest lands with crown density of 10 and 40 per cent are not likely to be available in contiguous patches, unless of course the game plan is to show on record best forests as degraded by conniving with the lower level officials.

Transfer of management of forest lands to industry

As already stated in the beginning of the chapter, the Ministry's claim is that there is no proposal to alienate forest land, and that forest land will continue to be with the government. However, the proposals which have been drawn by the state governments and the industry assume that the management of forest lands will be transferred to them, though not ownership, through a MOU between the FDC and the industry. These proposals are being discussed below.

The Orissa government has proposed that the industry should pay 25 per cent of the outlay of the project as interest free loan, and then it will appoint a Project Manager and become overall incharge of the project, solely responsible for day to day working, execution of works and implementation of the Project till harvest. The industry will have the option to buy the produce from the plantations at the prevailing market rate, and the FDC can dispose off the produce only after the refusal of the industry in writing (which gives a veto power to the industry, and hence it will decide what is the market rate). Twenty five per cent of the produce including lop-tops, bark and small timber will be earmarked for local people at rates to be decided by the government in consultation with the Project authorities. It appears from the MOU between the FDC and the industry (which has already been signed in April 1993) that the rest of the 75 per cent of the expenses will come from banks, which is possible only when plantation is on fertile lands. In any case the MOU never states that only degraded forest lands will be taken up. Also, if land remains under the control of the industry, chances of a part of the production being siphoned off under the table cannot be ruled out.

Similar to Orissa, the Arunachal Pradesh Government has also proposed that industry will have the right of surface utilisation for the purpose of raising tree plantation. In other words, land will remain under the control of industry. They will also be allowed to raise temporary structures. One wonders if this is not alienation of forest lands or if this is not leasing, how else does one define leasing or subletting. The Arunachal Pradesh government proposes that the gross revenues accrued from the plantation activity will be shared with the government in the ratio of 75:25. In other words, the government is leasing out the forest lands by charging a rent of 25 per cent only. In addition, the government would charge Rs 2500 per ha as 'opportunity cost' of the allotted land. The annual share of the department from the sixth year onwards should not be less than Rs 10,000 per ha. The government has already identified 25,000 ha. which the wood-based industry proposes to regenerate over a period of 15 years on an investment of about Rs 250 crores.

The draft conditions formulated by the Ministry of Environment and Forest, given at appendix 1, states that the industry will get the right over land for undertaking afforestation and right over fixed percentage of forest produce, but land will not be leased to the industry. It is difficult to understand the fine distinction which is proposed in the guidelines between leasing and handing over possession to the industry. These guidelines suggest that the land above 25 per cent density shall not be available for plantation, although the proposals finalised by the State Governments do not restrict themselves to 25 per cent density.

In a letter dated 15th July,1994 addressed to the Minister, E & F, GOI, Sri Thapar, Vice-Chairman, Joint Committee on Paper Industry has given two models for raising pulpwood plantations (an euphemism for raising man-made mono-cultures of eucalyptus). Both envisage handing over of the possession of forest lands to industry. The proposal is silent over the question of parting any revenue or royalty to the government. Establishment of social forestry on 15-20 per cent of land is seen as rent. Purely from a commercial point of view, it may be more profitable for the government to auction land!

There is no mention in either the Government of India guidelines or the State Government's proposals or those from industry as to how the rights and concessions which people enjoy over these lands will be affected. As degraded forest lands are most likely to be protected forests, the issue of peoples' rights cannot be swept under the carpet. It is significant that the Government of Arunachal Pradesh, which has the second highest area under forest after Madhya Pradesh, has identified reserved forests of Paya and Digru located in district Lohit to be leased to industry. On the one hand, the Forest Conservation Act specifically mentions that the reserved forest land will not be de-reserved and the new Forest Act (which is still in a draft stage) bans not only de-reservation but disallows any form of Joint Forest Management on reserved forests, on the other hand control and possession over reserved forests is being handed over to private rich parties. It is feared that other States will also follow suit because industry will not like to get into legal hassles of dealing with rights and concessions of a large number of forest dwellers. Is it fair to surrender exclusive control over forests to the rich, and deny people's participation even on a joint basis? Politically too, it would be difficult to sell this idea in a country where there is so much of land hunger.

The past experience of granting leases to industries needs to be recalled here. Sometimes industries, in order to maximise production, used methods which are destructive to trees. An obvious example is extraction of resin from pine trees. Where industries held bamboo leases they utilised even the better quality bamboo for pulp, although according to rules, only inferior quality bamboo should be used as pulp, and the better quality should be sold to artisans. Furer-Haimendorf (1985) describes how a particular paper mill exploited bamboo in a tribal region by bringing in hundreds of labourers from different states and used methods of extraction which endangered future regeneration. Forest leases in favour of private parties still continue in Orissa despite the Forest Conservation Act.

Many countries such as Malaysia and the Philippines have experience of leasing out forests to logging companies. The general experience has been that bifurcation of ownership and management leads to faster deforestation and the arrangement is not conducive to long-term investment by either party. Moreover, political masters see such arrangements as patronage, and give concessions to the industry at a price. For instance, in many developing countries, the license fee is waived or its recovery stayed after the industry has paid "political subscription". Once possession over forest lands is transferred to the rich, such concessions appear justified in the interest of "sustained production". The suggestion that the management of forest lands should be given to private industry amounts to nothing but share cropping. A great deal of literature exists in agriculture on the evils of share cropping and leasing. In our own country, the abolition of intermediaries and the Zamindari system in the early fifties was based on the rationale that it is only owner cultivation which can maximise production, and that share cropping is inimical to production.

A FAO bulletin, The Challenge of Sustainable Forest Management (1993) concludes that privatisation in itself does not necessarily lead to the maximisation of public welfare, especially in the environmental area. A World Bank Report (1991) also states that the free interplay of market forces will not bring about socially desired outcomes.

Leasing of Forests to the poor

Although the Forest Conservation Act does not permit leasing of forest lands now, before 1980 a few experiments of leasing of forests to the poor were tried. One example is of the Bharatiya Agro Industries Foundation (BAIF), a large and reputed voluntary organisation active in work with poor farmers in several states. In Vansda Taluka of Valsad District in South Gujarat, 700 ha of forest land was leased out to tribals on the basis of usufruct. On each plot of land a tribal family worked to plant mango and other fast growing trees such as subabul, eucalyptus, casuarina and bamboo, and other varieties such as amla, neem, drumstick, mahua and jackfruit.

By 1987 over 51,00,000 trees had been planted on tribals' private land as well as on the leased forest land. By 1988 more than 5000 families from 40 villages had registered themselves under this scheme. Despite its best efforts, BAIF was not able to gain access to more degraded forest land, because of restrictions imposed by the Government of India on leasing of forest lands under the Forest Conservation Act. The tribals were

still keen to plant trees on their private land, so long as they got subsistence help during the first few years. This was arranged by the NGO. Since then, the scheme has continued on private lands.

Although, given good extension and proper technology, such schemes can be successful, yet leasing of forest lands on a large scale has several other implications. First, a great deal of private land, often with the poor, is uncultivated, but may be suitable for trees. More than 5 to 6 million hectare land has been leased to the poor in the last two decades. In addition, in semi-arid regions a great deal of private land is either uncultivated or yields very low output. The total area of such land is estimated at 35 m ha, which is comparable with the area of degraded forest lands (Chambers et al. 1989). Hence there is no case for further privatisation, unless suitable technological and institutional arrangements are put into operation to bring this huge chunk of land under trees or agroforestry. Second, privatisation may encourage the poor to plant short-term exotics, or use land for agriculture. Both forms of land-use for degraded lands are environmentally not desirable. The limited market demand is another constraint, amply demonstrated by the phenomenon of eucalyptus glut in north and west India (Saxena 1994). What is appropriate is to put degraded public lands under grasses, shrubs, bushes, or slow growing multipurpose trees, which, although yielding only low-value output, are environmentally more sustainable. This option, however, does not bring good returns commensurate with the individual efforts put in, hence the poor are unlikely to use leased lands for shrubs and bushes only.

Third, the number of the poor families is very large, and privatising in favour of some, while ignoring others, is likely to result in social tensions. Fourth, villagers have rights of collection on most of degraded forest lands, and privatisation would perhaps be against the existing settlement laws, and will be opposed by other villages, having usufructory rights in the concerned forest land. Fifth, the experience of some of the NGOs like Sewa Mandir in Rajasthan shows that they were more successful when they undertook afforestation of public lands, rather than of private lands. This is because the constraints in semi-arid monocropped areas are such that individual approach is less likely to succeed (it increases cost of protection for two reasons; first, mono-cropped areas have long fallow periods and therefore an individual's decision to plant perennial crops would entail higher protection efforts, an secondly, degraded lands are far from habitation which are difficult to protect without group consensus than working with groups.

A similar problem has been noted by Ostrom (1994) for range lands as she argues that privatising rangeland will require each herder to invest in fences and their maintenance, as well as in monitoring and sanctioning activities to enforce their division of the grazing area. If productivity of land varies a great deal from point to point or if rainfall occurs erratically, herders will not be self-sufficient, they will have to develop markets or seek insurance. Both increase costs which could have been avoided if the resource was managed jointly. The problems of dividing non-stationary resources like fisheries or water are even more complex.

And last, most of Forest lands are in tribal areas, where market penetration is weak, and the population per village is not high, and hence working with groups does not raise the kind of problems encountered in the handing over of social forestry plantations on non-forest public lands to the panchayats, where penetration of markets and large size of villages have eroded the cohesive nature of village society.

Recommendations

Of all the forest based industries, paper and other large industries consume just a fraction of forest products. Ninety per cent of forest raw material is processed by 23,000 saw mills and a larger number of cottage units. The policy so far has been to provide subsidised raw material to large industry whereas small and cottage scale industry have to suffer the vicissitudes of market forces. In addition, now the large scale industry is using its political clout to get possession over fertile lands. The proposal, to say the least, is grossly unjust. It deprives forest dwellers the use of forest lands, which they are legally and morally entitled to use, and it deprives farmers from selling their produce to the only market that exists, which is large industry.

Degraded forest lands require not capital investment, nor even higher technology, but protection and recuperation, which can be done only by working with the people, where industry has neither expertise nor

patience. The West Bengal experience shows that about 2000 peoples' forest protection committees have regenerated more than 300,000 acres of sal forests at no extra investment, simply by protection on the promise of sharing wood and non-wood products with them. If lands on which peoples' livelihoods are dependent are given to the industry, they may have to employ mafia gangs to keep people out, thus completing the cycle; in addition to politician - mafia nexus and politician - industry nexus we shall witness the rise of industry - mafia nexus.

Therefore, schemes should be initiated for linking farmers with industries, in ways similar to the linking of poplar growing farmers with a match factory in north UP This experiment shows that, with technological backup, timber size trees suitable for sawing can be raised on farm lands within 8 years. In fact, due to farmers' enthusiasm for growing poplar its enhanced supplies have led to the establishment of several plywood factories in that area, thus providing considerable downstream employment. Improvement in technology and extension is required for all farm forestry species, so as to result in production of thicker logs suitable for sawing.

Similar tie-up with farmers is being tried by the ITC-run Bhadrachalam Paper Mills in AP. The industry produces improved seeds, grows the seedlings in their nurseries, and gives them to the farmers for planting. Farmers get crop loans from the banks, and extension service from the industry. This example shows that improved planting material can improve productivity from 7 to 20 cum/ha/year. A minimum price is guaranteed to the farmers by the industry, although farmers are free to sell their produce to anyone they like. NABARD has rightly insisted on free choice for farmers, although industry would like the farmers to be bonded to them.

The recent upsurge in the number of companies offering private teak plantations to the urban rich is well known. This may be the only example in India where urban private capital is getting invested in rural areas; generally the flight of capital has so far been only from the rural to the urban sector, and, therefore, such schemes need not be discouraged. They have been able to get around the problem of ceiling on land by buying the land in the name of each investor. Paper and plywood industry, if desirous of acquiring large chunks of degraded forest land to take advantage of economies of scale, should learn from the experience of such private sector initiatives.

Even small farmers can be benefited if they are linked with industry for markets. Whether an activity would be economically viable for small and medium holdings or not depends on two factors; divisibility of inputs and scale of economies. Tree planting requires divisible inputs of seeds, fertilisers, water and labour. It is quite feasible to plant just a few trees on a small piece of land. Secondly, economies of scale favour small scale production, as it requires family labour in the off-season (for harvesting at least), uses land with little opportunity cost, and can be taken up along with agriculture in appropriate agroforestry models. The only disadvantage with small farmers is that of risk, which can be overcome by offering to the farmers proven technology and extension.

It is a myth that industry cannot deal with farmers directly. For several crops like sugarcane, potato, rice, cotton etc. industry has been in touch with the farmers for decades. No industry imposes a condition that farmers are bound to sell to that industry, as is being demanded by the paper industry in India. Such a restriction would mean exploitation of the farmers, and must be opposed.

It is not being denied here that there could be transitional problems in building up communications by industry with farmers. These were noticed in the case of supplies of eucalyptus from farms to paper mills. First, many mills are designed for bamboo, and not for eucalyptus. Because of a shortage of bamboo, the mills are closed, or running at low capacity. It was unfortunate that in many farm forestry programmes, like in Orissa and AP, no special emphasis is given to bamboo. Second, many others requiring wood are located in the east and south, where forest lands are located and where eucalyptus plantations were first started on forest lands. For them to transport wood over a distance of more than 200 km from the north-west would be uneconomic. Hence the paradox of abundant availability of raw material in the north and west part of the country, and low capacity utilisation of mills in the east and south of the country continues (Saxena, 1991). A practical solution would be to split the processing units; to establish a new pulp making plant close to farm

forestry areas, and transport pulp to the paper mill. Third, buying small lots from a large number of dispersed farmers requires the setting up of a new marketing infrastructure, whereas paper mills like to get large-scale consignments from forest depots. And last, it is not easy to obtain government permission to move wood bought from private sources, as restrictions exist on transport of wood in many states.

But these are temporary problems and can be sorted out by mills with the help of the government. Wherever paper mills are active in buying from farmers, it is observed that they are able to buy almost the entire marketed farm eucalyptus from the region. In districts Kolar and Bangalore of Karnataka, where the interest of farmers in growing eucalyptus continued for a longer period than in north-west India, a study shows that most of farm eucalyptus is being bought by paper mills. In Kolar, 97.5 per cent of privately grown eucalyptus was marketed, of which 97 per cent went to the Harihar Polyfibres; in Bangalore 92 per cent was marketed, all to the same paper mill. Similar preference in favour of the paper mill was noticed in the village Bagwala (about 20 kms from a paper mill in district Nainital, UP) in early 1991, as almost the entire produce from the village was reaching the mill gate. Of the total wood arrivals in Lalkuan wood market, 7 km from the paper mill of Nainital, almost 90 per cent was being sold to the mills (Saxena, 1994). This was perhaps because traders were able to achieve a large turn-over if they supplied to the mills.

It has also been suggested by industry that farmers should produce fuelwood for their own consumption, leaving industrial wood to be produced by the government or by industry itself. As argued in chapter 3, this model is just not workable, as fuelwood which has to be gathered by the vast millions of people has to come from public lands, whereas pulpwood and other cash generating raw material could be produced on farm lands.

It is well known that the New Forest Policy discourages the planting of commercial species on forest lands. Para 4.3.4.3 states that the domestic requirements of tribals and other poor living within and near forest of fuelwood, fodder, minor forest produce, and construction timber should be the first charge on forest produce. The first part of Para 4.9 of the Policy enjoins upon the forest based industry to establish a direct relationship with farmers who would raise the raw material needed for meeting the requirements of the industry. The amended Forest Conservation Act bans the planting of commercial species like tea, coffee, rubber and oil-palms on forest lands, so that the nexus between industry and forest lands may get further weakened.

Since the demand for marketed wood in India is limited, by duplicating the same species like eucalyptus on forest lands as on farm lands, we are ultimately cutting into the profits of the farmers, and thus undermining the farm forestry programme itself. It would be ironic if production of eucalyptus on farm lands, which would be far cheaper, is discouraged because of production of more expensive eucalyptus on government lands.

In a Parliament Question answered sometime in mid 1991, detailed reasons were put forward by the Ministry as to why forest land should not be allotted to industry. These were as follows:-

1. Villagers have traditional rights over forest lands. Assigning forest lands to industry would create resistance in the local village communities.
2. Degraded forest lands should be regenerated to meet local needs as a first charge.
3. For restoring ecological balance, mixed species plantation should be done, and not mono-cultures.
4. Industry should establish direct contacts with farmers, as provided in the New Forest Policy.
5. If paper industry is given land, it will lead to similar demands from the tea, rubber and spices industry.

As per a news item dated Sept. 27, 1991 in the Indian Express, the Ministry had declared in unequivocal terms that forest lands will not be leased to industries. One does not know of any new developments which should have changed the government's policy.

It is hoped that the GOI will keep the above factors in mind before deciding this issue. If the government does not settle this controversy quickly and keeps the hopes of industry of getting access to forests alive,

investment by the industry in setting up of a new marketing infrastructure for buying from farmers would never be forthcoming. In the interest of viable farm forestry, this appears to be the only option.

Chapter 8: Administrative Issues in Forestry

Suggestions to improve efficiency in the Forest Department

As a pre-requisite for the successful implementation of the new Forest Policy, the Forest Department will need to restructure its organisation and culture to meet the new challenges ahead and the demands likely to be placed on it in future. This needs a separate and comprehensive study, which is expected to define the broad nature, structure and detailed actions of the institutional reforms. However, some of the administrative problems which have been noticed in the field, and on which action can be initiated without waiting for a detailed study, are discussed below.

Policy - With a radical shift in the national forest policy, the Forest Department's responsibilities will have to redefined, its technological capabilities to effectively implement the new Policy need to be reassessed, and its linkages and overlaps with other departments and private organisations have to be urgently reviewed. In the absence of this, in most states 'business' has been as usual, and the new Policy has made almost no impact at the cutting edge level, nor has there been any improvement in the tribal - Forest Department relationship, which continues to be dominated by mutual antagonism.

Target fixation - One of the most serious problems is imposition of high and unrealisable targets of plantation by the Government of India. This has several implications. First, to show a high achievement of planting, little emphasis is given to natural regeneration, which is far cheaper and cost-effective. Similarly, fodder production, which cannot be measured in terms of saplings planted, suffers although it should be given a high priority. Second, the budget for planting released by the Forest Department is unrealistically low, and has not increased in the last few years despite increase in labour and other costs. There is an urgent need to appoint a technical committee to fix the norms in a more rational manner. Third, budget for protection is available only for three years, although looking at the field conditions it should be for five years. Fourth, as there is no system of evaluation of schemes, specially of its social contents, efforts which should be made to improve long-term viability of projects and to secure peoples' cooperation are neither monitored nor insisted upon. And lastly, many schemes, like eco-development and Joint Forest Management, although considered highly desirable, are not part of the state Plan Schemes in many states. The bulk of the funds gets earmarked for planting schemes, which have a low rate of survival, without taking a long term perspective. Most field officers feel that the way they spend money is not building assets at all, nor helping the people beyond giving them wages.

Rather than impose targets from the top, these should be based on a discussion with the field officers, and should reflect local conditions. Plantation should be a small component of the overall strategy of rehabilitation of degraded lands. Moreover, not so degraded lands can show quickest increases in productivity (of grasses and underwood) through soil conservation measures. Suitable indicators for measuring progress on these items need to be evolved.

Though perhaps not intended, the Government of India's unrealistic planting targets have constrained some state governments in not sanctioning any funds for Joint Forest Management and fodder development, as the entire plan funds get diverted to achievi ng unreasonable targets, which have questionable long term viability. A proper mechanism has to be worked out for fixing realistic targets.

Targets as well as budget should be communicated much before advance work is to begin. Late start would mean poor quality of seeds, little time in nursery preparation and over dependence on species which require only a few months at the nursery stage.

Financial procedures - There are two important problems here. The first relates to the timely allocation of funds from the Government, and the other to adequate financial delegation. There appears to be uncertainty about both, availability of funds and its timing. Sanctions are issued in the month of August or even later. In

one circle sanction was received on 12th March, which the Conservator surrendered, as he could not have utilised funds in the stipulated time. It would be best if targets are decided on the basis of five years, so that nursery activities can be better planned. To avoid the problem of untimely release of funds the DRDA pattern may be recommended, in which funds get transferred directly from the GOI to the districts on 1st April itself bypassing the state bureaucracy. Similarly, afforestation funds should come straight from GOI to Conservators. If a Project is approved for five years one sees no reason why the CCF does not have authority to sanction funds to the field, at least for the component which does not have "schedule of new demand" proposals.

The Divisional Forest officer is the key person in the execution of projects, therefore he should be able to take almost all operational decisions. But even when budget allocation is made by the Government/CCF, actual withdrawal still requires the Conservator's signatures or authority. Similarly, the DFO cannot buy polythene bags from the market, the tenders require the Conservator's approval. The present powers of a DFO in many states for technical works is only to spend upto Rs 1 lakh, and of a Conservator upto Rs 3 lakhs. These limits were fixed several years back, and need to be upwardly revised, especially if eco-development projects are to be conceived at the local level. These administrative matters take a lot of time of field staff, leaving little energy for extension or establishing contacts with the local people.

There is neither timely allocation of funds from the Government/CCF Budget, nor adequate financial delegation. Besides, there is uncertainty in the total allocation because of which advance works can never be executed with certainty. A forest official may receive funds from several departments, each having its own priorities and set of schemes. It has been quite common to have different prices for the same seedlings in the same area, or varying cost estimates for protection. It would simplify matters if all forestry funds were pooled and amalgamated with each other with a common set of objectives.

One of the reasons why fruit seedlings, which require longer duration to raise, are not distributed is the lack of certainty of budget for nurseries in the Department. Often money is available for nurseries only as a part of the plantation programme, and not separately. This is a short sighted policy, as it deters the officers from planting such seedlings which require to be kept for a long time in the nurseries. Survival would be much better if taller seedlings are planted. The Forest Department should start a Horticulture Division in one of their circles. In addition to the Department having many such nurseries and training centres for teaching grafting techniques, permanent nurseries can also be set up by NGOs, which can be used as extension and training centres.

Lack of specialisation - Forestry is a synthesis of wide-ranging and diverse subjects, such as tribal welfare, communication with human beings, biology, agriculture, and economics. Very few forest officers in India have specialised in tribal welfare, anti-poverty programmes, social implications of technological options in forestry, and other such subjects of human interest. A Service which is not aware of how it has affected the lives of multitudes of people, will ultimately be out of the mainstream of development. This lack of specialisation or interest may be one reason why in forestry today there are many non-technical advisers, and why they sometimes have better access to policy making positions. Even within the science of forestry, the IFS offers little scope to specialise. The system of administration in India is such that specialists (like sociologists), when taken in a department on deputation, are not very effective. Hence, the knowledge of other disciplines, if required within the Forest Department, has to be internalised.

Work load - There is uneven work load between different functional divisions, and officers are keen to move to territorial divisions. Officers in Social Forestry may be underworked but Territorial officers may be overworked. One suggestion could be to merge some functional divisions and create smaller geographical but multi-purpose divisions, especially for ecodevelopment and Joint Forest Management, as regular territorial forestry staff cannot cope with this as well as protection.

Transfer policy -One should categorize posts in field/state/centre according to the nature of duties and geographical location into A, B and C posts, and chart out the kind of mix that should dictate the average IFS officers span of career. In terms of postings, the fact that they are looked at as rewards or favour from the political masters, or that posts are available for the bidding needs to be changed. The very existence of

unimportant posts causes an unhealthy attitude amongst officers and divides them in their service interests which is exploited by politicians. In view of the vast number and gamut of jobs it is necessary in the short term to enunciate a transfer policy. This would obviate the feeling that certain officers always get 'plum' postings and avoid difficult areas, and would reduce the arbitrary nature dictating deployment of officers presently.

Short tenure - Powers and perquisites of different posts with similar salary structure need to be rationalised. With extremely varying perquisites and conditions of work, officers themselves put pressure on the system to move from a less important to a more important post. Very few officers are willing to work in the social forestry set up or at state head quarters, resulting in quick turn over. The USAID evaluation of the Madhya Pradesh Social Forestry Project, while analysing the reasons for the failure of the programme, commented, 'A critical factor has been the number of turnovers in the top position of SFD over the past four years. The Director's post has been used as a "port of last call" by the Forest Department for the last one year. Three times, persons who were on the verge of retirement were appointed as Director to hold office for a few months. The organisation is only three years old and is about to receive yet a fifth Director. Generally few top positions (conservator level and above) have been held by an incumbent for the full tenure of three years'. The situation seems to have worsened after the withdrawal of the USAID Project. Between January 1985 and April 1993 there have been 12 CCFs in social forestry in MP, giving an average tenure of only 8 months. In 9 out of 12 cases, the stay was even less than 9 months, thus making a mockery of leadership which was to be provided by the incumbent.

A malaise afflicting the IFS is the instability of tenures, leading not only to a lack of sense of involvement but also to the inability to contribute effectively to amelioration of the system. Transfers have been used as instruments of reward and punishment, there is no transparency and in the public mind transfer after a short stay is categorised as a stigma. Officers who are victimised are not in a position to defend themselves. Internally the system does not call for any reaction to explain one's conduct, while externally public servants are debarred from going public to defend themselves. It is in this context that it is crucial and critical to remove uncertainty and imbue the officers with a certain security of tenure in every post, barring cases of promotion. In order to ensure this it is proposed that the Conduct Rules be amended to include 'transfer below two years' as a minor penalty.

A less radical way to minimise transfers is to impose a condition that the average tenure of all officers of the rank of conservators and above will be at least 24 months. While in an individual case the government will have unfettered powers to transfer and move officers, as they have been doing so far, it will have to ensure that the average of all officers stays above 24 months. This will ensure that for each quick move, many others enjoy a security of tenure.

Overstaffing - Despite a ban on fresh recruitment by the state government, which gets repeated every year, the staff of the Forest Department in Madhya Pradesh has increased from 25,000 to about 40,000 in the last fifteen years. The non-plan expenditure in the department is about five to six times the Plan expenditure. Similar must be the position in other states too. Hard decisions are required to reduce inefficiencies and overheads. Some of the functions of the department, like supplying fuelwood to urban depots, can be left to the market operations, thus effecting reduction in workload and staff.

Publicity - There is lack of information and publicity about procedures, laws and rules affecting common people. Even officers are sometimes not aware of latest instructions. This lack of clarity hampers cooperation which is sought from the people. A list of laws affecting common people should be prepared in the local language.

Monitoring - A major paradox for the FD is that the forests are to be managed by management plans, procedures for which have been officially established, but the funding to work in the forests comes, not in relationship to the management plans but by "schemes." The funding of schemes amounts to a kind of prioritising by the government (or to a certain extent by donors). The Five Year Plans identify the plan priorities and fund requirements, while the annual plans and budgeting exercise determine the actual disbursal of funds. At times, because of shortage of funds, not all the funds approved under annual plans

may be released. Thus the present situation is such that, not all the needs of forestry are met through the planning process, as the implementation of working plans is curtailed by approval and release of funds. The State and Central Government's commitment of funds is based on "schemes" and these do not necessarily cover all the needs of all the working plans. Thus financial planning is divorced from physical area planning. One of the more serious lacunae seems to be in funding of routine silvicultural maintenance activities for existing stands, both natural and plantations. Thinning, clearing of vines and creepers, and the like are sometimes not done for want of funding. It appears that the emphasis should change, at the highest level, from funding primarily new plantations to regeneration through taking care of existing forests.

The primary monitoring activities of the FD at present have to do with fiscal accountability. While it is necessary, it should not be allowed to overshadow the need for technical and resource monitoring and planning work accordingly. At present, it appears that there is great pressure on the FD as a whole to account for money spent and man days spent in terms of ha of trees planted, numbers of tree-smugglers prosecuted, etc. but not in terms of longer-term results, because those are not monitored. The fiscal responsibility has to do with the funding, annual allocations and 5-year allocations, but the business of producing trees and keeping forests healthy requires a longer-term perspective. Under the current monitoring, emphasis is laid only on the initial expenses. After five years, little is done or monitored. This is partly responsible for the poor state of many plantations.

Secondly, when money has been allocated for a particular activity in a particular area, it is assumed that the work in question has been done, and that it was sufficient. This ignores the fact that either of the above assumptions could be wrong. In addition, other forces come into play, primarily the gradual thinning and cutting of trees by local people. The latter may necessitate going back into an area and replanting trees or cutting back coppices to fewer numbers of shoots, clearing brush, etc. to reduce the impact of the damage done. In either case, it may be difficult to get funding to go back into the same area where work was done, not so long ago, previously. This is short-sighted as it affects the condition and productivity of the forests dramatically.

Officers at all levels in the Forest Department spend a great deal of time in collecting and submitting information, but these are not used for taking corrective and remedial action, but only for forwarding it to a higher level. This defeats the very purpose for which information is collected. There is no periodic evaluation of schemes at present.

Every forestry project has stated in its objectives that it wishes to help the people, and often they get nothing beyond wages. One way to avoid this would be to collect information on a matrix like this:-

Table 24: Benefits to different sections of society from the project (excluding wages)

Beneficiary	**Before the project**	**1st year**	**2nd year**	**3rd year**	**nth year**
Poor men					
Poor women					
Headloaders					
Other Villagers					
Contractors					
Urban Markets					
Etc.					

This will ensure that intended benefits do really flow to the needy people.

Evaluation - There is no periodic evaluation of schemes at present. Many schemes have continued for decades without any evaluation, although they may have lost their utility. Efforts which should be made to

improve long-term viability of projects and to secure peoples' cooperation are neither monitored nor insisted upon. Even when an outside agency is engaged for studies (due to pressure from the donor agencies), the department takes little interest in finalising the research issues or in helping the organisation during the course of data collection. The net result is that either the study is not sufficiently analytical or even when it is so, the study is hardly read or put to use.

Seasonality - Very few works are done in the monsoon months due to lack of release of funds. These are the months when the poor are very short of cash and grain, and therefore, are forced to do headloading. If works can be taken up in these months, pressure on forests can be reduced to some extent.

Coordination - The inter-relationship of various divisions within the Forest Department, and their linkages with the district administration need to be worked out. More important is the issue of coordination between the Forest Department and departments dealing with Tribals, Rural Development and Women. Unfortunately in many states, there seems to be no tradition of joint meetings of these departments to sort out policy differences, that is, other departments do not critically assess the forest department's policies nor do they suggest alternatives. Governments spend millions of rupees in the name of tribal upliftment. However, tribal policy and forest policy, despite the rhetoric, have never been integrated so far. They run on parallel tracks. Whereas the policy in Tribal Development is to give new skills and assets to the tribals, forest policy tends to reduce the access to and value of the existing assets for the tribals.

Returns and meetings - Too many returns and meetings are prescribed, which serve no purpose. These need to be reduced. Reporting workload should be standardised so as to be compatible with computer based MIS. An evaluation study (Om, 1986) of the work of the Tamil Nadu social forestry staff revealed that Range Officers devoted only 6 per cent of their time to extension, against a target of 40 per cent, the shortfall being attributed to preoccupation with administrative matters, mostly filling of returns, attending meetings, and looking after senior officers.

Ecodevelopment - This may require expertise in subjects not available with the department at present. Pilot experiments should be tried and lessons learnt, on getting staff on deputation or subcontracting the work to other departments, for replication elsewhere.

Internal culture - The internal culture of the Forest Department has continued to be hierarchical and authoritarian. Unless their work culture changes, they are more likely to view peoples' committees as their adjuncts and subordinates, to be used at best for protection of forests, rather than for promoting genuine partnership. Until senior officers learn to listen to their juniors they will not be able to listen to villagers. Therefore to undertake peoples' participation, the FD would require to change its attitude first.

Training - The Indira Gandhi National Forest Academy at Dehradun and the Rangers Colleges in the states continue to teach a curriculum that has changed little in the last 100 years. Revenue raising as an objective has still not been given up by the State Forest Departments. Even when the Government of India 1988 Policy does not give this objective any priority, it is still ingrained in the minds of the staff due to old traditions. Therefore these institutions should modify their curriculum to incorporate the social skills and the changing silvicultural and evolving administrative concepts.

Approach towards ‘naxalism’ - Many forested districts in Central and south India are facing the problem of naxalism. The Forest Departments in these states do not seem to have any coherent policy to deal with the issue. For instance, 55 per cent of the area of Bastar district has been declared as forests. Before 1988 the naxalite influence was confined to Jagdalpur alone, but now it has spread to the entire district. According to an official note prepared by the Forest Department, it has not only affected forest works, it has also broken the morale of the officials. Out of a total number of 458 coupes in the district, 124 coupes are totally closed due to the naxalite menace. In three divisions of South Bastar, West Bastar, and Narainpur no contractor is willing to carry on transport operations. Opinion within the state governments is divided whether to treat the naxalite problem as a purely law and order issue, or as a socio-economic problem arising out of neglect of the genuine problems of the tribals. It is in any case a complex problem, not amenable to quick solutions, but

the Forest Department must decide its own role, specially because many demands and grievances of the 'naxalites' concern it.

What is more worrying is the attitude of the department towards peaceful organisations, often referred to as activists. These organisations purport to fight against corruption of the local administration and organise the tribals and other poor people for right of access to forest resources. Some of the officers of the Forest Department like to brand them as naxalites, so that these may also attract the might of the state power, although there is no evidence that these organisations are armed, or have any plans for organising large-scale violence. One positive effect of their activities is increased awareness of the local people, which can be harnessed in JFM activities. It is ironic that the department is trying to create awareness in areas where the population is very subdued and lacks confidence to express itself, but shies away from ready-made groups, because they would like to deal with the department on an equal basis. We need to study this, and devise means to promote JFM with their support. This is possible only when there is better understanding between the forest officers with such activist organisations.

NGOs - Many states have formed working groups for implementation of the Joint Forest Management programmes. NGOs are generally members of these groups, and they help the administration in documentation, research or field level implementation. There is no such tradition of working with the NGOs in many states. The modalities of their cooperation need to be worked out. In the absence of workable institutional mechanisms for their involvement, it is feared that NGOs may be deprived of the contributions that they can make.

Some thoughts on Forest Development Corporations (FDCs)

There are 26 FDCs in the country employing 19047 permanent employees. The main function of the Forest Development Corporation in many states has been so far to convert 'low' value degraded miscellaneous forests into 'high' value teak and bamboo forests. The total plantation area with the FDCs is 1.24 m ha (Chaturvedi 1991). In view of the new Forest Policy and the ban on clear felling, this role needs to be radically changed. Commercial plantations increase hostility between government and the tribals. In many places, people have organised themselves and resist planting of commercial species on forest lands, and have even uprooted seedlings. No long term strategy seems to have been evolved to deal with this issue. The experience of AP, shows that awareness among the tribals is likely to increase in future (as it should), and that they can no longer be taken for granted in the matter of choice of species. Despite the popularity of teak in the Forest Department in AP, it was difficult to protect teak in natural forests, as it was being smuggled and stolen at a very fast rate. The experience of Maharashtra and Gujarat is that after teak is ten years old, villagers cut it illegally and take it away. Thus planting teak encourages smugglers or indisciplined behaviour. The future of pure teak plantations, which take 60 to 80 years, is therefore bleak in India. One-third of the total growing stock in Madhya Pradesh is in one district alone, Bastar, where there should be no shortage of fuelwood and other forest products, and yet it is ironic that foresters - tribal relationships are at their worst in Bastar, thus suggesting that the real issue is not shortages of fuelwood and fodder, but larger issues of control and objectives of management of forest lands are involved.

Corporations were created so as to attract bank funds, and create additionality of resources for the government. This objective has also not been met. In the last twenty years, they could obtain loans worth Rs 194 crores only (Chaturvedi, 1991). IFS officers do not consider serving the Corporations as of utility to them for their future prospects. The tenure of the chief executive of the Corporation has generally been short.

Other options - Forest Development Corporations were created when government policy was to promote commercial plantations on forest lands. The imperatives of the new environment and livelihood oriented forest policy of 1988 would require drastic changes in the charter of the FDC. Our suggestion is to convert them into exclusive NTFPs, Fodder and Fuelwood Development Corporations, as commercial plantations on forest lands is to be discouraged now. They could undertake fuelwood plantations on degraded revenue lands too, specially close to human habitations. The FDC could also take over responsibility for nursery development and seed production, especially of grasses and legumes, for which demand is likely to increase

in view of increased importance being given to fodder from forest lands. The Corporation could also concentrate on roadside and railway line plantations, for which there is ample land available.

The other suggestion is that the FDC should promote high quality timber production on private lands through extension and marketing support. The FDC may also consider attracting private capital (just as many private teak companies are doing) from the urban rich, and invest on teak plantations on private (but not forest) lands. If private companies are able get over the problem of land ceiling, it should be far easier for a government company to do so, without asking for a change in the present ceiling laws. These would be in the nature of captive plantations, but on private lands and within the present legal framework of land laws. The Government may even consider giving the FDC suitable bank guarantees in order to facilitate loans from Indian banks.

Sustainability of forestry projects

Sustainability in relation to forestry on public lands has several facets.

1. Social sustainability refers to the acceptability of the project in the village environment: If the project is not accepted by the village as a whole, the risk is high that the mistreated factions,- be they the poor or the better off,-will destroy the efforts to create assets for the benefit of all villagers. Similarly, if one village benefits from the project while others in the vicinity are left out, the latter may destroy plantations, intentionally or by indifference.
2. Economic sustainability could refer to unit costs. If plantations are too expensive to establish, they will never be viable/ replicable without heavy subsidies by the Government and/ or foreign donors. Such an investment may not be forthcoming in subsequent years. It could also refer to marketing possibilities: forests raised by regeneration or plantation and their produce have a value that can be maximised only if a market exists.
3. Technical sustainability refers to a wide range of aspects; soil preparation, choice of appropriate species, and fencing belong to this category.
4. Organisational sustainability could refer both to the Government's administration and the village level establishment. If the wing executing the project is weak, if other departments are uncooperative, VFCs/ FPCs are lethargic, then the scope for sustained forest development is very limited indeed.

Our field visits have indicated that many constraints make the sustainability of forestry projects a bit uncertain. Inter- and intra-village competition for scarce resources threaten the social sustainability. High costs in respect of components related to the establishment of new plantations, no cost sharing with the villages benefited by the project, as well as very limited possibilities to market forest produce threaten the economic viability. Insufficient training - both in quantity and quality terms - and poor performance in regard to participation hampers the technical sustainability. The transfer system, the principle of operation on the basis of physical targets-in particular planting up of new areas - and the management by Government orders model reduce the scope for the FD to achieve best results. Similarly poor understanding of village forestry issues and lack of training, weakens the VFC/ FPC's chances to take over responsibility for assets created under the project. Without these changes, organisational sustainability is questionable.

Chapter9: Summary of Main Recommendations

Rapid expansion of forestry programmes has taken place in India in the last two decades without growth of systematic knowledge about how and why they affect rural people. There is, as yet no identification of the key factors that must be evaluated, so that the outcome of forest management in different ecological and socio-economic conditions can be explained, predicted or improved. The present book, based on a Workshop held in July 1994 at the National Academy of Administration, Mussoorie, and in which experienced people from the field as well as policy making positions participated, seeks to review the existing policy and implementation issues, and makes practical recommendations, which may be of some value to policy makers, state governments, donor agencies, and field officials. These are summarised in this chapter.

The limited success of social forestry on non-Forest lands in India during the period 1975-90 led the planners and donor agencies to shift attention to Forest lands, which form the bulk of India's uncultivated (but capable of supporting vegetation) lands. Fortunately, the Government of India, in 1988, revised the old timber-oriented forest policy, and requested the state governments to treat subsistence requirements of the forest dwellers as first charge on Forest produce. In pursuance of this objective, the Government of India recommended to various State Governments in June 1990 to encourage the involvement of village communities and voluntary agencies in the protection and management of Forests. However, Joint Forest Management should not be seen as a panacea for deforestation or for alleviation of rural poverty. In itself Joint Forest Management sets out the minimum conditions necessary for halting land degradation. Whether it will succeed, and where, may often depend on efforts made to increase productivity of land other than degraded forests: forests remote from villages, non-forest village commons, and private lands. Therefore, the strategy for rehabilitation should be multi-pronged, taking into consideration all forms of culturable lands. Some of the key issues examined in this book are summarised below.

Forest lands

- Between revenue and Forest lands the latter should get a higher priority for funds. Compared with departmental forestry on revenue lands, there are obvious advantages of scale and protection. The ambiguities of ownership which have plagued social forestry would not apply. Forest soils are generally better than the soils on revenue lands. Costs would be lower. The morale of the Forest Department would be higher, since the trees would be planted within the territory they are familiar with.
- The two main components of afforestation, farm forestry and afforestation of Forest lands, should have different objectives and approach. Farm forestry and agroforestry should aim at maximising sustained economic returns from land, whereas public forestry should aim at maximising welfare through production of such commodities like fuelwood, fodder, NTFPs, etc., which are needed by the people. The choice of species, though subject to agroclimatic and technical considerations, would also be different for the two programmes. Short duration exotics, which give high market value would be suitable for farm forestry, whereas species which have their value in the crown, and not in the stem would be suitable for public forestry. Slow growing but naturally occurring timber-value species like sal and teak should be regenerated or grown mixed or interspaced with a lower storey of vegetation.
- Norms for silvicultural practices were developed in times prior to the current scenario of high biotic pressures, and must now be adjusted accordingly. If the national objectives have changed to prioritise people's needs, there must be an accompanying change in silvicultural practices and technology. Timber is a product of the dead tree, whereas NTFPs come from living trees allowing the stem to perform its various environmental functions. Moreover, gathering is more labour intensive than mechanised clear-felling. Hence in a poor country, NTFP based forestry will be more sustainable than timber-based forestry.
- This would be reversing the priorities as were traditionally understood between what is the main product and what is the by-product. Choice of species and management should be radically changed

to suit the new policy. From Forest lands, grasses, leaves, twigs, legumes, wild fruits, MFPs, and nuts should become the main intended products, and timber would be a by-product from large multipurpose trees. For quick benefits to the poor, long gestation trees should be supplemented with an understorey of grasses, bushes and shrubs so as to satisfy their immediate needs.

- Outside each Forest coupe there should be a notice board publicising what rights people have as regards collection. The colonial tradition of secrecy must be given up. A simple notice in JFM areas that, "the community has full rights of usufruct and 50 per cent rights on wood", may in itself, change peoples' attitude towards forests.
- Similar to the Government of India's Forest Conservation Act, the State Governments may consider using their law making powers to increase the price of raw material from forests to industries to bring it to par with the market prices, and restrict subsidies only to cottage industries and other local users. The industry should encourage farm forestry by following the sugarcane model, rather than depend on government supplies.
- The proposal of leasing Forest lands to industry, to say the least, is grossly unjust. It deprives forest dwellers of the use of Forest lands, which they are legally and morally entitled to use, and it deprives farmers from selling their produce to the only market that exists, which is large industry. Both eucalyptus and bamboo, required by the paper industry are short rotation crops, eminently suitable for farm forestry. Degraded forest lands require not capital investment, nor even higher technology, but protection and recuperation, which can be done only by working with the people, where the industry may not have any expertise.

Revenue lands.

- · The present practice of "taking over" common lands by the FD should be stopped, or drastically reduced to experimental projects. Funds for afforestation should be transferred to the village community. The role of the Forest Department would be mainly extension and technical support.
- · Generally only a small area is available in the village. If afforestation is left to the panchayat, it would take up only a small portion, and thus plenty of area would be left to be used by the poor for grazing.
- · Where panchayats represent several villages, single village organisations should be created. Finally, distribution of produce is better done on the basis of one household one share.
- · Model afforestation schemes should be prepared for implementation by the panchayats. These should be widely circulated, and panchayats should be encouraged to apply for funds. Such panchayats which are capable of looking after plantations should be given funds in the first instance. Their example and good work should then be publicised so as to encourage many others to take advantage of the schemes.
- · As production of grass increases through afforestation of public lands, greater attention should be paid to its storage, so that fodder is available in lean months too.
- · Often degraded lands are available in larger chunks, but these are not taken up as the cost of reclamation would be high. However, in the long run, it is better to afforest these, as they have better demonstration effect, satisfy local demand, and offer better management possibilities.
- · To preserve the control of the village communities over their lands, as regards land use classification, it may be advisable to create another category in the nine-fold revenue classification and call these lands by some name other than forests, such as groves or agro-trees.

Farm forestry

- · Private forestry requires security of land and tree tenure, and secure access to markets. The restrictive laws on harvesting, movement and sale of forest products must be abolished. Similarly, land records should be corrected, and security of land tenure assured to the poor.
- · The government should stop subsidies on government supply of wood to industries, thereby forcing industry to buy from the farmers at a remunerative price. The new Forest Policy endorses this

suggestion, but in many states, subsidies still continue. Since the demand for marketed wood in India is limited, by duplicating the same species like eucalyptus on Forest lands as on farm lands, we are ultimately cutting into the profits of the farmers, and thus undermining the farm forestry programme itself. It would be ironic if production of eucalyptus on farm lands, which is far cheaper, is discouraged because of production of more expensive eucalyptus on government lands.

- · Schemes should be initiated for linking farmers with industries, in ways similar to the linking of poplar growing farmers with a match factory in north UP This experiment shows that, with technological backup, timber size trees suitable for sawing can be raised on farm lands within 8 years.
- · The subsidy on seedlings is unnecessary. The main thrust of the government's intervention in seedlings should be to ensure that pedigree seed is used with regard to all species selected. A suggestion is often put forward to have a two-tier pricing system, more subsidy for the poor farmers, and higher prices for others. This is unworkable, leads to corruption, and large-scale abuses. If the subsidies have to continue, there should be one price for all, but seedlings in no case should be distributed free. Free distribution leads to bogus reporting too.
- · Farmers should have a range of other short-rotation, high-value species beside eucalyptus and acacia on their land, which meet their various needs, and spread the risk of the collapse of any one market. Economics of each model should be worked out for several future years. This would require assessment of future demand, supply and prices, separately for each species, to be made by competent organisations, and given due publicity. This will help small and marginal farmers to decide what to plant. Diversification in species will also be environmentally better.
- · Temporary nurseries are able to supply only such seedlings which can be raised in a short time of three-four months. Many high value trees, like teak or fruit species, require seedlings to be at the nursery stage for a longer period. Hence, temporary nurseries should be replaced by permanent nurseries.
- · The focus should shift from replacement farm forestry to complementary agroforestry. Replacement farm forestry should be, however, advocated if land capability dictates such landuse.
- · Farm forestry in semi-arid areas cannot be seen as a private activity with no emphasis on group consensus. A group approach has to be followed for reaching consensus on cattle grazing. The West Bengal Group Farm Forestry Scheme should be a good model.
- · All trees are not environmentally or socially beneficial, and, therefore, the impact of private trees on soil and water regimes, as well as on labour absorption should be taken into consideration in sanctioning a project. A free-for-all approach is socially and environmentally harmful.
- · Although the government may start direct buying from the farmers, it can never eliminate private trade. Therefore, rather than try to mop up an insignificant part of the market supplies, government organisations should inform tree farmers about the primary and secondary markets, prevalent prices, marketing practices and laws.
- · It is difficult to rehabilitate degraded lands without introducing moisture conservation and water harvesting measures. Such measures are needed for all rainfed areas put to biomass production. One should adopt in-situ moisture conservation practices through planting of suitable grasses and trees which may also provide sufficient protection against erosion.

Peoples' participation and JFM

In many states, villages distant from forest areas have rights. In other cases, a forest patch does not have a well-defined and recognised user-group, admitting the rights of the entire population of that region or the entire forest area. This kind of a 'right-regime', which makes forests open-access lands, is not conducive to successful protection, as rights of contiguous villages protecting forests may come in conflict with those of distant villages, not protecting but still having rights to enjoy usufruct. Therefore, at least in JFM areas, settlement and usufruct rights should be reviewed in order to put them in harmony with the 'care and share philosophy' which is the basis of JFM.

- · Peoples' participation should be promoted by enabling the people to have usufruct of intermediate and a definite share (say 50 per cent) in final produce, on the Arabari pattern. Complete control by the people on decision making on public lands is an ideal which can be achieved in stages. The initial point of intervention is labour-intensive trees and sharing schemes which strengthen peoples' organisations, and it would then be possible to transfer greater management responsibility to them.
- · Target fixation should be realistic. Local officers and village communities should be free to move at their own speed, and select their own components which will help in establishing decentralised management systems.
- · In some cases, the strategy of natural regeneration alone may not be enough to give sufficient usufruct to the people. May be, if a small plantation of species desired by the people is taken up, the perception of the tract's value may increase, and every one may cooperate to keep livestock out.
- · Not all social groups are hit equally by the decision to keep livestock out of the enclosed area. Such vulnerable groups should be identified, and help should be given to them by providing employment in forestry works.
- · For low income rural families to participate, it is important that benefits start flowing as early as possible. Therefore the Plan must aim at regenerating grasses, or such species where benefits by way of fruit, or twigs, etc., are available in a short time. Storage facilities for grass may help in making it available during the lean dry months.
- · Greater budgetary flexibility is needed so that the FD may respond to sudden but acutely felt needs, like water shortage, irrigation problems, and the disruption of communications.
- · The traditional role of a forester, as a mere custodian of forests, should give way to one of a manager charged with certain social objectives. The villagers should be regarded as an important asset and a resource. This change in attitude can be attempted through training.
- · For marketing NTFPs, the government should not have a monopoly, as nationalisation does not help gatherers in the long run. Monopoly purchase by the government requires sustained political support and excellent bureaucratic machinery. It is difficult to ensure these over a long period and hence nationalisation has often increased exploitation of the poor. It is better for the government to regulate private trade, inform tribals and gatherers about the prices prevailing in different markets, improve marketing practices, and act as a watchdog rather than try to eliminate private trade. Where the government alone does marketing it is inefficient; and where it is left to private trade, it is exploitative. It is better to allow private trade and government buying to co-exist, as it happens in the wheat purchase scheme in north India.
- · Given the sex segregated and hierarchical nature of Indian society, separate women's organisations and staff are needed to work among women, to instill confidence in them, so that they can fight for their rights. Therefore, whenever there is recruitment, more women need to be recruited in the Forest Department. The village level committees should have adequate and equal representation of women. Forestry staff should be sensitised on gender issues through orientation programmes. As women in many societies still feel inhibited in expressing themselves in mixed gatherings, each committee should have a separate women's cell for raising their consciousness and for improving their skills. The quality of women's participation and the control they exercise over decision making processes is more important than the sheer number of women present in such bodies. Discriminatory land laws which prohibit women from owning land should be changed.
- · NGOs and voluntary organisations should be associated to provide an interface with local people to promote joint forest management programs or to settle forestry related disputes.

At present, the Forest Department can cancel or dissolve FPCs. The mechanism of this dissolution may be worked out in more detail so that the order does not appear as arbitrary.

Administrative measures

A merger of Social Forestry and Territorial Divisions will be more in tune with the new integrated projects. It will also cut down administrative costs.

- · Funds for afforestation are received from several departments, each having its own priorities and set of schemes. It has been quite common to have different prices for the same seedlings in the same area, or varying cost estimates for protection. Release of funds is also ad hoc. It would simplify matters if all forestry funds were pooled and amalgamated with each other with a common set of objectives.
- · Forest Development Corporations were created when government policy was to promote commercial plantations on forest lands. The imperatives of the new environment and livelihood oriented forest policy announced by the Government of India in 1988 would require drastic changes in the charter of the FDC. One suggestion is to convert them into exclusive MFPs, Fodder and Fuelwood Development Corporations, as commercial plantations on forest lands are to be discouraged now. The other is to make them promote high quality timber on private lands through extension and marketing support.
- · It would be best if targets are decided on the basis of 5 years, so that nursery activities can be better planned.
- · There are two important problems relating to financial procedures. The first relates to the timely allocation of funds from the Government, and the other to adequate financial delegation. To avoid the problem of untimely release of funds, the DRDA pattern is recommended, in which funds get transferred directly from the GOI to the districts on 1st April itself, bypassing the state bureaucracy.
- · The Divisional Forest officer should be able to take almost all operational decisions. But even when budget allocation is made by the Government/CCF, actual withdrawal still requires the Conservator's signature or authority. These administrative matters make heavy demands on the time of the field staff, leaving little energy for extension or establishing contacts with the farmers.
- · Conduct Rules be amended to include 'transfer below two years' as a minor penalty.

The Forest Service in India has undergone great changes in the last ten years. Exposure to new ideas and working with the people has produced a new generation of young Forest Officers whose mindsets are entirely different from their predecessors. It is clear that more radical orientation towards giving property rights to the communities and accepting a reduced role of a facilitator for the Forest Service is likely to be a lengthy process, but we should be able to enter the 21st century with a vision of the future.

Annexure-I

INDIA POLICIES AND ISSUES IN FOREST SECTOR DEVELOPMENT

Executive Summary

1. Vision. Indian forests are important because they provide fuel, fodder, some food and income to rural people as well as timber, environmental services and watershed protection. These forests are continuously degrading due to high pressures on the resource (India has only about 0.08 ha forest per capita). The approaches tried to address forest degradation have not been adequate to protect the resource to the extent required. If Indian's forests are to have a chance for sustainable management a new strategy is needed. This report outlines elements of such a strategy. It involves making villagers partners in forest management, stimulating the private sector to more actively take part in forest development, adopting improved technologies on a wide scale reviewing the forest administration to ensure effective implementation of forest policies, and setting development priorities based on the costs and benefits of different options.

2. Bank Strategy. The Bank is at a turning point in its lending for forestry in India. In the past, forestry projects in India supported mainly social forestry and watershed development activities. But such programs have had mixed success, and are inadequate in scope to address the complex issues affecting forests. A broader approach is needed which will protect and improve existing forests, and encourage private forestry. The bank's forestry strategy has changed recently to focus on sector-wide projects combining policy reforms and support for a wide range of forestry investments and related activities at the state level. Two such forestry projects were approved for India in Spring 1992 following extensive study of issues affecting sector performance in the states of Maharashtra and West Bengal. Further state forestry projects are envisaged over the next few years. This review provides an overview for Bank staff and Indian policy makers to understanding and finding ways to address key forestry issues. It builds on experience gained through Bank projects world wide and uses case studies from the above mentioned Indian projects to illustrate issues and potential solutions. The review will be updated as more experience is gained in the sector.

3. Forestry Performance and Problems. Indian forests are under immense pressure to supply forest products to a growing population (850 million) in a land scarce situation. The Forest Departments are trying to protect 22 per cent of India's land area. This has proved very difficult through the traditional methods as mentioned above. Many poor people living in and around the forests depend heavily on them for subsistence needs and income from gathered forest produce. Forests are not equally distributed in India. Some areas still have quite considerable forest resources, while others have none at all. Fuelwood is still the most important form of household energy in both rural and urban areas and represents 90 per cent of the demand for wood. As the population and incomes are increasing, the demand for fuelwood as well as other forest products is growing rapidly. The fuelwood deficit is large and the forest industries are facing raw material shortages forcing them to operate well below capacity Forests have been overexploited to meet the various demands, including illegal removals which is one of the reasons why productivity in natural forests and plantations is low. A large part of India's livestock population grazes in forests which causes serious damage to regeneration and young plantations but there are no realistic management alternatives yet. Forests are also the only remaining source of agriculture land and encroachment and shifting cultivation of forests are prevalent.

4. Issues. There is a tremendous urgency to finding ways to manage forests sustainably in the face of current pressures and to augment the raw material production. Despite large-scale wasteland afforestation and farm forestry schemes the production from those areas has not significantly relieved the pressure on forests. Four sets of interrelated issues are key to breaking the negative patterns leading to continuous degradation of the resource. These issues encompass : (i) interactions between people, forests and the environment; (ii) financial and economic incentives for sustainable land management including forestry and tree crop development; (iii) technological factors that limit the yields that can be obtained; and (iv) the

institutional framework including the respective roles of the public and private sectors in forestry. Although many of the forestry programs that were taken up during the past decades have worked reasonably well there are still many areas of possible improvement.

5. While the needs of local people have been taken into account in designing forest plans, people have not been sufficiently motivated to cooperate to reach development goals. Furthermore, the village forests which used to supply them have vanished thereby increasing the pressure on public forest lands. A new approach has been identified in which villagers, particularly local women, and the forest administration become partners in forest protection and management. The approach requires further development and adoption on a wider scale. Without providing options that allow people to obtain the products they need in a sustainable fashion, they will not protect any forest areas. While fringe forest populations are users of the forest resource they are also the first line of defense against illegal extraction. Mutually reinforcing links exist between increasing populations, insufficient agriculture growth and environmental degradation in marginal areas of India.

6. The private sector has not contributed as much to developing the forest sector as it could have done with clear incentives. Farm forestry development has considerable potential. However, a number of government regulations and practices make farm forestry less profitable than it could be and has contained development of industrial forest resources by both farmers and industries. Protection of the forest based industries, aimed at developing them, has led to a situation where many industries are relatively small in scale and obsolete technologies are still used. Consumers pay for this inefficiency through higher prices and scarce forest resources are wasted. Pricing and marketing of forest product also needs attention. Provision of raw materials on highly confessional terms to forest industries has led to high demand , wastage of raw materials, and a large loss of revenue to the states.

7. Afforestation programs on public as well as private lands have suffered from technological weaknesses which have limited the productivity and the impact of those efforts. Forestry technology needs to be improved in India. The most Important gaps are : the quality of planting materials; lack of appropriate models and modalities for regeneration of degraded forests with people's participation; planting practices and a range of models for commercial and farm forestry production; and a weak information transfer process. There has not yet been any widespread success in involving women in forestry initiatives, even though they constitute a group that has much to gain from increased access to forest products and income-generating enterprises. Many of the identified weaknesses stem to some extent from institutional and financial constraints within the forest administration.

8. The public sector has attempted to take on all roles in the sector (policy maker, protector, producer, extractor, processor, provider of products, etc.) but that is a nearly impossible task. Government policies and investments have not induced people to adequately manage or develop forest resources and policy impact analysis has not been sufficient. Although large -scale afforestation efforts have been made outside designated forests the investments have not been adequate to sustain the resource. Forestry development has further been affected by fragmentation of programs, contradictions and overlap among them. An effective policy can only work if there is an adequate institutional structure and capacity to implement it. The structure and procedures employed by the forest administration have in many respects remained unchanged for decades and need review to effectively meet the challenges ahead.

9. The most important forest policy goal for the next decades will be to improve forest protection and management. The forests provide a number of important environmental services (protection of watersheds, source of plant and animal bio-diversity, stabilization of fragile soils) and there are strong policies to conserve and expand this resource. However, the pressures on the resource are so strong, that apart from a limited number of areas of important bio-diversity, it will be impossible to protect forest areas unless the benefits of this conservation are perceived by the public, especially those living near the forests. Further efforts along the traditional lines are not likely to prevent degradation of the forestry resource and will not solve the many forestry problems. It is necessary to enlist the cooperation of local populations and other agencies in forest protection, management and development. To accomplish this the government has to use the tools at its disposal to create an environment that will encourage forest users and farmers to take greater interest in

forest development. If all actors started working together now, it would be possible to maintain the current level of forest cover and improve the quality of the resource, even in the face of current pressures.

10. There are many inherent conflicts between users of forests. Policy makers have to decide on trade-offs between different uses and users keeping long-term sustainability in view. GOI prioritizes environmental conservation and meeting the needs of villagers in its national policy but state governments have pressing needs for revenue and for meeting industrial and commercial wood commitments. Local users have no or very few alternate sources of energy, employment or income so it is not acceptable or possible to exclude them. A key issue in tribal areas is to develop institutional links between forest departments and tribal development authorities that will lead to setting and working towards realistic objectives. The government also needs to develop new ways to address inter-sectoral problems such as energy and livestock. Examples of solutions to the energy problem include reaching agreements on alternate supply where possible-starting with urban and industrial users who pay for produce, and adaption of energy saving technologies to suit local food preparation habits and locally available fuels. Coming to grips with the heavy livestock grazing in forests through management methods such as rotational grazing and increasing the overall fodder production is very important. Agriculture directorates must be given clear responsibilities for augmenting fodder production and livestock programs cannot continue to operate as if there was no conflict with wasteland and forest development programs.

Recommendations

11. A number of steps need to be taken to make the forest strategy outlined above possible. The areas that need most attention can be grouped into five categories: (a) improving incentives for local participation and private development; (b) improving the technological means to solve production problems; (c) increasing the effectiveness of public sector forest management and development; (d) prioritizing areas to protect and develop; and (e) topics that require further analysis. The actions required under each of these categories are discussed below. A matrix summarizing the recommendations in each area is attached.

A. Improving Incentives to Protect and Develop Forests

12. Villagers are much more likely to protect forests when they have a say in forest management and receive an significant proportion of the benefits. This point has been shown to hold true in number of joint forest management (JFM) arrangements in different parts of the country. It is time to expand these experiments on a larger scale. GOI is encouraging joint management and so far eleven sates have passed regulations setting out the modalities and allowing forest administrations to share revenues from forest lands with local population. Increasing availability of commercial NTFP is key to motivate people to protect forests because it provides an annual income flow. A cooperative attitude from the forestry staff is also important. Women are a strong potential lobby for forest protection so it is important to include them in discussions regarding joint management arrangements. NGOs can provide valuable help in this process. One of the main constraints to involving NGOs in forestry programs (apart from the often prevalent mutual distrust) is difficulty in providing funds in a timely manner to support NGO work. Most NGOs are short on funds and therefore need advances. To date, JFM arrangements have almost exclusively focused on heavily degraded lands. Relatively better forests also need protection and the returns to both government and villagers would be much higher on such lands. Priority should be given to establishing joint management where it has good likelihood of success (willing local population. viable rootstock) and around national parks and sanctuaries and environmentally sensitive areas. Care should be taken to keep the cost of the models reasonable to allow replication over a wide area within current budgetary constraints.

13. Farmers will want to plant more trees if they can spare the land and it is more profitable for them than other crops. The first step to increase private sector motivation to plant trees is to identify and remove a number of regulations and government practices that act as disincentives. They include. (i) legislation governing state government rights to private forests; (ii) restrictions on felling trees on private lands; (iii) transit pass requirements; and (iv) mandatory sales of forest produce to the government in states where such exist. Some states have already removed transit pass requirements for the most popular farm forestry species. The most important ways to increase returns from farm forestry is to improve the quality of planting

material and to develop agro-forestry models suited to different regions and conditions. Subsidization of seedlings should be discontinued because it is costly, has not been as effective an incentive as thought and it discourages quality seedling production. The impact of the subsidy may be negative since the quality of seedlings provided is often extremely low. Extension services for farm forestry and tree crops will be important as more sophisticated advice on management and models are required.

Access to credit for farm forestry also needs to be improved. Women are an important target group for social forestry development on private as well as public common lands. An increased number of female forestry staff would improve the chances of reaching those women. Development of suitable market information systems would be helpful to farmers as prices vary significantly between markets.

14. Further liberalizing selected trade and tariff barriers and concessional pricing of raw materials from public forests will encourage the forest industry to become more efficient and improve incentives for private forest development. However, unless the industries feel confident about the future policy environment including the raw material supply situation they will be loath to make investments to upgrade their plants. Forest industries can alleviate the raw material shortage to some extent by linking up with farm forestry and/or by growing their own supply. A mechanism is needed that will allow non-government entities to assist in the rehabilitation of degraded forest lands. There is limited scope for industries to access public wastelands for tree planting since most have alternative uses or are encroached.

B. Improving Productivity

15. Improving the quality of planting materials is one of the most important factors to increasing productivity and quality of forest plantations on both private and public lands. It is easy to do by using better tree seeds and nursery management in accordance with available technologies which require only minor adaptation to Indian conditions. The improved planting material will be more expensive to produce than current seedlings, but it will be well worth the extra investment. Other techniques which can improve the productivity of plantations includes paying more attention to planting practices. Site amelioration is often needed on degraded sites. Establishment of a data base for matching species with agro-ecological zones and conditions should be high priority.

16. Development of better models and techniques to rehabilitate degraded forests is also a high priority. Particular emphasis should be given to rehabilitation of degraded forests through protection, or protection plus enrichment planting. Such models are much less costly than full afforestation models and also do well in joint management arrangements as a variety of NTFP become available for collection within a year or two, only. Since the government does not have the resources to replant the vast areas of degraded forests at once, this can be a very useful model to protect the areas in the meantime. More work is needed on the potential for expanding NTFP, on methods for propagating the trees and shrubs that produce them, and on how to include them in multiple product forest plantations. Multi- product models (tree, bushes and grasses) tend to maximize diversity and provide more environmental benefits than the traditional models.

17. Forestry research needs to be strengthened considerably to support the desired development and provide solutions to field problems. This strengthening needs to begin by providing increased status and autonomy to the research function, increasing the qualifications and continuity of state forest research staff and improving links to central forest research and other research efforts in the states and the world. Within the broad priorities set out above each state needs to set its own priorities-with the importance of each topic related to area coverage and likely benefits. It is suggested that forest field staff be given more say in formulation and evaluation (annual) of research programs. Sociological research needs to be carried out in parallel with identification of technical and economic options for the above programs. An assessment of how best to develop an effective extension mechanism for trees (forestry and horticulture) to farmers and local villagers is also needed. The mechanism should as far as possible tie in with existing research and extension systems.

C. Better Public Sector Forest Management

18 The state governments should review how the responsibilities and the tasks done by the forest departments can be restructured to give them a more reasonable workload and better address priority concerns. They need to define which of the tasks allotted to the forest department are legitimate government concerns which cannot be handled by any one outside the public sector (listing which agencies) and concentrate on them. They should also list tasks which could be undertaken by other actors such as NGOs and the private sector (including private individuals, farmers, cooperatives and industries) with appropriate support. Examples of areas that clearly need to be managed by the public sector include regulation, monitoring, protection, some aspects of technology development and extension. Areas which could be addressed by the private sector include inter alia operation of forest industries, production of seedlings, afforestation and some forest research. Many NGOs are technically weak but their assistance can be helpful as a complement to government activities, particularly as a link at the grassroots. Functions which could be performed by other government departments such as farm forestry research and extension should also be reviewed.

19. The effectiveness of public forest management can be increased. The key will be to coordinate forestry programs between implementing agencies and review the forest administration's internal organization. It is questionable whether FDCs and other boards or corporations should remain semi-independent, be privatized, or merged with the forest directorates' overall work programs. Adoption of joint management will require re-orientation of forestry staff and changes in the working procedures. While most of the forest directorates' work can be carried out by generalist staff they need specialized support in certain fields (e.g. forestry research, resource assessment, management of protected areas, marketing). Government needs to think about how to address this issue and its implications for staff training, organization and promotional prospects. The training of lower level staff needs particular attention. There is also a need for a forum where professionals from different states could debate forestry topics / issues of common interest. Forest department staffing appears high for certain categories and states may need to address this after in-depth review. Hiring in outside experts or contracting out tasks should be considered wherever possible. Improved procedures, management information systems and increased delegation of financial powers would also make the organization more effective. There are often problems relating to timely release of funds, which is critical in time-bound activity such as planting. The current short-term target oriented focus needs to change to one of high quality and long term sustainability with a consistent system of rewards to achieve these goals.

D. Development Priorities

20 Forestry planning needs to be viewed on a state-by state basis since conditions are diverse and forest resources far from equally distributed. Each state should prepare a forest strategy and development program based on areas that are critical to conserve at all costs, forests with relatively intact cover which would also be a priority to protect and degraded forest areas. In the future all forestry investments must be made on the basis of prioritized forest management plans which is not the case now. Priorities will need to be set to determine where to focus protection and joint management efforts, where to start development activities, and areas that are low priority because they are too difficult or costly to treat. The state plans that are being prepared as an input into the National Forestry Action Plan are an important step in this direction.

21 The better quality areas and areas which are which are easier to develop should be taken up first. Many good forests are in danger of degradation unless suitable institutional mechanisms are developed to protect them and a large area of degraded forests could likely be rehabilitated through protection only. Trees should not be supported for their own sake. Economic and environmental trade-offs and social sustainability should determine the kind of development to favor on particular locations. It may be that multi product mixtures of trees, bushes and grasses, or fruit bearing trees / bushes, or other crops would be the best land uses in certain areas. It is suggested that the provision in the Forest Conservation Act which restricts use of non-forest species be relaxed to allow such development where appropriate especially in context of JFM. The forest administrations should concentrate on protecting and developing the forest lands Farmers can take up farm forestry plantations themselves including production of required planting materials, if provided extension support. Since results of afforestation efforts on non-forest public wastelands have not been up to expectations, more focus should be placed on forest lands in future afforestation efforts.

22 Bio-diversity conservation could be improved through a spectrum of interventions to meet differing needs. Some areas require total protection while others can tolerate a a higher degree of intervention by local people. A three pronged approach includes : (a) extension and improvement of the protected area network; (b) increasing benefits to local populations in and around protected areas through joint management and other eco-development activities; and (c) including bio-diversity objectives in management of multiple use forest lands. It is recommended that the National Afforestation and Eco-Development Board Develop a strategy for experimentation with multi-use forests.

23. Increased investments need to take place in forest management and development and in a number of supporting functions in order to carry out the above strategy. The supporting functions include but are not limited to seed handling and processing, nursery infrastructure, and staff and NGO training. Funds need to be provided for important silviculture operations which currently often are neglected, joint management of forests, expanded programs for rehabilitation of degraded forest land and for bio-diversity conservation efforts. Funds will also be required for equipment and operation of research programs in priority areas required for upgrading technological knowledge. A greater portion of revenues from forest exploitation and development projects using forest lands should flow back to forest development. It is suggested that funds from the many different forestry schemes be consolidated by the government and some funds could be reallocated from current plantation programs and policing efforts toward the above priorities.

E. Areas for Further Analysis

24. Several topics which have been discussed in this report require further analysis before recommendation can be made about how to tackle identified problems; (i) a data base needs to be established on pricing and marketing of forest raw materials including quantities trends, and the market for farm forestry produce; (ii) a better understanding of actual returns from farm forestry and non-timber forest products under different conditions is required; (iii) a better understanding is also needed of the current uses and levels of encroachment of public wastelands; (iv) governments need to analyse the constraints that apply for forestry development from non-forest policies (tax, industrial, land tenure) and fined solutions to remove disincentives; (v) mechanisms for involvement of the private sector in the development of degraded government forest lands; and (vi) to revise the protected areas system an adequate information base is needed to evaluate the importance of bio-diversity in different areas, level of protection required and the areas coverage needed for particular ecosystems.

Annexure : II

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Appendix 1

Draft guidelines drawn up by the GOI

Afforestation of degraded forests - involvement of forest based industries

1. Land will be leased to Forest Development Corporation (FDC) who, in turn, will enter into proper MOU with the user agency without leasing the land to them. This MOU will give right to the user agency for undertaking afforestation and right over fixed percentage of forest produce at the time of harvesting.

2. FDC will be represented in the Board of Directors of the user agency.

3. FDC will be entrusted with the responsibility of overall supervision of the plantations e.g. species selection, number of trees to be planted, soil treatment etc. Actual operation will be done by the user agency.

4. Funds for afforestation will be provided by the user agency.

5. 25 per cent of the area will be planted with species for the purpose of supplying fuel, fodder etc. Cost of plantation and maintenance will be borne by the user agency. Entire produce out of such plantation will vest with the State Government.

6. At the time of harvesting 12.5 per cent of the forest produce from the balance 75 per cent area shall be made available to the State Government which the State Government will be free to sell at market price. However, the first preference shall be given to the user agency. This together with 25 per cent planted area will be treated as opportunity cost of the land.

7. Grass and lops and tops below 5 cm diameter will be made available free of cost to the local population.

8. Standing trees above 20 cm diameter in the area applied for will not be felled and shall continue to be the property of the Government.

9. First, the most severely degraded forests below 10 per cent density will be allotted and afterwards next category shall be offered for plantation. The land above 25 per cent density shall not be available for plantation.

10. Entire area will not be clear felled at a time which can be ensured by proper selection of species with different rotation. Projects with strong research base and advanced techniques of plantation will be given preference.

11. User agency will prepare a detailed project report giving details of land identified, choice of species, pattern of plantation, rotation period, expected yield, financial inputs, source of funding, proposed MOUs etc. after suitable lands are identified.

12. Each proposal will be examined under Forest (Conservation) Act, 1980 as well as from policy point of view and decision be taken after its detailed examination.

13. Only existing industries which already have access to wood from natural forests will be eligible. New industries which come up later will not be eligible.

14. Such industries will have to meet at least 40 per cent of their requirement from farm forestry, balance 60 per cent will also include imports, supply from natural forests and their plantations.

15. Formal proposals will be sent only after publishing about the proposed plantation and inviting objections from local community and also getting clearance from gram sabha.

List of Abbreviations

ADB	Asian Development Bank
AFC	Agriculture Finance Corporation
AP	Andhra Pradesh
BAIF	Bharatiya Agro Industries Foundation
C&D Lands	Land unfit for agriculture but suitable for trees
CCF	Chief Conservator of Forest
CIDA	Canadian International Development Agency
CPR	Common Property Resource
CSE	Centre for Science and Environment
DANIDA	Danish International Development Agency
DDRI	Deen Dayal Research Institute
DFO	District Forest Officer
DRDA	District Rural Development Agency
E & F	Environment and Forest
ESCI	Energy Survey Committee of India
FAO	Food and Agriculture Organization
FD	Forest Department
FDC	Forest Development Corporation
FPC	Forest Protection Committee
FR	Flat (power tariff) rates
FSI	Forest Survey of India
GNP	Gross National Product
GOB	Government of Bihar
GOG	Government of Gujarat
GOI	Government of India
GOO	Government of Orissa
GOUP	Government of Uttar Pradesh
GOWB	Government of West Bengal
GR	Government Resolution
GTZ	A German Donor Agency
ha	hectare(s)
HP	Himachal Pradesh
hp	horse power
HRMS	Hill Resource Management Society
IAS	Indian Administrative Service
IBRAD	A voluntary organisation based at Kharagpur (West Bengal)
IFS	Indian Forest Service
IIM	Indian Institute of Management
IIPO	Indian Institute of Public Opinion
ILO	International Labour Organization

IMR	Infant Mortality Rate
IRDP	Integrated Rural Development Programme
JFM	Joint Forest Management
LBSNAA	Lal Bahadur Shastri National Academy of Administration
LIS	Lift Irrigation System
LPG	Liquid Petroleum Gas
m ha	million hectares
m ha m	million hectare metres (the volume of water that would cover a million hectares to a depth of one metre
MFP	Minor Forest Produce
MIS	Management Information System
MLA	Member of Legislative Assembly
MOU	Memorandum of Understanding
MP	Madhya Pradesh
mT	million Tonnes
NABARD	National Bank for Agriculture and Rural Development
NCA	National Commission on Agriculture, 1976
NCAER	National Council for Applied Economic Research
NCHSE	National Centre for Human Settlements and Environment
NDDB	National Dairy Development Board
NGO	Non Governmental Organisation
NREP	National Rural Employment Programme
NSS	National Sample Survey
NTFP	Non Timber Forest Produce
NWDB	National Wasteland Development Board
ODA	Overseas Development Agency
ORG	Operation Research Group
pc	personal communication
PEO	Programme Evaluation Organisation
PF	Protected Forest
PL	Poverty Line
PR	Public Relation
pr	pro rata (power tariff) rate
RBI	Reserve Bank of India
RF	Reserve Forest
RLEGP	Rural Landless Employment Guarantee Programme
RPF	Resource Poor Farmer or Farm Family
Rs	Rupees
SF	Social Forestry
SFD	State Forest Department
SFRI	State Forest Research Institute
SIDA	Swedish International Development Agency

SPWD	**Society for Promotion of Wastelands Development**
TERI	**Tata Energy Research Institute**
TN	**Tamil Nadu**
TOI	**Times of India**
UNDP	**United Nations Development Program**
UP	**Uttar Pradesh**
UPFC	**Uttar Pradesh Forest Committee**
USAID	**United States Agency for International Development**
VFC	**Village Forest Committee**
VIKSAT	**Vikram Sarabhai Centre for Science and Technology, Ahmedabad**
WA	**Water Abundant**
WS	**Water Scarce**
YC	**Youth Club**

GLOSSARY

agroforestry	cultivation of trees in combination with annual crops on farmed lands
achar	Buchanania lanzan Spreng
amla	Emblica officinalis, yields fruit, tannin and fodder
aquifer	the underground formation of water deposits tapped by wells
arjun	Terminalia arjuna; host for tasar silk-worm, an excellent shade tree, bark used in native medicine
babul	Acacia nilotica; a small evergreen tree, can stand periodical flooding, hence ideal for tank foreshore afforestation
bamboo	Bambusa arundinacea and Dendrocalamus strictus are the two most common species; wanted by both, paper industry and the poor
ber	Zizyphus mauritania; a fruit yielding tree which both cultivated and found wild
bhabbar	Eulaliopsis binata, grass which can be used for pulp and also ropes
bhoodan	voluntary surrender of land in favour of the poor, often such land is infertile
bidi	local cigarette which uses leaves in place of paper
bouldery lands	lands subject to fluvial action in recent past resulting in the presence of gravel boulders at the surface or in sub-soil
cashew	Anacardium occidentale
casuarina	Casuarina equisetifolia; widely grown in coastal areas for poles and fuelwood.
chamar	a low labouring caste, declared as scheduled caste, traditional occupation is leather work, constitutes about 9 per cent of UP's population
chiranji	Buchanania latifolia.
chula	small open stoves which use wood, dung cakes or charcoal for cooking
coconut	Cocos nucifera; widely grown on private lands in coastal India. Every part of the tree is used.
competitive market	market conditions which oblige sellers to sell at a price close to average cost
community forestry	growing and protecting of trees on non-private and often non-forest lands, which are known as revenue lands
coppice	re-sprouting of trees after felling
core poverty	deprivation of poor people in the cores or economic heartlands, which are generally more economically developed and accessible to urban centres.
crore	10,000,000
cropping intensity	ratio of gross area cropped during a year to net cropped area
crown cover	area covered by leaves and living branches of a tree
culturable wastes	land suitable for cultivation, but not taken up for cultivation at least in the last five years.
doab	land between the two rivers, Ganges and Jamuna
desi	local or indigenous
fallows	land suitable for cultivation, but out of cultivation for a period not exceeding five years.farm forestry practice of growing trees by farmers on

	private lands
flat tariff	electricity cost charged on the basis of the hp rating rather than on actual use
fixed costs	costs such as interest and depreciation which do not vary directly with the level of use of an equipment
Forests/Forest Land	forest area under the management of the Forest Department
forests	Besides the area under FD this would also include village forests as well
forest dwellers	living inside or in the close viccinity of forests
forest villages	villages set up by the Forest Department inside forests to ensure timely supply of labour for forest operations
gaon sabha	village council
gross irrigated	area of land irrigated in a year (two irrigation area seasons on the same land counting as two)
groves	land, generally private, used for growing fruit trees
gujjar	a nomadic tribe subsisting on cattle rearing, have now taken to farming in Haryana and north-west UP
harijan	modern euphemistic term for untouchable
incremental pumping cost	direct cost per additional hour of operation of a lift irrigation system
induced groups	groups of water users formed by the effort of an external agent such as an NGO on a government agency
jack	Artocarpus integrifolia; a large evergreen tree with dense crown, yields large fruit weighing 5-15 kg
jamun	Syzygium cumini; a large evergreen fruit yielding tree; bark and seeds are used medicinally
jat	a farming caste of Haryana and western U.P., known for its industriousness and hard work
karanj	Pongamia pinnata; a multi-purpose tree used for fuel, fodder and medicines. Seed contains high percentage of oil
khair	Acacia catechu; its wood yields commercial catechu which is used for dyeing and tanning
kharif	the summer southwest monsoon season with onset of rain mainly in May and June, and withdrawal of rain mainly in September.
kundis	outlets of a piped, underground water distribution system
kuth	produced from the heartwood of khair (Acacia catechu) trees, used in betel-leaf.
kusum	Schleichera trijuga; used as a host for the lac insect, seeds yield medicinal and hair oil
lakh	100,000
mahalwari	a system of revenue settlement in which village was the unit for assessment. Mostly prevalent in Punjab and Haryana
mahua	Madhuca indica; occurs most commonly near tribal habitations in Central India, flowers and seeds are rich in oil, and are eaten
malguzari	land revenue levied by the state on cropped lands
medium irrigation	irrigation systems with command areas of between 2,000 and 10,000 ha
minor irrigation	irrigation systems, whether lift or surface gravity,with command areas of up

	to 2,000 hectares
mixed forests	forests raised for preserving biological diversity and ecological stability which provide a variety of livelihood goods to the gatherers
monopoly power	power to raise the price without losing a substantial chunk of one's market
moonj	coarse grass used for thatching, and weaving baskets and cots; controls sand dunes
mulberry	Morus alba; leaves are used as food for silk-worms, fruit is eaten,and its wood is used for sport goods
net irrigated area	area of land surface that receives irrigation water in a year, two irrigation seasons counted as one
non-rotational	trees which are used for recurrent benefits of trees fruits, leaves etc. There is no organised felling of such trees. This type of management is also known as physical rotation
neem	Azadirachta indica considered a sacred and health giving tree because of its insecticidal and medicinal properties
oak	Quercus spp., multiple use trees, used for fodder and making agricualtural implements
palmyrah	Borassus flabellifer, used mainly for extraction of toddy. Leaves are used for thatching and for carrying water
panchayat	village council, lowest form of local government, consists of elected members headed by a chairman
panchayat lands	non-private lands under the control of village councils
pani panchayat	water councils
pastures	open access lands meant for grazing; often highly degraded
patta	literal meaning is contract, refers to leasing of government land on specific terms, also means title deed to land
peripheral poverty	deprivation of poor people in the peripheries, which are generally less economically developed and less accessible to urban centres
poles	wood of diameter less than 20-25 cm, which is generally used for scaffolding and as posts
poplar	an agroforestry tree, has grown well in Haryana, Punjab and western U.P., timber used for matchwood, veneer and sport goods
pradhan	village chief
production forestry	growing of trees of commercial value on forest lands
pro rate tariff	electricity cost charged on actual metered consumption of power
rabi	the winter cropping season
resource-poor	applied to farms, farmers and farm families, means that the farm resources do not currently permit a decent and secure family livelihood. Such families include many, though not all, of those with marginal (0-1 ha) and small (1-2 ha) farm holdings, and many others with more than 2 ha but whose land is infertile, vulnerable to floods or erosion, or subject to low and unreliable rainfall
revenue lands	lands under the control of revenue department, these are non-forest and non-private lands, often highly degraded
rotation	time interval between regeneration of a tree and its felling
ryotwari	a system of land settlement in which cultivators pay land revenue directly to government

sabai grass	**Eulaliopsis binata**
sal	**Shorea robusta; a common but slow growing large tree in Indian forests. Yields both timber and important MFPs like seeds and leaves**
saline ingress	**intrusion of sea water into coastal aquifers**
salvadora	**Salvadora persica and Salvadora oleoides**
santhal	**name of a tribe of south Bihar and West Bengal**
sapota	**Parkia roxburgii, gives fuel, fruit and medicines**
sarpanch	**chairman of Panchayat**
sarpagandha	**Rauwolfia serpentina**
sheesham	**Dalbergia sissoo; a favourite road-side tree in north India, wood used for wheels, boats and furniture**
sisal	**Agave spp., yields fibre and binds soil**
social forestry	**programme of growing trees to satisfy rural needs of fuelwood, small timber and fodder**
spontaneous groups	**groups of water users formed and sustained by their own initiative**
stylosanthes	**a cultivated grass of high nutrition value**
subabul	**Leucaena leucoephala, a fast growing nitrogen fixing tree yields both fodder leaves and fuelwood, despite efforts it plantation has not been successful outside Maharashtra**
tamarind	**Tamarindus indica; an evergreen multi-purpose tree, yields edible sour fruits, fodder and timber**
tarai	**foothills; the name given to the flat belt of country running along the foot of the southern most range of the Himalayan system**
tasar	**silk tasar, a product of insects which are cultivated on the leaves of arjun and sal trees**
teak	**Tectona grandis; highly valued for quality timber used in furniture, house building and cabinets**
teli	**a backward caste, traditional occupation is trade in oil**
tendu	**Diospyros melanoxylon; used as wrappers of tobacco to produce bidi, Indian cigarettes,**
timber	**tree logs of more than 25 cm diameter, used for making sawn planks**
tribals	**nomadic people who till recently lived by hunting and gathering of forest products**
tyagi	**meaning sacrificers; consider themselves a sect of Brahmins who gave up their traditional occupation in favour for the plough. They are thus agriculturists. There are Muslim Tyagis as well, who were converted to Islam during the Mughal rule**
unculturable wastelands	**covers all barren and unculturable land like steep mountains, snows deserts etc**
water intensive	**crop interprises using large quantities of water**
zamindari	**system of land ownership by non-cultivators, has now been legally abolished**

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