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**COMMON RESOURCE DEVELOPMENT:
COMMUNITY FORESTRY IN MAHARASHTRA, INDIA**

by

DOROTHY LELE, B.A.

**A thesis submitted to
the Faculty of Graduate Studies and Research
in partial fulfillment of
the requirements for the degree of
Master of Arts**

**Norman Paterson School of International Affairs
Carleton University**

Ottawa, Ontario

May 10, 1988

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ISBN 0-315-51156-7

The undersigned recommend to the Faculty of Graduate Studies
and Research acceptance of the thesis
COMMON RESOURCE DEVELOPMENT:
COMMUNITY FORESTRY IN MAHARASHTRA, INDIA
submitted by Dorothy Lele, B.A.Hons.
in partial fulfilment of the requirements for
the degree of Master of Arts

Thesis Supervisor

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ABSTRACT

Environmental problems generally involve the overuse or misuse of publicly owned resources to which access is open. The cooperative use of a common resource by a limited group of joint owners is one solution to such problems. An exploratory study of community forestry plantations in two villages in western India was carried out to investigate factors involved in the success of their implementation. Despite planned provisions for community participation, neither plantation was found to involve the community in its management and available benefits were not reaching poorer village groups. Since it is the poorer households who are most dependent on common and public resources for their fuel and fodder supplies, their lack of involvement in community plantations jeopardises the projects and has implications for reforestation projects on government land. Some conditions necessary for community cooperation in common resource management are outlined.

ACKNOWLEDGEMENTS:

I would first like to thank my supervisor, Prof. A. Steeves, who was unfailingly supportive at all stages of the program and field research. His advice and understanding helped immensely.

Anne Fouillard generously gave me her advice and support in preparing the study proposal. Dr.V.D.Dashpande's guidance was essential to me throughout the field research. I appreciated the help provided by Dr. Raja Vora and Dr. Uttam Bhoite. Dr. Ram Bapat shared his knowledge and optimism and provided a crucial introduction to Yelwadi.

Dr. A.G. Raddi first interested me in social forestry and its possibilities. Mr. Narurkar, Mr. Naravane, Mr. Sharma and Mr. Dalvi of the Maharashtra Social Forestry Directorate and Mr. Chawre and Mr. Nayak of the Pune District Directorate were very helpful and patient with all my questions. Mr. Naravane was very understanding in facilitating the beginning of the study and Mr. Nayak showed me the villages and some of the obstacles Social Forestry officials face. Dr. Karim Oka of IDRC gave me useful practical advice. Mr. Hal Fisher of USAID was very encouraging and informative.

I owe the people of Nane and Yelwadi more than thanks for their help and for showing me some realities of village life. Jayashree Mali made the interviews possible and taught me a great deal about the lives of NGO workers in India. The workers of

Gramayan were very helpful, especially when I most needed it. Niteen Birmal's reliable and resourceful assistance helped me through many difficulties. Vidyut Bhagwat, Jyoti Kanekar, Vasudha and Sureshrao Ranade and Jayant Lele cheerfully provided translation services.

Dr. Iqbal Narain's advice and support were very important to me in Delhi, as was the help and institutional support provided by Dr. John Hill and Mr. P.N. Malik of the Shastri Indo-Canadian Institute. The generous hospitality of Dr. Hill and Dr. Karen Ray made my Delhi work easier.

The study was made possible through the Awards for Canadians Program of the Canadian International Development Agency and affiliation with the Indian Social Institute, New Delhi.

Ravi, Vidyut and Chinoo Bhagwat made me part of their family and gave me a home and support through difficult times. I benefitted from Ravi's environmental interests, Vidyut's political and cultural sensitivity, and Chinoo's and Ranjeet Jakli's help with Marathi. Vasudha Mane gave me a haven in Talegaon when I fell sick.

I owe my feeling for Maharashtra and my interest in its culture and history to the warmth and kindness of my in-laws, especially my sisters-in-law and nieces.

None of this could have been successfully accomplished without my husband, Jayant, who introduced me to India and to new

ways of seeing the world. He gave me the support I needed throughout my NPSIA program and the field research, as well as helpful comments during the writing of the thesis. Lastly, although my son, Amod, makes no secret of not liking my absences, and still makes bad jokes about social forestry, his support and self-reliance during this period helped me manage the work.

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MAP 1 INDIA

CHAPTER I

INTRODUCTION

In the past two decades, increasing environmental problems have been warning us of the natural limits on the extent to which we can interfere with ecological systems and still maintain them for future use. The health hazards resulting from agricultural and industrial pollution, toxins magnified through the food chain, and the many forms of soil erosion and water problems, are all consequences of overuse, overloading or improper use of resources. Now that they are threatening economic productivity, these problems are even more urgently indicating that our present use of resources must be changed in order to ensure their future viability. They can no longer be considered 'externalities' to be acknowledged, then ignored.

Reports such as that of the World Commission on Environment and Development point out how critical it is that we do something, collectively and within each nation, about our unsustainable use of resources. Current trends "threaten to radically alter the planet" and "threaten the lives of many species upon it, including the human species" (The World Commission on Environment and Development, 1987). Attempts to prevent further negative environmental effects through Environmental Impact Assessments and pollution control legislation have not done much to-

wards reversing and controlling unsustainable use. Their major contribution so far has been to show how difficult it is to control the use of environmental resources.

Solutions must be as wideranging as the problems. The interdependence of forest cover, water resources, climate and soils over whole regions requires that problems have to be addressed as a whole. Reforestation and the planting of windbreaks and shelterbelts, for example, will not be sufficient to check soil erosion on agricultural land, if cropping patterns, ploughing practices, and heavy dependence on chemical inputs are not also re-examined and altered. Such practices cannot be addressed, moreover, without interfering in economic relationships between the production and use of agricultural chemicals, the support of urban consumers and industrial and municipal waste disposal.

Fundamental to problems of overuse or detrimental use of resources are issues of property rights and responsibilities. The interdependence of public and private property has become more evident as negative effects of our private production and consumption processes accumulate. Practices such as strip-mining, clearfelling of forests and intensive agricultural cultivation maximise the current use of private and public resources often to the detriment of surrounding resources. Wastes from private industrial and agricultural production pollute public resources of air and water. Private interests then pressure the State to take responsibility for and bear the cost of cleaning up and rehabili-

tating public resources, without being willing to make necessary changes in their damaging use of them.

Under property arrangements in market economies, the interest of private property owners and of local communities often come into conflict with the public interest. How public resources should be used is decided by dominating economic interests with political power. Their use of resources for industrial productivity often conflicts with local interests or use rights, as in the case of mining and timber contracts or waste disposal arrangements. The conflict between public claims, which often represent industrial interests, and the claims of localised groups, and individuals within them, is at the base of many environmental problems.

In order to deal with such environmental problems, it is therefore essential to distinguish between types of property. Property is a set of rights to the use and transfer of an asset, established and maintained by the authority of government. Private property assigns the sole right to the use and disposal of an asset on the owner and his family. Public property is owned and controlled by various levels of government, which allow various rights of access and use to the general populace, usually not limited to membership rules. Public property includes the product of organised human labour, such as public transport systems and public institutions and services, as well as natural resources such as land, water, forests and minerals, however

utilised by man. The right to decide on the use of public property and the responsibility for maintaining it is retained by the State, through its position as representative of the public interest.

Common property, on the other hand, "refers to a distribution of property rights in resources in which a number of owners are co-equal in their rights to use the resource" (Ciriacy-Wantrup and Bishop, 1975: 714). Common ownership involves the exclusion of non-members and the inability to transfer rights of use. The owners' actual use of the resource over time may not be equal in terms of quantities derived, that is, they have rights of common use, rather than specified use rights (as is the case under common tenancy). Common property resources refer to resources jointly owned by and accessible to the whole community, such as village forest or grazing lands.

Unfortunately, economists use the term 'common property' to refer to open access public property, neglecting the possibilities for resource rehabilitation of joint use agreements, such as were common in traditional societies. Communal property arrangements of traditional societies involved collective agreements on regulated use of a specified land unit, rather than open access. The agreement would usually operate through tacit cooperation according to rules specifying rights of joint use. Remnants of village institutions for decision-making and exchange relations still exist and could be drawn upon for the reinstitution of

cooperative management of common resources.

The rehabilitation of resources usually requires changing their use, which involves interfering with the interests of many private users accustomed to free access. Where individual rights have been emphasized over collective interests, as in most western societies, it is claimed that the individual's incentive to maximise his use of public resources without concern for others' use or for their future condition, inevitably leads to mismanagement and destruction of the commons. Our increased capacity to damage the environment and destroy public resources has presented us with the challenge of reestablishing the connection we have lost between individual self-interest and common interests in order to rehabilitate degraded resources.

Competing interests in the use of public resources lead to more severe environmental consequences in the developing countries because of greater pressure on resources. The market demand for industrial raw materials such as timber and wood products for urban consumption, combined with the needs of local people for fuelwood and tree products is resulting in widespread deforestation, and consequent problems of soil erosion and water retention, subsequently leading in many areas to desertification. This process is extremely difficult to reverse because, after the tree cover has been removed, the needs of local inhabitants are then concentrated on the meagre resources that remain.

India provides an excellent example for study of these

problems because it has reached a state where the impact of negative environmental consequences on the rural poor is seriously undermining developmental objectives. Industrial growth has resulted in similar but more acute problems of environmental pollution as in western countries, while competition of the industrial sector with rural communities for material resources has increased the importance of issues such as rights to common resources, the limits on sustainable use, the necessity of proper management for sustained productivity, and the interdependence of common resource use with private resource use.

Since Independence in 1947, India has established itself as an industrial nation. Its well-diversified resource base, large domestic market and capable manpower have contributed to the development of a strong industrial and manufacturing base. India is self-sufficient in most consumer and capital goods to the point of exporting many of them. The benefits of industrial growth, however, largely accrue to the top fifth of the population. The top fifth income group consumes half the industrial consumption goods, while the bottom half accounts for only one fifth of consumption (Bardhan, 1984: 20).

A substantial proportion of the rural population, moreover, is working in subsistence agriculture. Three quarters of the population lives in rural areas and seventy percent of the workforce was employed in agriculture and allied areas in 1980 (World Development Report, 1986, 238). Forty percent of the agricultural

labour force are agricultural labourers, that is, wage workers on other people's land (Kurien, 1987: 46). Although commercial farming has expanded through government financial and input support, the majority of cultivators operate marginal farms. Fifty-seven percent of operational holdings in 1980-81 were under 0.5 hectares in size (Government of India, Ministry of Planning, 1987: 27). Many such cultivators must find additional employment to support their households.

The competition of the subsistence sector with industrial and urban interests for forest products has resulted in a severe environmental crisis, evident in increasing problems of drought and flooding. 1987 was the third consecutive year of widespread drought in India, accompanied by flooding in downstream river basins. The loss of forest cover which is at the root of such problems is generally blamed on increasing human and livestock populations. Examining the situation more deeply, however, indicates that increasing population is an intermediate effect rather than the basic cause. Expanding populations must be seen in the light of the resources available to people increasing the size of their families and livestock. Increased population is to a large extent a result of impoverishment, since reproduction is one of the only sources of wealth left to such families (Mamdani, 1976; Rao, 1976). Children are future producers of wealth, and animals provide basic products such as milk and dung, which would otherwise have to be bought or forgone. To the extent that livestock

can be maintained on public grazing land. the cost of these products to the owner is minimal.

Poverty is the result of the inequitable distribution of resources. It is structurally determined by the market allocation of resources (Redclift, 1984; Blaikie, 1985; Sen, 1981). Those left to live on inadequate resources are driven to find additional means of support and/or adequate wages. Access to land is critical in determining the use of the environment, since those people reduced to making a living from meagre or degraded landholdings, or from daily wage labour, draw on the resources of their surrounding environment to reduce the gap between their needs and the product of their labour.

The displacement of large numbers of people onto plots too small to support them, combined with declining availability of common resources, is propelling a cycle of continuously deteriorating environmental resources. Since they have little means of buying inputs, the poor depend to a greater extent than larger farmers on resources that have no market price. The appropriation of common resources by the state and their exploitation for industrial purposes has decreased their availability to local communities. Common land has also been reassigned, through legitimate public use, for schools or other public buildings, through reallocation to private use in land reforms, the "Grow More Food" campaign, and welfare programs, as well as through illegal encroachment.

As available common property resources decline in area, they also decline in quality since less resources have to supply similar or growing village needs. The pressure of villagers' needs on whatever common resources remain to them is increasing, rather than decreasing, resulting in the overuse and degradation of these resources. Dryland farming communities of Maharashtra, of which I shall present two examples, are now facing such a shortage of fuel and fodder that all non-private land is treated as a possible source of household fuel and fodder supplies. It is of little consequence to the women collecting twigs, branches and grass which Government Department owns the land on which it grows.

Under these conditions social forestry programs have been developed and introduced as the major government response to problems of deforestation. Social forestry has become so common in India and the term "social forestry" so widely used that it covers almost all types of tree-planting by individuals, organisations and governments under various private and government programs. Its meaning must therefore be clarified in relation to other types of forestry.

Production forestry refers to the management and use of forest resources for industrial purposes. Combined with conservation practices, it is commonly termed "traditional forestry" by westerners accustomed to its widespread practice. Since it has only been developed in the last couple of centuries, however, and

has nothing to do with social structures and practices that social scientists generally term "traditional" to distinguish them from modern or post-industrial structures, this is a misnomer. "Traditional" forestry is only "traditional" in that it differs from the more recently developed extension forestry.

Production forestry was introduced in India by the British in the nineteenth century, and administered by the Imperial Forest Department set up in 1864. Timber was especially needed for railway construction in the latter half of the nineteenth century, and later to support needs generated by the two World Wars. Large areas of forest were taken over by the state and closed to local people in spite of widescale protests, especially on the part of tribal peoples dependent on forest products for their livelihood.

After Independence in 1947, the exploitation of forest resources was increased to support the growth of industrialisation. Since the fifties Forest Departments have also developed "extension forestry" to some extent, which, like agricultural extension, involves programs providing support for and training in forestry practices to the rural public. Extension forestry, as in most countries, has been mainly "farm forestry", that is, the provision of programs encouraging commercial tree growing by farmers on their own private land.

Another aspect of extension forestry, which began to develop through the seventies, was "community forestry", tree growing on

commonly-owned land, involving community members as participants and beneficiaries. Public and private interests are combined in investments by government in the form of "technical assistance, planting stock, and wage subsidies" and by villagers in "foregone grazing and labor for protection and management" (Romm, 1979: 13). "Social forestry" is commonly used as a term equivalent to both extension and community forestry. In its use as a broad label it covers all forestry activities involving the public, including community and farm forestry. It can be distinguished from conventional forestry practices under production forestry by the attempt to involve its beneficiaries directly in planning, managing and distributing the product of their projects.

During the seventies, the world energy crises and subsequent energy shortages of commercial fuel drew attention to the importance in developing countries of rural people's dependence on woodfuel as their chief energy source, and to the connections between industrial, urban and rural use of forest products, increasing shortages, and deforestation. The Interim Report of the National Commission on Agriculture (set up by the Government of India) of 1972 and its final Report of 1976 emphasised the necessity for reforestation programs that would help meet the fuel, fodder and small timber needs of rural populations, in addition to production forestry programs. After Mrs. Gandhi recognised the seriousness of deforestation and it was included in her 20-point program of 1975, government support for social

forestry programs quickly expanded. By the early 1980s major programs were established in most Indian States, supported by various international aid agencies.

Most academics, development agencies and change agents define social forestry in terms of the involvement of the people concerned. Noronha and Spears, for example, describe social forestry as an approach to tree cultivation characterised by the direct involvement of the beneficiaries "in the design and implementation of the reforestation efforts and the sharing of forest produce" (Noronha and Spears, 1985: 229). Michael Cernea of the World Bank reports a consensus that social forestry projects "are designed to trigger cultural change in the behavior of large numbers of people with respect to the planting and protection of trees" (Cernea, 1985: 1).

Some sources, however, recognise that the term "social forestry" has been so widely used to cover so many differing programs that it has become virtually meaningless, and even sometimes misleading. Thus, the International Institute for Environment and Development's Report on Farm and Community Forestry deliberately avoids using the term "social forestry" because the authors found it misleading in that "it implies that any form of tree growing by farmers or local communities automatically brings social benefits", which is "not necessarily the case" (Foley and Barnard, 1984: Foreword). India is a case in point, where many accusations have been made that government programs have not

delivered the social benefits they promised, especially to groups who need them the most.

In practice, social forestry in India is usually small-scale, centred on the village and village land resources, using both private and public land, and includes both strip and block plantations. Government programs commonly have several aspects: first, the provision of seedlings, either free or at subsidised rates, to individual farmers and households to plant on their private land; secondly, planting on public lands, owned either by the village, or by various Government Departments; thirdly, land usufruct schemes, whereby individuals are granted rights to the products of government-owned land in return for the maintenance and protection of trees planted on them; and fourthly, more recently, "wasteland" development schemes, where individuals and voluntary organisations are provided funding to reforest degraded land.

Planting includes strip plantations along field boundaries in the case of farm forestry, along canal sides, roadsides and railways on public land, and block plantations on both private and public land. The land used varies widely in quality, although, ideally, emphasis is placed on marginal agricultural land and land too degraded for cultivation, to bring them back under vegetative cover. Techniques do not differ significantly from those used in production forestry, except that there is wider recognition of the need for mixed species and intercropping,

rather than the monocultures preferred under commercial production.

The main objective of social forestry programs, as expressed by the National Commission on Agriculture, was to increase supplies of fuelwood, fodder and small timber to the rural population. Major difficulties have been encountered, however, by contradictions between the objective of supporting farm forestry for commercial ends and the objective of increasing supplies of wood and fodder in the nonmonetised rural sector through community woodlot and household planting. The tendency has been for the farm forestry component to expand very quickly at the expense of the community forestry component.

Community woodlots are necessarily much more difficult to manage than private plantations because of the shared responsibility and cooperation required. Private plantations have the advantage of the direct responsibility of one owner household for all operations. Attempts by Social Forestry Departments to involve the "community" in managing and protecting plantations on communally owned land have met with limited success, due to the nature of the village as a heterogeneous, hierarchically organised, politically divided social entity. Usually, the Panchayat, or village council, as representative of the village community, is given responsibility for the management of community plantations. If, as often happens, the Panchayat does not involve village members in deciding on the use of the plantation, they do

not have any stake in protecting it, and have no reason to keep their cattle out of it (except for nominal fines, often unenforced).

Because of the comparative success of farm forestry in terms of hectares planted as well as survival rates, many programs have cut back their community woodlot planting and concentrate their efforts on farm forestry. This concentration on farm forestry is the basis of criticism that the benefits of social forestry are being mostly received by the largest landholders, that the landless benefit only in temporary employment during planting, and that the product of these programs is being directed to the urban and industrial sector for increased income generation, rather than used within the village for village needs. Selling the product of social forestry projects leaves the subsistence sector exactly where it was before. Without increasing non-market sources for fuel and fodder, the rate and extent of deforestation and overgrazing can only increase.

It remains a major question whether or not public interests can be reconciled with private ones in such a way as to achieve the cooperation and community participation necessary to manage community woodlots. The resolution of this question is critical in order to increase wood and fodder supplies outside the market sector (until such time as all rural peoples can be included through adequate wages in the market sector). Understanding how to successfully involve local people in growing their own wood

supplies and especially in protecting plantations during their maturation, is also essential for resolving the major problems in use and management of Forest and Revenue land, whose deteriorating physical condition is not only disastrous for local inhabitants, but because of its often critical location and size, has important general environmental effects.

This crucial community involvement is the focus of this thesis, and I shall therefore concentrate on the community forestry aspect of the Social Forestry Program in Western Maharashtra. Chapter II reviews the literature available on common property, Chapter III examines property rights with respect to forest land in India, describes the village context in Maharashtra and provides a general description of the Maharashtra Social Forestry Program as the government response to the problem of reforestation. Chapter IV presents the methodology used in the exploratory field study of two villages in Maharashtra. Chapter V sets out the results of this study, an analysis of the communities involved, their energy use and their involvement in community social forestry plantations. The thesis concludes with a chapter on factors involved in successful cooperative common resource management.

CHAPTER II

Cooperative Use of Common Property Resources

I have argued that common resources have been depleted as a result of local communities' loss of their traditional use rights, as a result of the state's appropriation and exploitation of these resources. In order to analyse this problem in a framework conducive to finding the best possible solutions, in this chapter I shall review some of the literature relevant to common property resource management and collective action, and consider the problem of the cooperative use of common resources such as community woodlots.

1. Common Property Resources:

The literature available on common property resources is the creation of economists, beginning more than thirty years ago with problems of regulating the harvesting of international fisheries. It is a subset of the material on the economics of environment and natural resource management. Due to the utilitarian origins of economics, there are major problems involved with its treatment of common property, which is based on the individual as the unit of analysis, and focuses on individual incentives and costs. Social benefit becomes an aggregate of the consumption of indivi-

duals; social damage and social costs are reduced to the sum of individual costs.

The first major problem encountered with economists' analysis of common resources is their use of the term "common property" to refer to unowned resources or publicly-owned resources to which access is open. This use is in contradiction with the meaning of common property under English common law, German land law and Roman law, where it refers to property rights in resources in which "a number of owners are co-equal in their rights to use the resource", while other potential users are excluded (Ciriacy-Wantrup and Bishop, 1975: 714). Problems of open access and unrestricted entry differ from problems relating to the structure of joint use rights on common property (Runge, 1986). Economists are mainly concerned with the former.

Ciriacy-Wantrup and Bishop distinguish between the concept, the institution, and the particular resource subject to the institution, which have all been referred to as "the commons". The concept of "the commons" is an analytical construct, while institutions are patterns of expectations and norms of behaviour, with respect to which a particular resource such as a pasture is used. Ciriacy-Wantrup and Bishop maintain that economists should not use the concept of "common property resources" or "the commons" where institutional arrangements of joint use are absent. The concept of "property" has no meaning without the exclusion of potential users who are not owners or who do not have some arran-

gement with the owners to use the resource. They maintain that calling unowned resources such as fisheries in international waters common property is self-contradictory (Ciriacy-Wantrup and Bishop, 1975).

The literature on what are called "common resource" problems is thus limited to open access situations. Economic theory is used to analyse open access natural resource use, its depletion and regulation, with all the attendant problems of measurement and quantification (Dasgupta, 1982; Ahmad, 1983; Randall, 1981; Dasgupta and Heal, 1979; Howe, 1979; Lecomber, 1979). Quantifying social objectives and social and private costs and benefits in resource use involves many difficulties. Specifying social welfare functions is difficult even under full market conditions (Randall, 1975). Calculating optimal allocations and rates of use of natural resources remains questionable due to imperfect knowledge of total effects of current use, and the impossibility of accurately quantifying factors such as the deteriorating quality of the resource.

Another major limitation of the application of economic theory to environmental resources is the relegation of many important qualities of these resources to the status of "externalities" outside the analysis. Externalities are defined as the effects of the actions of one agent on the welfare of other agents through channels other than prices (Ahmad, 1983: 20), either immediately or over time. In most cases of public resource

use, these so-called "externalities" are in fact integral to the problems involved, and therefore to the rehabilitation of degraded resources. Externalities involved in forest use, such as the forest's wider role in environmental maintenance, become increasingly apparent in negative consequences outside the forest as the resource deteriorates. The forest's role in water retention, water control, downstream soil productivity, its contribution to climactic conditions, and to the preservation of irrigation and water supply systems are "externalities" too important to be considered external to the problem at hand. Economists recognise and allow for such contributions only by setting the social value of forests higher than the value of direct forest products (Dasgupta, 1982: 6).

Another problem with economists' treatment of resource use is their discounting of the cost to future generations of present use. For the maximisation of total well-being, it is assumed that the welfare of the present generation counts for more than that of future generations. This assumption flows from a utilitarian orientation to the future that discounts the community as an ongoing entity, and ignores the individual's interest in the future. Our present use of resources does discount future use. But that is exactly the crux of the problem. A society that assumes that future use is less important than present use, and organises its use on the basis of that assumption, is compromising its future.

2. The problem of the commons:

Previous generations could consider the supply of such resources as water and timber almost infinite since they were so plentiful, but our technologically enhanced use of them has been recently making the natural limits to their supply and regeneration much more obvious. We now have to recognise that even though such resources are regenerative, their supply and regeneration is finite and are now in danger of irreversible damage. It is now necessary to regulate their use at a sustainable level, which involves us in problems of public goods and common resource management.

A resource problem that should be distinguished from common property is that of "public" or "collective goods", which are resources or products either wholly or partly "indivisible". A public good "has the characteristic that a consumer's use of it does not prevent someone else from also using it at the same time" (Ahmad, 1983: 19), or "is equally available to everyone" (Kimber, 1981: 179). Air and water, for example, or the beneficial climatic effects of a forest, are indivisible and equally available to many consumers at the same time. Public goods can be produced from common property, such as the improved water retention and supply for the area that results from a tree plantation on common property, but most products of common property are divisible, that is consumable in separable units.

Since it is impossible or too expensive to exclude consumers

from using a public good when it comes to contributing to the cost, they "would have strong incentives in expressing a low interest in the public good, paying only a small contribution, or perhaps none at all, knowing that they would still have access to it, provided other consumers make sufficient contributions" (Ahmad, 1983: 19). This ability of a consumer to use a resource without making an equal contribution towards its provision is called the "free rider" problem, and constitutes a fundamental problem in environmental resource management.

Whether natural resources are open access, commonly owned, or public goods, when they are freely available outside the market and the regulation of its 'invisible hand', economists treat them as "problems of the commons", where, it is argued, "a resource in finite supply is likely to be over used if available free of charge" (Dasgupta, 1982: 13). Such problems of the misuse of open access resources are seen as resulting from individual incentives to act against the common interest (Lecomber, 1979). They are compellingly illustrated in Hardin's 'Tragedy of the Commons', where the individual's incentive to graze another head of cattle is shown to lead inevitably to the destruction of the pasture (Hardin, 1968).

Although grazing at a level depleting the resource is advantageous to the individual in the short run, the collective interest in the use of pasture lands requires 'stinting', or reducing one's own consumption so that total use is kept within

sustainable limits. In order to analyse the expected behaviour of individuals using such public resources as grazing lands, it is compared with situations contrived in "Prisoner's Dilemma" models, where individuals are put in the position of choosing a strategy against another individual's interest as well as their own common interest. Defecting from their common interest and agreement rewards each prisoner more than cooperation, which is claimed to be comparable to grazing conditions.

The Prisoner's Dilemma is based on higher payoffs for defecting (that is, confessing), only if the other does not confess. If both players confess, they are both convicted on the major charge, but get somewhat shorter sentences than either would if he chose to confess (or defect from their agreement) when the other does not confess¹. Neither player knows what choice the other will make. In this situation, the incentive to cooperate is less than the incentive to defect, so defection becomes the dominant strategy.

The dynamics of group interaction are often analysed on the basis of such models, in other disciplines as well as that of economics. Game theorists argue that individual involvement in groups for collective action is a Prisoner's Dilemma, and, on the basis of this model, predict that the rational, self-interested individual will defect (the "noncooperative" solution). Different conclusions, however, can be reached according to the assumptions made about the number of players, their knowledge of the situa-

tion and the other players, whether they play only one game or continue playing, and the relative costs and payoffs assigned to the various choices. Outcomes vary depending on how the game is set up and its underlying assumptions.

It has been pointed out that the choice of the individual to contribute to the provision of a collective good depends first on his understanding of the motivation and calculations of the other contributors, and secondly on whether or not the provision of the good is certain and will be unaffected by his withdrawal (Kimber, 1981). If the provision of the good is not certain and an individual assumes that "his motivation is like that of everyone else (i.e., that they too will act rationally)" (Ibid: 191), he will not leave the group because he will realise that, if the others also make similar calculations, such decisions will lead to the loss of the good.

In cases where an individual has expectations of others' behaviour and where the game is played more than once, the preferred strategy has been found to change significantly to 'no first cheat', that is, co-operate first, defect if the other defects (Axelrod, 1981). Where rules effectively assure an individual that he will not be 'suckered', that is, contributing when no-one else is, co-operation increases. In the case of the state's provision of public services, however, where the individual can expect the good to be provided no matter what he chooses to do, then it becomes rational for him to try to free ride and

necessary for the state to coerce him to contribute (through taxes).

Using Prisoner's Dilemma models to analyse problems of public resource use leads to the false conclusion that it is against an individual's self-interest to contribute to the common interest. The parameters of the individual's choice vary according to the circumstances. The number of other contributors, expectations of their choices, and changes in the benefit according to the number of subscribers and their contribution all affect the outcome. It makes a difference whether the cost of providing the good is fixed, as in digging a well, or continuous, as in providing police services or street lighting. Each situation differs along several dimensions such as individuals' differing interest in the good, interpersonal relations with others, ability to enforce rules and especially the amount of increased benefit that can be expected from cooperation. Assumptions that individuals choose independently of expectations of others' behaviour, and without concern for their future or that of their group, are uncharacteristic of real world conditions and result in misleading conclusions.

3. The use of public and common resources:

The individual must be seen as an integral part of the group, rather than the group being treated as only the sum of individuals, according to utilitarian premises. The individual

can only be understood within his group contexts. He is himself formed by group life even while he contributes to its formation. Focusing on individual rights and maximising the sum of the welfare of individuals loses sight of the reality of the individual's group loyalties and agreements. Ignoring group interests and involvement results in treating common resource problems only in terms of directing individuals to act in accordance with the social good through monetary incentives and disincentives.

Economic theory assumes that the actions of many individuals acting independently according to their own self-interest through the 'invisible hand' of the market, will result in a harmony of interests congruent with the social good. When it becomes clear, however, that market forces are working against the social good, as, for example, in monopolistic markets, the impoverishment of labour to the point of social unrest, or the destruction of public goods, then the state enters to regulate the market. Legal sanctions are invoked either to curb excessive self-interest, or as incentives to redirect self-interest.

In the case of resource management problems where individual self-interest is seen to be in opposition to the common interest, economists offer two types of solutions, either by privatising their use, which involves depriving at least some of the public of a previously public resource, or by government intervention through taxes, subsidies or quotas or fines and imprisonment. Offering private use rights to individual resource users in

situations of resource degradation involves all the problems of previous land reform attempts. Not everyone can be included, and few will have the resources necessary to restore the land from its present condition. Parcelling out large areas into private plots creates other obstacles in their rehabilitation. Deforestation, for instance, often involves large watersheds or hilly areas which are almost entirely denuded. In order to control water run-off and check soil erosion, rehabilitation measures should be planned and implemented for the area as a whole. Attempting to coordinate the private interests of many individual farmers introduces further difficulties.

Solutions to regulating resource use through government controls, apart from being antithetical to traditions of communal access, are often not even technically feasible. Regulation cannot control use where it cannot be applied or enforced. A substantial non-market sector operates alongside market conditions in rural India, and is particularly important in rural energy use, since most energy used in the rural sector is biomass energy for cooking, collected free of charge from public and common property. Fuelwood and fodder from common property were traditionally a major resource, perhaps the only resource, available to landless villagers. Where rural dwellers have been charged for forest produce previously free, however minimal the rate, they have attempted to shift their demand to other forest areas where charges do not exist or are not enforced. In non-monetised rural

areas, regulation through monetary controls will always involve serious enforcement problems, since officials cannot be everywhere and people with very little money have high incentives to avoid charges.

Such solutions are based on assumptions of the inevitability of the mutual exploitation of individuals, and of the basic opposition of individual self-interest with the common interest. Social commentary in the tradition of Hegel and Marx does not see self-interest and common interest to be in contradiction with each other. This tradition assumes that the rationality of humans can overcome the apparent contradiction between individual and community through institutions of collective will formation.

There are conditions under which individuals have incentives to cooperate². Even the early utilitarians were sensitive to the social nature of productive labour. The sociological tradition points to the fact that production can be increased immensely through conscious cooperation of members of a community, thus increasing the size of the total product so substantially that all can benefit far more than when they work separately. Even those who would otherwise be tempted to indulge in a free ride benefit more from cooperation, but the voluntary contribution of all members requires conscious deliberation and committed participation. Where institutional mechanisms of participation fail, free riding can still be discouraged through social sanctions which can be very strong in small communities.

4. The Possibility of Cooperation under Village Conditions:

Using village grazing lands or wood reserves does not generally conform to the conditions of a classic Prisoner's Dilemma or even a Multiperson Prisoner's Dilemma for several reasons. First, the individual's interest in the collective good may be high enough to contribute to the good even when there are few others cooperating. The benefit to different individuals may vary and its value to certain individuals may be high enough to bear a great deal of the total cost, so that the good is provided no matter how many others choose to contribute. Those who cooperate may find themselves better off than if all had defected, because they are obtaining some good that would otherwise not exist. Depending on the value of the good to those contributing, and on the extent of their resources, some free riders can be tolerated.

In a village, mutual interdependence increases the importance of expectations of others' behaviour and affects the individual's choice. He is aware of his dependence on others for various needs, and aware that the group's actions affect his possible choices. The costs and benefits of resource use depend on the total actions of the group, and decisions to use resources and how to use them will be affected by the expected decisions of others. Under such conditions of mutual interdependence and expectations, free riding may not be dominant, because an individual can reasonably expect that a sufficient number of other villagers will cooperate. In such circumstances, he has an incen-

tive to cooperate to increase the payoff produced by cooperation. In cases where the benefit increases with the number of people participating, individuals have an incentive to participate themselves, and they also have an incentive to convince others to participate.

The individual villager relies on others for various needs, and he can expect strong repercussions when he acts against group interests. In addition to the possible withdrawal of economic support, such as lending tools or buying goods, the social costs of breaking rules can include loss of reputation, social neglect, and exclusion from groups.

Village conditions of scarcity and uncertainty make an individual more dependent on the group. The uncertainty that a good will exist unless people contribute to it, along with the need for that good, provides a strong incentive for individuals to contribute. Conditions under which village societies operate can make agreements for joint use of resources both a rational and an efficient alternative. The social overhead costs of enforcement and adjudication of private property claims may be too high for a village to bear. The dependence of the village economy on its natural resource base and the physical limitations in fertility and water supply of that base require proper management for survival. Uncertainties of nature and the level of subsistence at which people live make them more dependent on each other for help in the face of adversities. If they cannot rely on outside help

to provide food and water in cases of resource failure, it is in the common interest of communities dependent on their natural resource base, that resources are allocated in such a way that individuals are not driven to use them in a manner detrimental to the common interest, that is, to destroy them.

Policies of privatisation of the use of public resources have been widely applied on the basis of the "unproven premise that free rider behavior dominates" (Runge, 1986: 629). Several case studies, however, indicate some of the advantages of cooperative agreements for resource management as well as their existence (Ibid: 632). Privatisation cannot always solve problems of public resource management in rural third world situations. Separating the resources will not provide a sufficient amount for each of the people needing them, and will make their efficient management more difficult. Privatisation also involves the need for enforcement mechanisms of exclusive use rights, which have limitations both of feasibility in rural areas and high costs.

In dealing exclusively with problems relating to open access resources, and in devaluing possibilities of cooperation for the common interest, economists have neglected possibilities of common property institutions for improved resource management. Despite the penetration of the market economy into village communities, many old institutions and values still survive. Given the detrimental impact of market-oriented growth processes which are becoming more and more detrimental in the environmental dimen-

sion, the revival or adaptation of these institutions may be the most rational course of action. Because of the limitations of their framework, economists have little to say about barriers to group formation and cohesion, internal dissension, making and keeping agreements, and meeting subsistence needs in the midst of imperfect market structures. Their shortsighted, shortrun analyses and policy options cannot offer the insight needed to find alternatives that can deal with present environmental challenges of public resource management.

There is a need to find ways to encourage the cooperative use of common property, in the hope that it will provide lessons for finding solutions to the major problem of the use of open access public resources. This study examines the community woodlots of a government program in India as cases of common resource management, in order to specify how the community is involved in their management and use, to locate the potential of common resource management for environmental rehabilitation on a wider scale, and to suggest conditions and adjustments that would encourage better cooperation and participation.

Footnotes:

1. See Kimber, 1981, p.182 for a clear description of the original game.
2. Even within the Multiperson Prisoners' Dilemma, cooperation has been shown to be consistent with self-interested behaviour (Runge, 1986: footnote 5).

CHAPTER III

The Historical Context and Present Use of Common Property Resources in Maharashtra

Government attempts at ameliorative action, such as social forestry programs, cannot overcome problems related to structural inequality like deforestation, unless the problem is fully understood within the structural context, and secondly, unless a serious attempt is made to modify existing structures. In order to understand current problems in common property management of the community forestry plantations under study, the community's rights to land and to the use of it must be set in their historical context. This context explains existing structures and processes and also sets the parameters for possible change and realignments. I shall therefore present a general description of the traditional village economy and its land use before British rule, and how it was changed under colonial administration. I shall then consider contemporary village structures, present land distribution and rural energy use, and finish the chapter with a general overview of the Maharashtra Social Forestry Project.

1. Traditional Village Structure:

The basic unit of economic organisation in Indian society was the village. Most of the cultivated village land was divided into estates with hereditary rights, held by individual house-

holds, kin groups or subcaste groups who were responsible for payment of government dues on them. Each member of a subcaste group

could cultivate his share as he pleased, or lease it out, but he was responsible to the others for payment of his share of the revenue unless he left the village, in which case the other members of the (group) could either cultivate the lands and pay the land revenue or let the government give it to another cultivator and collect the revenue from him (Fukazawa, 1982: 178).

Central to the system of agricultural production in a village were the landowning families. They were provided services and products by families of various service castes such as carpenters, potters, blacksmiths, water-carriers, sweepers, laundrymen, and priests, who then had the right to a proportion of the harvest, as well as customary payments and gifts on special occasions. These exchanges were thus made within patron-client relationships which defined mutual obligations as well as rights.

The traditional village economy was based on this exchange of goods and services known as the *baluta* system (or the *jajmani* system in northern India), in which services were provided throughout the year in exchange for a proportion of the harvested crop. Position and responsibilities in this system were defined by caste, which, when defined in terms of its basic common characteristic, is an endogamous hereditary social group. A particular occupational responsibility specifying preferred and forbidden occupations is associated with each caste (Mandelbaum, 1970).

In practice, rather than restricting a villager to a parti-

cular occupation, caste only limits his possible range. Brahmins (the priests), for example, would not be permitted by caste members to do leather work. Similarly, groups outside caste ranks, the "untouchables" or "Scheduled Castes and Tribes", lived outside the village, and were usually responsible for tasks such as leather working and the disposal of corpses and wastes, which were considered impure and defiling by the higher castes. Although they would not be allowed to act as priests, they could be farmers, since agriculture was open to all.

Some of the service households were hereditary village servants, who provided services in common to the entire village community, for which they were entitled to certain rights of lands. They were assigned plots of land, called 'inam' land, on which the land revenue was very low. In addition, a fixed annual share of the agricultural produce of each peasant's family was permanently assigned to these public village servants, who always included a carpenter, blacksmith, potter, leatherworker, washerman, barber, and a priest (Fukazawa, 1982: 334). Inam lands were also attached to the other hereditary village offices such as that of headman (patil) and accountant (kulkarni).

Even though absolute communal ownership may have only existed very long ago, the idea of ownership in terms of sole and exclusive possession remained foreign to India up until the twelfth century. Muslim rule introduced it to some extent before the British formally institutionalised it, but the indigenous

orientation to a thing of value recognised various claims on it or interests in it, rather than ownership of it. Land was seen as belonging to a community rather than a single person, and would entail rights of parties other than the primary ownership group, which were equally absolute. In addition to the sovereign's right to land revenue, other villagers also had rights to a proportion of the harvest. "Alienation of these rights was possible, but not alienation of the land itself in a way that excluded the exercise of the rights enjoyed by others" (Embree, 1969: 46).

Through *baluta* relationships, the village formed a community of specialised interdependent groups. Service groups depended on the community for their livelihood, and cultivators depended on it for services necessary to their way of life. The landowners or patrons had a diffuse responsibility for the households that served them to provide help in times of difficulty. Within the pervasive idiom of the patron-client relationship, they could also expect clients to provide political support. People thus had permanent obligations to each other that tied them together in unequal but stable relationships that were all-encompassing. Such relationships of social dominance, where the superior requires the inferior in order to define himself as superior and values the inferior as a person, must be distinguished from relationships of political dominance, which are more characteristic of contemporary village life, where the superior is indifferent to the inferior, who is treated only as a means (Orenstein,

1965: 8).

Villages were governed by councils or panchayats, which were "either a panchayat of all castes, or a panchayat of the major 'clean' castes, or a panchayat of the most powerful castes" (Bagchi, 1982: 10). These councils dealt with disputes of various kinds through deliberative processes "for resolving conflict, for redressing transgression, and for launching group enterprises" (Mandelbaum, 1970: 278). Only unresolved disputes would be taken for redress to a higher political authority outside the village, which rarely occurred.

2. Colonial Intervention:

Western India, mostly comprising what is now the State of Maharashtra, was united in the eighteenth century under the leadership of Shivaji, a Maratha chieftain. He defeated and drove back the Mughal armies to their central territories in Delhi and established a Maratha Empire. Maratha kings through their Brahman prime ministers, the Peshwas, ruled varying territories for more than a century until being defeated by the British in 1818. The British had begun their conquest of India in 1757 with Robert Clive's defeat of the Nawab of Bengal (Bagchi, 1982: 78) on behalf of the British East India Company. The driving force behind the expansion and consolidation of their power was their primary interest in India as a major source, first of manufactured goods, and, subsequently, as a source of raw materials as

well as a market for the products of Britain's industrialisation.

India's previous position as a major manufacturing country of that region was soon changed by British economic and political intervention. The British East India Company disrupted traditional crafts and industries by trade restrictions and monopolies. Then, as a result of British industrialisation, the Company's interest shifted to procuring raw materials, encouraging, often by force, the production of raw cotton, indigo and opium. It lost its trade monopoly in 1813. Between 1815 and 1830, the Indian cotton and silk handloom industry was "overwhelmed by the competition of British goods" (Bagchi, 1982: 80). From a producer of cotton manufactures, India became the major importer of British cotton goods, which were the single largest item of British exports up to the end of the nineteenth century (Bagchi, 1982: 88).

By the time the British crown took over direct rulership in 1857, India had "ceased to be a leading manufacturing country of the precapitalist era and was reduced to the position of a supplier of agricultural goods and raw materials to the industrialising economies of the West, particularly Britain" (Bagchi, 1982: 82). In order to encourage the extension of commercial agricultural production for export, the British began to change institutional arrangements to facilitate land transfers and acquisition, to set up infrastructural systems for communication and transport to allow easier access between markets and producers, and to

develop agricultural support systems like irrigation networks to increase agricultural productivity.

As British control over land revenue expanded, the Mughal system of land revenue administration was altered in order to increase land revenue and to commercialise agriculture. Under the Mughals, revenue was often collected in kind, and failure to pay rent did not lead to loss of land, whereas the British required cash and permitted the sale of land or rights to collect rents for the realisation of arrears of revenue (Bagchi, 1982: 83). Under the British, cultivators had

to raise crops that would enable them to pay rent in money, and they had to intensify labour on the fields and extend the margin of cultivation. They could no longer treat pasture as an untaxed capital asset, for if they claimed any right they had to pay rent on it as on the cultivated land. Since the cultivators were left with very little surplus, they could not maintain the fertility of soil or replace their main capital stock and consumer durable, viz. cattle (Bagchi, 1982: 84).

British introduction of the institution of private property and a legal system to support it, along with the increasing influence of market forces and its associated contractual relations, began to weaken the baluta system. Manufactured products became available more cheaply than village crafts such as textiles, leather goods and the blacksmith's products, and led to a decline in handicraft production and the need for craftsmen. The traditional interdependence of village caste groups through reciprocal obligations was disrupted by these cheaper imports and by the introduction of commercial agriculture, both cash-crop and

plantation, in the eighteenth and nineteenth centuries. Payment for services in cash and a stricter land revenue administration fundamentally changed exchange relations in the village.

3. Land Use Rights:

The colonial state destroyed the tradition of communal sharing and responsibility through two sets of policies, first, by establishing land revenue systems in which the individual household was made the property owner and responsible for land revenue. As a consequence, the relationship between the state and the community with respect to traditional communal resources was also fundamentally altered. Even though, in theory, previous rulers had had a right to reassign titles to land and could assert ultimate claim to ownership of lands not under direct household cultivation, custom prohibited them from asserting absolute proprietary rights. In fact, therefore, land not under direct cultivation was treated as common by the community. Under a second set of policies instituted towards the end of the nineteenth century, most of this common land was appropriated by the colonial regime in the name of the public interest.

The land revenue system of the Marathas had incorporated features of previous Muslim rule as well as older Hindu traditions. Hereditary officials such as the *deshmukh* at the district level and the *patil* (headman) at the village level continued to hold their titles, lands and most of their powers. The Marathas

administered the land revenue through appointed and paid officials, headed by the mamlatdar at the district level, who appointed his own subordinates and fixed the land tax for each village with the patil (Fukazawa, 1982: 178).

At that time, during the seventeenth and eighteenth centuries, "waste land was abundant all over Maharashtra" (Ibid: 179) and the problem was more that of bringing and keeping unused arable land under cultivation rather than extending the fields for cultivation. No land revenue was expected from uncultivated or unoccupied land, which seems to have been designated from very early times as 'waste' land, but was used communally by the local people. The patil had the power to reassign abandoned landholdings and waste land, within the demands of land revenue regulations, but, generally, rights to land were hereditary and not transferable. Under duress, because of plundering armies or excessive land taxes, rather than selling land, households and even entire villages sometimes abandoned their land and migrated.

With the increasing influence of the East India Company as a political power after 1757, the administrative system established by the Peshwas over the Maratha territories began to suffer, due to internecine warfare between various indigenous princes. During the regime of the last of the Peshwas, the land revenue system deteriorated greatly. Revenue farming was widely used after 1803 and resulted in excessive taxing of cultivators, whose only recourse was to give up cultivation. "The office of mamlatdar was

auctioned and the purchaser in turn let it to revenue farmers" (Fukazawa, 1982: 182). When the British finally defeated the Peshwa and took over his territories in 1818, they set up their administration of Bombay Presidency, and abolished revenue farming. The higher rates of assessment of the last years of Maratha rule, however, were generally retained, with similar consequences for the next twenty years of decreasing or stagnating cultivation.

At that time no best model for land revenue administration was available. Neither the zamindari system of revenue farming in Bengal nor the ryotwari system of direct assessment in Madras had been completely satisfactory (Ibid: 183). In Bombay Presidency, the British began by following the principles of the Maratha system. Generally, the revenue was first assessed on the village as a whole and then distributed among individual peasants, who each contracted separately with the government and were made individually responsible for the assessment. This was known as a ryotwari settlement. Some villages, though, were still responsible collectively through the patil for their revenue.

The Bombay Survey System, which formally instituted and extended the ryotwari system throughout the Presidency, was introduced in the years following 1835. The colonial objective of increasing production of exportable surpluses through institutionalising private property rights and commercialising production had the effect of breaking down traditional ties and obliga-

tions in the village. Making each farmer directly responsible for taxes, rather than the village as a whole, tended to weaken village solidarity and to affect adversely the leadership position of the patil. An objective of the new Survey System was also "to facilitate transfers of land since it was assumed that land would thus move from inefficient to efficient occupants" (Ibid: 186). By the end of the nineteenth century, however, the effect seemed to have been the opposite: land transfers may have been encouraging non-agriculturalists and absentee landlords, rather than better cultivators, to acquire more land.

At the same time as they were regularising land revenue systems, the British state systematically began to appropriate property rights to uncultivated, unoccupied lands. There were several types of land used by a village in addition to cultivated land. Land unavailable for cultivation included nonarable land, such as land with broken or stony surfaces, as well as land set apart for special purposes, including the village site itself, the burial or cremation ground, temple grounds, lands used for roads and railways and common lands specifically set aside for use as pasture and fuel reserves (Baden-Powell, III, 1974: 246).

The British considered all lands other than cultivated land "wastelands", in that they were unowned and seemingly unproductive, but these lands were of great value to the villagers in supporting the village economy. Forest communities especially depended on wastelands, for they lived on the products of the

forests they inhabited. Wood, mud, grasses, leaves, and fruit were collected for housing, energy, fodder, medicine and food needs, at the minimal cost of personal labour. Similarly, in non-monetised agricultural economies, these products provided an important supplement to the exchange of agricultural goods and services, especially for those with less land and resources.

Although the ruler had ownership rights over such lands and their products, the occupancy and use rights of local inhabitants on such lands had previously been respected both by native and invading kings (Guha, 1983). These wastelands, a large part of which were forested, were used by the villagers under common property arrangements. Various customs were observed for religious reasons which had the effect of preserving forest ecosystems. It is estimated that prior to colonial rule, at least 80 percent of India's land resources was common property (Singh, 1986: 2).

At the same time as the were establishing land revenue systems for cultivated land, the British also began to lay claim to these uncultivated common lands, a great deal of which were forested. The State's right to take over these lands was justified by claiming that it had always belonged to the ruler and therefore to the State (Baden-Powell, II, 1974: 397). Individual cultivators who used it for grazing and fuelwood, did not claim it as belonging to them. Rulers and village headmen could reassign it by assigning title to it, so obviously must have had

property rights to it. This argument ignored the fact, however, that previous Indian sovereigns "granted occupancy rights and did not appropriate common resources" (Singh, 1986: 25) even when they asserted their ownership of common forest lands.

The subsequent appropriation of wasteland by the State involved procedures which were meant to leave part of it for village use. On most of it though, customary rights of users were extinguished through compensation. The rule for allotting waste lands devised in 1862 was

to grant a certain area of waste to the village for extension of cultivation and use as grazing ground, &c., and reserve the rest to Government. The rule was that an area equal to 100 per cent. as a minimum, and 200 per cent. as a maximum, on the area of cultivated land should be given over to the village (Baden-Powell, II, 1974: 400).

It did happen, of course, that, due to improper measurement of boundaries, "proper areas of waste were not left to the village, or not left in suitable position" (Ibid: 401).

Similar procedures for land appropriation were followed under the Revenue Code and the newly formulated Forest Act, with the result that a great deal of land surrounding the villages that had previously been available to them and subject to their control was now withdrawn from their use.

4. Forest Use Rights:

The colonial regime gave rise to two sources of increased common land exploitation, first, from groups newly dispossessed from the baluta system who had no other resources to draw upon,

and secondly, the new development effort of road and railway construction required both land and greatly increased quantities of timber. In addition to this increasing domestic demand, the British also accelerated the extraction of valuable timbers for export. Having depleted their own forests by the sixteenth century, India's provided a crucial source of teak, especially for shipbuilding to support England's marine power. As was the case in textiles and spices, the British immediately entered the market for, and began to lay claim to, India's seemingly inexhaustible timber supplies.

By the latter half of the nineteenth century, the large quantity of timber required for domestic railway construction, at its peak from 1870 to 1910, gave urgency to the need for establishing control over the exploitation of India's forests. After the First War of Independence in 1857 (or the Mutiny, as the British saw it), railway construction was rapidly expanded for military purposes, as well as to increase access to hinterland resources and to facilitate the export of primary commodities and the import of finished goods. Large tracts of forest were cleared by private contractors, both Indian and European, without regard for waste, to meet the demand for railway sleepers and locomotive fuel (until coal mines became operative).

In addition to justifying the state's right to appropriate forest land by referring to previous rulers' claims to it, a second justification was that state control would ensure their

conservation and proper management under "scientific forestry" principles, as well as their protection against destructive use (Voelcker, 1986: 135). The need to control the wasteful and destructive extraction methods of private contractors was seen as reason enough to take control of the resources. It was also argued by the latter half of the nineteenth century that the spread of cultivation, and especially the practice of shifting cultivation, were causing rapid deforestation that required government intervention. The practice of leaving the forests "free to all" was considered detrimental to proper forest management (Stebbing, I, 1922: 37).

In 1864 the Imperial Forest Department was set up to control and supervise the exploitation of forests. Supporting legislation in the Indian Forest Act of 1865 made the first assertion of state monopoly right over forests, "subject to the proviso that the existing rights not be abridged" (Guha, 1983: 1940). It was replaced by more comprehensive legislation in 1878, which established three types of forest land: i) state or reserved forests, which were reserved for state exploitation and completely restricted against village and private use, ii) protected forests, where local rights were recorded but not settled, and iii) third class or village forests assigned for village use. Provisions were made in protected forests for restrictions on the use of particular tree species, when they became valuable, and for changing the status of protected forests to reserved.

It was intended that the state would set aside and protect the third class of village forests for village use. The rulers' lack of understanding of traditional management systems and their decline under the pressure of commercialisation was at the root of the ineffectiveness of these provisions. Because the procedure for "protection" required that such forests must first be made reserved forests, in order that forest officials would have the power to limit and curtail the use of their products, local communities strongly opposed such a measure, for fear of being restricted from using it. Consequently this section of the legislation became inoperative (Stebbing II, 1923: 471).

The sovereign's claim to the ownership of lands and forests under his rule was used to legitimate the assumption of exclusive monopoly right over these common property resources. Under the Forest Act, local customary use of forests was now termed a 'privilege' rather than a 'right', and privileges were "exercised only at the mercy of the local rulers" (Guha, 1983: 1884). In order to cancel these privileges on reserved forest land, a mechanism was set up, similar to that used to appropriate Revenue wasteland, for people to declare their rights over such land and to receive compensation for losing them.

The procedure to be followed however, was sufficiently difficult for a populace unaccustomed to British administrative practices, let alone their language, that very few claims were made (Singh, 1986: 11). Where forests were to be reserved, a

Forest Settlement Officer would issue notice in the official gazette requiring that any person with rights over that land should claim them within three months. Rights of users could then be extinguished by paying compensation or transferring them to another block of forest through the discretion of the Officer in charge.

The commercialisation of productive processes and the increasing individualisation of rights basic to commercialisation attacked communal economic systems. The loss of community control over forest lands led to the overuse and deterioration of lands still accessible to the local inhabitants. Villagers could no longer be sure of realising the benefits of their efforts at maintenance and management. Guha quotes a forest superintendent of Dehra Dun, commenting in 1897 that, wherever third-class or village forests existed, villagers generally believed that their efforts at maintaining or improving such forests would "end in appropriation by the (forest) department as soon as they become commercially valuable" (Guha, 1983: 1885).

The loss of right to the usufruct of the forest was especially devastating to forest dwellers or tribals, whose livelihood was threatened. The subsequent protest and unrest exacerbated bureaucratic antagonisms between the revenue/law and order administration under the District Collector and forest administration under the Forest Department. The Collector was concerned with public discontent and also his loss of the right to increase

cultivation areas into lands now under Forest Department control, which had been a means of conferring patronage. The forest officers resented the lack of support of the civil authorities who were in charge of issuing sanctions against infractions. In spite of continuing protest against the denial of local forest use rights, the process of taking over reserved and protected forest for commercial use continued, and was further consolidated in 1927 in a revised version of the Forest Act.

In addition to protecting forest products from local inhabitants, the Forest Department was expected to generate enough revenue to be self-supporting. Besides selling standing trees to timber merchants, the Department also felled and extracted timber directly, producing building materials, teak exports and minor forest produce. Its surplus grew from 1.7 million rupees, or 30% of total revenue in the early 1870s to 13.2 million rupees or 45% of revenue in 1914, at the beginning of the First World War. During both World Wars, forestry production was greatly expanded to meet war demands. The production of timber reached 863,000 tons in 1942/43, "a three-fold increase over that for 1940/41" (Stebbing, IV, 1962: 161).

Independence in 1947 brought no major change in government control of forest resources, except that they were no longer to be used for foreign interests, but to support the industrial development of the new State. The expansion of forest industries and accompanying need for forest products for industrial produc-

tion resulted in a policy of 'dynamic production forestry' where natural forests were clear-felled to generate income and to provide land for replacement with plantations of fast-growing and/or valuable commercial species. The support of international aid agencies such as the World Bank helped extend roads into previously inaccessible forests to open forest resources for industrial development, without sufficient concern for negative environmental effects and for negative socio-economic effects on the local inhabitants¹.

The 1952 statement of National Forest Policy reaffirmed the principles of the Indian Forest Act of 1878, strengthened in 1927. It asserted the state's right of control over forests in the national interest over the rights of village and forest communities, which clearly identified the national interest as in opposition to the local community interest. Although the role of forests in environmental protection was also recognised, the national interest generally coincided with that of urban-industrial groups and involved production forestry and the destruction of forests for road construction, irrigation and hydro-electric projects, whereas the "cultivation of lands shown as forest lands but without any actual tree cover was treated as encroachment" (Kulkarni, 1983: 89). By 1976, the National Commission on Agriculture estimated that over 3.4 million hectares of forest land had been lost between 1951 and 1972 for various development purposes, including river valley projects, minor irrigation pro-

jects, the establishment of industries, the settlement or rehabilitation of landless people, and the construction of roads (Centre for Science and the Environment, 1986: 6).

In addition to this transfer of forest land for purposes of industrial development, there has been substantial deterioration in the forest cover on much of the remaining forest land. Total forest land area under control of the Forest Department is 75 million hectares, but less than half of it is actually under tree cover (Guha, 1983: 1892). The 1952 National Forest Policy stipulated that one third the total land area of India should remain under forest cover, but "satellite pictures revealed that during 1972-75, only 16.89 percent of the land area actually had forests" and by 1980-82 forest cover had decreased to 14.1 percent of land area (Centre for Science and the Environment, 1985: 80).

As shortages of many forest products became apparent in the seventies and their commercial value rose, the Central government increased its involvement in the forestry sector. Where responsibility for forests had rested with the States since the 1920s, in 1976 it was moved from the State List to the Concurrent List of responsibilities. The Forest Conservation Act of 1981 requires Central Government permission for any forest land to be used for non-forest purposes.

A new Forest Bill was proposed in 1980 which would have further strengthened Central power over States and local communities, and was strongly opposed by voluntary organisations on

behalf of forest dwellers and rural communities. The proposed legislation retained most of the 1878 Act, adding three new sections. It would have provided the Forest Department with more flexibility in taking over land, whether it was forested or not, and in appointing contractors to purchase forest produce. It would have increased the penalties for forest offences and assigned greater power to forest officers to confiscate tools and impose penalties. At the same time it included no provisions for improving environmental protection: under the present Act, activities that imperil environmental protection can only be prohibited in non-government forests (Guha, 1983: 1942-3). The 1976 Report of the National Commission on Agriculture formally recognised the necessity for maintaining forests for ecological protection in addition to programs for production forestry and social forestry, assuming that all three objectives can be simultaneously achieved.

The debate aroused by the proposed Forest Bill arrested its passage and has delayed the introduction of a revised National Forest Policy and Forest Bill. Several critics argue that the forestry sector should no longer be treated as primarily revenue generating (Fernandes, 1983; Gadgil et al, 1983; Kulkarni, 1983). Others go so far as to question continuing state ownership and control of forest lands (Singh, 1986; Commander, 1986). Such arguments against public ownership point out the deterioration of forests resulting from ineffective public management. Advan-

tages of state management are only gained to the extent that its control is effective, and the present condition of forest resources under state control show that it has not been effective. Serious "leakages" in contracting logging rights, difficulties in the enforcement of monopoly control and the implementation of conservation principles have resulted in the loss and deterioration of a large proportion of natural forests, whose environmental value only becomes more and more evident in their absence.

Thus the deforestation crisis must be seen as a direct result of forest policy and legislation that has displaced local communities from common land use, combined with the shortsighted acceleration of forest exploitation for industrial purposes. Blaming local populations for continuing to use the little that remains not only ignores the forces that led to the problem, but also results in inadequate solutions, such as small community woodlots that cannot begin to deal with the real problem of dispossessed villagers.

Meanwhile, the continuing deterioration of forest stock, the increase in related environmental problems, and shortages of forest products are putting pressure on the Government to come up with effective solutions to these problems. Under counter pressure from urban-industrial interests, however, the government continues to supply industrial raw material through the Forest Department, and offers social forestry programs encouraging local people to develop forestry resources to replace what has been

lost.

5. Contemporary Village Structure:

Commercialisation of production, the privatisation of property rights, and the state's assumption of ownership rights over communal land already described, continuing after 1947, have resulted in the breakdown of institutions of communal resource use. Modern political institutions continue to make reference to community interdependence and responsibility for those in need, but the reality is competitive individualisation mediated by top-down government programs that are delivered through institutions in the control of village leaders. Involvement in the market and subjection to market forces have been accompanied by increasing differentiation in the peasantry, with the lowest segments being the most serious victims, since commercialisation meant the decline and loss of any remaining communal obligations and rights.

After Independence, preferences and discrimination based on caste affiliation were officially abolished in an attempt to eliminate social injustice against deprived groups. Caste identification was thereby eliminated in the decennial census, except for that of Scheduled Castes and Scheduled Tribes, which have to be identified for the special educational and job concessions to which they are entitled in government affirmative action programs. In addition to these 'depressed' or 'backward' castes, representations have also been made on behalf of caste groups of

somewhat higher status than the Scheduled Castes, but also socially and economically deprived. These middle castes have been listed and designated as "Other Backward Castes" or OBCs. They make up about 52 percent of India's population, as compared with 22.5 percent Scheduled Castes and Tribes (Government of India, 1980, Vol.I: 64).

In spite of its official abolition, caste remains a significantly relevant social characteristic because it is as basic to one's identity as one's ancestral lineage. To the extent, moreover, that particular social groups maintain higher social and economic positions in the society, and others encounter barriers to improving their deprived positions, where these social groups are defined by caste, to that extent caste coincides with class.

Although there is a tendency in the literature to speak of the peasantry as an undifferentiated mass, various classes are generally distinguished by their relations to the means of production, that is, land, farm animals and agricultural implements and inputs. Specific forms vary enormously regionally and within regions, but generally the peasantry is differentiated into landlords, who derive income from renting land to tenants without cultivating it themselves, rich peasants, who manage their lands through use of hired labour, middle peasants, who cultivate their land through family labour, poor peasants cultivating plots of land too small to support themselves, and therefore also work on others' land for wages, and landless labourers, who rely entirely

on selling their labour for a livelihood (Bagchi, 1982: 147-9).

In addition to land-based classes, moneylenders, traders, and service groups continue to be part of the village, although their work may have changed. In Maharashtrian villages, moneylenders and traders are generally vanis from Gujarat, artisans and service groups still perform their traditional caste-associated or a related trade, and the landless to a large extent are Scheduled Castes and Tribes (untouchables). The last census that recorded caste in 1931 showed the cultivating castes of Maratha-Kunbis to be 37 percent, artisan castes 7 percent and Scheduled Castes 12 percent of the population of western Maharashtra (Census of India, 1931). Brahmans, who composed only about four percent of the population, now make up a large proportion of the intellectual and professional occupations in the cities. Few Brahmans have stayed in the villages.

Most of the cultivated land in Maharashtra is owned and farmed by families belonging to the caste of Marathas. It is by far the largest caste numerically, accounting for about 40 percent of the population (Karve, 1968: 76), but is a coalition of two roughly distinguishable groups. Vatandar Marathas, about 16 percent of the total population, are those who were traditionally entitled to inam lands as part of the privileges attached to their hereditary village positions as patils. They generally claim to be descendants of 96 clans of previous regional overlords. While the core lineages within concentric clan circles

(the largest consisting of 96 clans) retained their distinct identities for centuries, the relationship between the less privileged lineages or kin groups from these clans and a wider cultivator caste cluster called Kunbis was always fluid. Thus when numerical strength became politically important, elites from the Maratha clans were able to draw on often distant kinship links with this larger group of peasant cultivators, the Kunbis, in order to broaden their support base.

Today, elite Marathas are the large landowners in the village with the best land, the largest proportion of land, and disproportionate control over political access to government resources like subsidised inputs and credit that enhance the productivity of their land. Kunbis, who now prefer to call themselves Marathas, are also mostly cultivators, but their landholdings are usually smaller and of poor quality. They have less education, lower incomes and lower status than elite Marathas (Lele, 1981).

The Marathas have been defined as the dominant caste of Maharashtra due to their political and economic hegemony over the entire State. Dominant castes attain their power from a combination of forces, with control over land as its basis. The members of a dominant caste are "numerically strong in the village or locality" as well as being "prepared to exert their economic and political power" and "usually they are of respectable ritual rank" (Mandelbaum, 1970: 358-9). In that a dominant caste is

defined as wielding control as a caste, however, some authors question whether the Maratha caste can be considered truly dominant when it is only the privileged section of it that exercises dominance. In such a case it has been suggested that caste be separated from dominance and dominant groups be recognised as a political class (Carter, 1974: 50).

After Independence, the state began a systematic effort to introduce programs for improvements in agricultural productivity and in the conditions of life for the vast majority of rural people. The community development program of 1952, supported by the Ford Foundation, began to provide technical and infrastructural support for "integrated rural development". Although the First Five Year Plan (1951-56) followed an "extensive approach", where available resources and technology were dispersed "over the widest possible area in the hope of producing the fairest possible spread of benefits" (Pearse, 1980: 80), a major policy shift occurred in the Second Five Year Plan (1956-61) when the Intensive Agricultural Development Programme (IADP) was initiated in 1960-61 and followed a selective and intensive approach. The best agricultural districts were selected in each State, and were then provided with highly subsidised and improved agricultural inputs, increased technical support, and credit and marketing facilities. The technology associated with the new high-yielding seed varieties was introduced in these districts in 1966.

The revenue administration, also responsible for law and

order, continued from colonial times without much change. At the village level, the Revenue Department appoints a Talathi as its administrative official, to maintain land records, collect the land revenue and prepare voters lists, etc. It also appoints a Police Patil from the local patrilineage that has a right to the office by virtue of descent, but this officer no longer has any formal powers. A Gram Sevak or Village Level Worker is appointed to do the administrative and extension work of the rural and agricultural development programs. The taluka is the next highest administrative level to the village, encompassing from 50 to 200 villages with a town as its headquarters, and the mamlatdar as its head revenue official. Ten to 15 talukas form a district with the Collector as chief official.

Beginning in the early sixties a new system of electoral politics was instituted throughout India, with the objective of increasing local participation in the administration of rural development programs. The new political institutions of Panchayati Raj parallel levels of revenue administrative offices to a large extent. The village level political institution is the village council or Gram Panchayat, evoking memories of the traditional village panchayats but based entirely on modern electoral power politics. Each village is divided into wards for Panchayat elections to elect 7 to 15 members, two of whom must be women and one or more of Scheduled Caste and Tribes. Elected members then elect from amongst themselves a sarpanch (chairman) and upa-

sarpanch (deputy chairman). Elections are to be held every four years and the adult population of the area represented by the Panchayat is to hold a Gram Sabha meeting at least twice a year (Carter, 1974: 32-3).

Higher level political councils, established in 1961, are Panchayat Samitis at the taluka level, and Zilla Parishads at the district level. These councils consist of directly elected members, elected representatives from lower level councils, and chairmen of co-operative and educational societies, with seats reserved for women and Scheduled Castes and Tribes. Revenue officials administer such local as well as state and national elections.

Although these parallel institutions of Panchayati Raj may have helped curb the arbitrary decision-making powers of salaried civil servants headed by the District Collector, and although they do provide formal avenues for representing the needs of all village groups, political processes have been controlled by the privileged to maintain their position and to reserve access for themselves to state resources. Complex factional struggles combining vertical support networks with horizontal alliances are used to establish control over various political arenas. Vertical alliances are defined as "those between elite leaders and members of the political class generally, on the one hand, and their followers outside the political class, on the other. Horizontal alliances are those between one elite leader or political class

member and another" (Carter, 1975: 8).

Vertical alliances are built on stable patron-client relationships at the village level, usually based on ties of economic dependence, and promising rewards in return for political support. Each village ward elects two or three members to the Panchayat, so panels of candidates are nominated by different alliance leaders. The success of an alliance's candidates can then be used at higher levels to swing support to the chosen nominees of the village leader's allies. By tying into horizontal alliances at levels above the village, a leader wins preferential access to the benefits offered in government programs for himself and his supporters.

Agricultural inputs and support services are now generally provided all over Maharashtra through government-established co-operative societies. Various co-operatives providing credit, access to equipment, seeds, fertilisers and marketing facilities are located at village, taluka and district levels. They are run by elected boards and the pattern of using vertical support alliances is followed by the village elite in this case as well. Chairmanship and even membership of co-operative boards provide better leverage for maintaining local support than even a seat in the State Legislature because of the many patronage opportunities they provide.

Government programs are available, for instance, to subsidise and finance private irrigation works. Because irrigation is

the key factor in the farmer's capacity to produce lucrative cash crops, government support for digging wells and running pipelines from rivers makes a critical difference in the level of productivity of a farmer's holding. But not all farmers are considered good credit risks, especially if their holdings are small and unproductive. On their own, moreover, small farmers do not often know how to approach formalised institutions (Pearse, 1987). A patron can make the right application and the proper recommendation to the appropriate person in charge of loans and inputs, provided the small farmer's support is important enough to him. In spite of the presence of state banking institutions in most villages, "it is estimated that only 40 per cent of the total rural debt is provided by these institutions. In other words, the moneylenders are still responsible for sixty percent of the rural credit" (Government of India, 1985b: 58).

The domination of political and economic institutions by larger landowners (who are usually elite Marathas) perpetuates the separation of agricultural production into a flourishing commercialised sector in the midst of an impoverished subsistence sector. Subsistence farms, often defined by their small size, are characterized by the production of very little surplus for sale beyond the needs of the farm household, whereas commercial farming produces a substantial surplus for sale above the needs of the farming household. Although most farms in India, no matter how small, are involved to some extent in commercial markets,

from both the demand and supply sides, subsistence farms are those with minimal participation in commercial transactions.

The use of modern technology, even if it is limited to the use of chemical fertilisers, has increased the farmer's involvement in the market. Where access to credit can be achieved and irrigation made available, substantial rewards are gained through cultivating cash crops like peanuts, cotton, onions and especially sugarcane, rather than the staple dryland crops of sorghum and millet. The new elements of production like fertiliser, however, must be obtained and paid for in the market, whereas, under traditional subsistence production, agricultural inputs originated on the farm itself or in the neighbourhood. In order to pay for the new inputs, credit for operating capital must be arranged, and an increased proportion of the harvest must be sold, requiring increased market incorporation of the cultivator, and involving increased risk of indebtedness leading to loss of land.

The smaller the landholding, the harder it is to break out of subsistence production. Although the small cultivator has generally been found to be the most efficient producer, especially in traditional cereal farming (Lipton, 1978), in addition to the political disadvantages already described, he suffers from several diseconomies of inputs, such as the high cost of obtaining water, seed, fertilizer and especially credit for a small unit of production. The small cultivator, however intensively and efficiently he uses household labour, cannot compete with larger

irrigated farms using modern inputs. His risks, moreover, since they involve losing all his resources, are higher than those of a farmer with substantial assets.

Since few manage to commercialise their production, the subsistence sector remains large, that is, in terms of the number of cultivators involved, rather than the area under production. The majority of cultivators in India operate very small farms under 2 hectares in size (see Table 3.1). 57 percent of operational holdings were under 1 hectare in size and 18 percent were from 1 to 2 hectares in 1980-81, making a full 75 percent of all holdings under 2 hectares in size. Under rainfed agricultural conditions in most of Maharashtra, about five to six hectares of land is needed to maintain an average family of six persons (Brahme and Upadhyaya, 1979: 55).

Table 3.1: Distribution of operational holdings by size of holding, all India 1980/81

Size of Holding	Number of Holdings		Area Operated	
	number in millions	percentage	million hectares	percentage
Marginal (less than 1 ha.)	50.5	57 %	19.8	12 %
Small (1 to 2 ha.)	16.1	18 %	23.0	14 %
Medium (2 to 4 ha.)	12.5	14 %	34.6	21 %
Large (4 to 10 ha.)	8.1	9 %	48.3	30 %
Very Large (10 ha. and above)	2.2	2 %	37.1	23 %
Total	89.4	100 %	163.14	100 %

Source: Government of India, Ministry of Planning, 1987, Basic Statistics Relating to the Indian Economy, New Delhi, p.27.

The 75 percent of holdings under two hectares, however, accounted for only 26 percent of the cultivated area, whereas the

11 percent of holdings over 4 hectares in size accounted for 53 percent of the area. Larger holdings are more likely to be irrigated, and since irrigation in dryland areas is the critical factor in increasing productivity, these larger holdings are also the ones producing the largest surpluses, justifying in this way their favoured treatment by the State. Only 10.1% of the total area under foodgrains, and 13.3% of all crops in Maharashtra were irrigated in 1983-84 (Fertiliser Association of India, 1987: 11-17).

By necessity, a substantial proportion of the rural population works as agricultural labourers, which indicates that they either have no land or have too little to fully support their households. 62 percent of all workers in Maharashtra are employed in agriculture, and 43 percent of agricultural workers are agricultural labourers (Table 3.2). Whereas men looking for work now find some opportunities in the expanding industrial and manufacturing sectors in Maharashtra, even in some rural areas, most village women needing employment work as agricultural labourers. Although women comprise 30 percent of the total workforce, they make up 51 percent of agricultural labourers (Ibidem). They are often favoured as workers, since they do steady work at rates lower than those for men.

These large numbers of small and marginal farms and of agricultural labourers indicate the importance of the subsistence farming sector in the village. Agricultural commercialisation

**Table 3.2: Agricultural Workers in Maharashtra by Sex
as a Proportion of Total Workers, 1981**

	Male (in millions, percentage in brackets)	Female (in millions, percentage in brackets)	Total (in millions, percentage in brackets)
Cultivators	5.73 (33.7%)	2.8 (38.5%)	8.54 (35%)
Agricultural Labourers	3.15 (18.5%)	3.32 (45.6%)	6.47 (26.6%)
Total Workers	17.02	7.28	24.3

Source: from Government of Maharashtra, Planning Department, 1986, Seventh Five-Year Plan, 1985-90 and Annual Plan, 1985-86, Part one, Bombay, p.26.

and the decline of traditional ties of support has had the consequence of many such workers now finding themselves in the unfortunate position of having to contend with disadvantages of both systems, that is, of partial incorporation in the market, and, at the same time, of dependence on subsistence production without the old forms of support from larger landowners. Many of their needs which used to be met through exchange or with goods in kind, now require cash payments, but the major commodity they have to sell, their labour, commands a very low value since it is in abundant supply. Where they could previously count on some help from patron-employers, such as the right to graze his fields after harvesting them, now they are usually only entitled to an inadequate daily wage (Vidyarthi, 1984). In this way, they are caught between the partial control of market forces and the insufficient product of their private land and the common resources available to them.

6. Rural Energy Use:

The displacement of a large proportion of villagers onto inadequate plots of land or none at all, combined with the loss of their traditional rights to produce and other support from larger landowners and their difficulties in obtaining government support services for themselves, has resulted in their increased reliance on whatever non-market products are available to them. With increasing pressure from urban centres for biomass energy, in the face of increased prices of commercial energy since the seventies, added to these rural needs, the intensified pressure on public and common resources accounts for deforestation and the spread of other forms of land degradation. It is therefore important to describe rural energy use and sources, the dependence of subsistence households on common and public property resources, and their declining quality and availability.

The sudden increases in international oil prices in the mid-seventies affected both commercial and non-commercial energy supply and use in India. Widespread shortages and escalating prices of commercial energy increased market demand for cheaper biomass energy. The resulting pressure on fuelwood supplies created scarcities, especially for those rural people who have always depended on local non-market sources of biomass for their energy needs, and cannot pay for them when they become commercialised.

Shares of final commercial energy consumption in India in

1982-83 were 21.6% oil, 49% electricity and 29.4% coal (Khosla, 1986: 419). Non-commercial energy (biomass that is generally collected outside the market) such as fuelwood, agricultural residues and animal dung, is currently consumed in proportions of 65%, 15% and 20% respectively (Ibid: 436). When biomass energy consumption is included in figures of energy use, approximately 44% of total energy is consumed in industry, 14% for transport, 38% for residential use and 5% in agriculture (Leach, 1986: 48).

Commercial energy is intrinsic to industrial growth and is therefore predominantly consumed in urban areas, especially in the industrial and transport sectors, whereas most non-commercial energy is consumed in rural areas. The proportion of non-commercial to commercial energy consumed in India declined from 67.7% in 1953-54 to 43.5% in 1975-76 (Khosla, 1986: 436), to slightly less than 40% in 1979 (Leach, 1986: 58), reflecting the increasing component of industrial production in GDP.

The increase in commercial farming as a proportion of agricultural production is similarly reflected in increased commercial energy consumption in the agricultural sector. Only ten percent of total commercial energy is consumed in agriculture, but most of this is consumed in the commercial farming sector using modern agricultural technology. Energy use is generally much higher in cash-crop production than for food grains, especially because cash-crops are usually irrigated. Modern irrigation methods require commercial energy sources of either elec-

tricity or diesel fuel, and nitrogenous fertilizers, produced from a natural gas feedstock, indirectly use fossil energy.

The introduction of chemical inputs in the early sixties and HYVs in the late sixties has had a major impact on energy use. Where farming systems used to be ecologically closed, supporting both human and animal users from within the system, modern agricultural technology has fundamentally disrupted the old energy use cycles. Feeding livestock on crop residues in the field used to return dung to the soil as fertiliser, maintaining its humus content and fertility. The use of cattle for milk products and as draught animals was sustained on feed from within the system.

Now that external inputs like fertilisers are being increasingly used even on subsistence farms (Sankar, 1982), the self-sustaining qualities of farming systems are being destroyed. The traditional use of local seed varieties meant that the farmer self-selected the best seed for his particular land conditions for next year's crop, whereas the new seed varieties are developed for qualities not necessarily corresponding to a small farmer's needs. Since they are hybrids, new seed must be bought every year and, in order to achieve their high yield potentials, they require regular watering facilities and insecticides, herbicides, and intensified fertiliser applications, thereby increasing requirements for external support. The spread of the HYVs has also decreased the quantity of crop residues available for fuel and fodder use. Local crop varieties have longer stalks than

the new high-yielding varieties and therefore produce more straw per unit of grain. Switching to HYVs has thus affected fodder availability and displaced fodder sources to other lands, especially publicly-owned resources.

The use of modern agricultural technology and the farmer's dependence on inputs external to the farming system, including seeds, chemical and energy inputs, as well as financial and marketing support has thus disrupted the old self-sustaining energy cycles. In addition, the commercialisation of fuelwood and growing demand for it in urban centres has increased pressure on fuelwood supplies and removed it from the subsistence sector, increasing in turn the amount of dung and crop residues used for energy, which results in their withdrawal from use in the natural energy cycle as fertiliser and fodder.

However much commercialised agriculture and industrial development has increased commercial energy use, biomass energy is still the major energy source in rural areas, the residential sector accounting for most of the energy used in rural areas. Non-commercial fuels, consisting of logs, twigs, dung and agricultural wastes, make up 89.2% of all fuel used in rural households (Natarajan, 1985:4) and 89.2% of this rural non-commercial household fuel is collected (Ibid, II: 34).

The vast majority of all rural households, at all income levels, collect their fuel rather than purchase it, but from different sources. Richer households use more logs and more

commercial fuel than poor ones, but about the same proportion (around 90%) collect biomass fuels (Blair, 1986: 1318). Higher income households, however, collect biomass mostly from their own land, whereas lower income groups depend to a greater extent on common and public property resources. An extensive survey of energy use conducted by the NCAER in 1978-79 found that the major source of collected fuelwood, dung and crop residues for the highest income groups was from their own farms, whereas only 18% of the lowest income group depended on fuelwood from their own farms (22% for crop wastes) and 35% collected dung from their own animals. 23% of these poorest households depended on roadsides and 30% on forest land as the major source of their fuelwood (Natarajan, 1985 II: 37, 40-1).

Poorer villagers are thus disproportionately dependent on public resources for energy supplies. A 1982 study of dry tropical regions in seven Indian states found that "between 84 and 100 per cent of the poor households gathered food, fuel, fodder, and fibre items from CPRs (common property resources). In contrast, just 10-28 per cent of large farmers depended on CPRs for these items. However, a greater proportion of large farmers collected items like silt from CPRs, e.g., ponds, to enrich soils of their fields, and timber (mature trees from the village forest that are not legally allowed to be cut) for their private use" (Jodha, 1986: 1172).

This greater dependence of the poor on public resources can

be explained in terms of their resource endowments. Poor households tend to have high man-to-land and animal-to-land ratios, but need to use all their land resources for food crops. Collecting fuelwood and grazing their livestock on public lands complements their low land endowment, at the same time as it matches their high labour endowment. Since the main factor involved in using common property resources is human labour, this cost "matches very well with the labour surplus resource position of the poor. Furthermore, because of over use and degradation, the returns from CPRs to individual users, in most cases, are not very high and are unattractive for the rich. However, poor households, with surplus labour and low opportunity cost, readily accept the low pay-off activities possible through CPRs" (Jodha, 1986: 1172-3). These supplementary resources become even more critical to them in times of drought and crop failure because they do not have any other adjustment mechanisms to fall back upon.

At the same time that common resources have been increasing in importance as energy sources for poorer village households, both the area available as well as the quality of these resources have been declining. Jodha reports from village-level records and oral accounts that "both the area and physical productivity of CPRs, in terms of quantity and quality of products, have declined" (Jodha, 1986: 1177-8) in three forms: first, the physical loss of resources involved in common land that has been submerged

by irrigation projects or covered by roads and public buildings, secondly, the deterioration of productivity on common lands through misuse or overuse, and thirdly, the reassignment of usage and property rights.

Much of the common land remaining at Independence has been reassigned through legitimate public use, such as land used for schools or other public buildings, through reallocation to private use through land ceiling legislation, the Grow More Food campaign of the sixties, and welfare programs, as well as through illegal encroachment (often subsequently legalised). Jodha estimates that the area of common property resources has declined in the last three decades by 26 to 52 percent in the twenty-one districts studied. In Maharashtra, he estimates that common property resources declined as a proportion of total village area from 25% to 19% in Sholapur District, from 21% to 15% in Aurangabad, and from 19 to 11% in Akola, from the early fifties to the early eighties (Ibid: 1177).

Altogether, there has been a general trend towards greater privatisation of the ownership and use of resources (Kurien, 1987: 48). In addition to the transfer of property already mentioned, such changes as tenancy protection measures and the importance of title deeds affirming ownership to obtain bank credit, have increased the awareness and importance of exclusive ownership rights. The privatisation of land, however, ultimately has not improved the resource position of the poor, even when it

was meant to help them. Whatever land they received was often so poor as to be of little use, or was transferred to the use of large landowners through debt obligations. Their inability to develop and use the land, the lack of complementary resources, or immediate cash needs were common reasons for finally giving up the land they had received (Jodha, 1986: 1177).

Most of the available village land is now cultivated, and of the land that is uncultivated for various reasons (see Table 3.3), very little is available to villagers as common land for common use. If a village gairan still remains it is usually less than 20 hectares in size. Thus it is that on land owned by the Forest or Revenue Departments surrounding the village there are few trees and bushes left. Although villagers are not entitled to use products of such land, they depend upon them for sources of energy and grazing in the absence of other non-market sources.

This dependence on Forest Land resources explains why a great deal of the Forest Land that covers about one fifth of Maharashtra has no forest cover left. The Forest Department estimated in 1981 that 35.6% of the state administered forest was degraded (53.3% in Pune District) (Muranjan, 1987: 155). A large proportion of all publicly-owned lands are now degraded to the point of being classified as "wastelands" in a new sense. Previously, wastelands were defined on the basis of land-use, that is, they were lands lying uncultivated. Recognition of rapidly spreading ecological problems, related to modern agricultural

technology as well as to wood shortages, have led to definitions based on the quality of the land and the type of land degradation problem it suffers from (CSE, 1986: 3).

Table 3.3: Land Utilisation in Maharashtra, 1981-82

(in sq. km., percentage in brackets)

Forest		53094	(17.2)
Not available for cultivation:			
Land put to non-agricultural uses	9931		
Barren and uncultivated land	17334	27265	(8.9)
Other uncultivated (excluding fallows):			
Permanent pastures and other grazing	15908		
Miscellaneous tree crops and groves	1857		
Cultivable waste	9929	27694	(9.0)
Fallow Land		16544	(5.4)
Net Sown Area		182986	(59.5)
Total geographical area by village papers		307,583	(100.0)

Source: Muranjan, 1987, Management of Social Forestry in Maharashtra, Pune: Gokhale Institute, p.153.

Wastelands are now defined as land both lying uncultivated and physically degraded. They are distinguished between potentially "culturable" (arable) wastelands and "unculturable" wastelands which include barren stony areas, sheet rock, steep sloping areas and snow-covered and glacial areas. Culturable

wasteland is "land which is capable or has the potential for the development of vegetative cover and is not being used" (National Wastelands Development Board, 1986: 3), and includes "gullied and/or ravinous land, undulating upland with or without scrub, surface water logged land and marsh, salt affected land, shifting cultivation area, degraded forest land, degraded pastures/ grazing land, degraded non-forest plantation land, erip lands, sands, mining/ industrial wastelands" (Ibid: 1-2). Wasteland in India, according to a recent aerial survey, covered 146 million hectares in 1986, almost half the country's geographic area (CSE, 1986: 3). In Maharashtra, 30,662,000 hectares, or almost ten percent of the total area was designated as wasteland of various types (Table 3.4).

Table 3.4: Aerial Estimation of Wasteland in Maharashtra, 1986

	(in hundred hectares)
Salt affected land	1187
Gullied or ravinous land	7388
Undulating upland with or without scrub	19638
Jhum or forest blank	1455
Barren hill ridge or rock outcrop	995
Total	30662
Percentage of State area	9.96

Source: Centre for Science and Environment, 1986, *Developing India's Wasted Lands: A Briefing Paper*, New Delhi, p.12.

Although these official definitions refer to such wasteland as not being used in the sense of producing crops, pasture or forest, a great deal of this degraded wasteland still grows some

grass, visible in green growth during the monsoon season. The fact that it is cropped down to the soil level and dries up completely by summer only indicates that it is being used for grazing. Much of what is designated as wasteland is capable of producing significantly increased grass crops, if they can be protected from grazing animals (Chavan, undated: 4), but under current conditions, every plot of ground that is withdrawn from grazing use increases the pressure on remaining areas.

Commercialisation, therefore, rather than improving the supply of energy sources, has in fact redirected traditional rural biomass sources to urban areas, with especially negative consequences on the rural poor. The economic position of poorer village households has been continuously deteriorating because of their greater dependence on public resources. The accompanying decline in area and quality of public resources will only continue, unless some significant effort is made to alleviate the pressure on public resources and establish viable management systems for their sustainable use.

7. The Maharashtra Social Forestry Project, 1982-89:

Social forestry is not new to India, even if it was not known by that term before the seventies. Social forestry schemes are said to have begun in 1950 with the Vanamahotsav tree festival program and continued in the Second Five-Year Plan (1956-61) with the "Assistance to Village Panchayats for Afforestation and Development of Pastures" (Muranjan, 1987: 114-5). In Maharashtra,

some community afforestation work was also undertaken by the Forest Department under the State Scarcity Relief Program as early as 1972, as part of labour-oriented programs to provide relief during acute drought conditions that year (Sen et al, 1986: 146), and under the Drought Prone Area Program (DPAP), Western Ghat Development Program and the Employment Guarantee Scheme (EGS).

Before the seventies, however, reforestation was largely confined to replacement of higher value tree crops for commercial purposes by the Forest Department (USAID, 1982: 9). In 1972, the Interim Report of the National Commission on Agriculture drew attention to the need for social forestry programs, and suggested that Rs.770 million be allocated in the Fifth Plan for expanded farm forestry, extension forestry and recreation forestry programs. The final Report of 1976 recommended that forestry development should involve social forestry programs to supply fuelwood, fodder, small timber and other forest products to the rural population, to protect agricultural fields from soil and wind erosion, and for recreational needs of urban residents (Government of India, 1976: 119). Production forestry for domestic industries, however, remained the primary objective of forestry (Ibid: 15).

The inclusion of afforestation and social forestry programs in Mrs. Gandhi's 20-point program, first announced in 1975, gave a major boost to social forestry programs, providing Central

**Table 3.5: Expenditure on Social Forestry Plantation Schemes,
Maharashtra, 1956-1985**

	Expenditure Rs.hundred thousand
Second Plan 1956-61	14.44
Third Plan 1961-66	16.54
Fourth Plan 1969-74	63.24
Fifth Plan 1974-79	78.34
Sixth Plan 1980-85	1900.84*

Source: Government of India, Ministry of Agriculture, Department of Agriculture and Cooperation, Forestry Division, Sept.1981, Plan Development Programmes in Forestry Sector - 1951-85 (Selected Statistics).

* Government of Maharashtra, Planning Department, 1986, Seventh Five-Year Plan, 1985-90, and Annual Plan 1985-86, Abstract Statements II-III.

Government support. A Central Social Forestry Scheme involving degraded Government Forest Lands and village common lands was begun during the Fifth Plan (1975 to 1979), and was transferred to the States in 1979. The 20-Point Program was interrupted by Mrs. Gandhi's loss of power from 1977 to 1980, but social forestry programs were rapidly expanded in the early eighties.

Maharashtra's program was begun in 1978 within the Forest Department and was augmented from 1979 by Central and State-sponsored schemes like the Rural Fuelwood Programme, the National Rural Employment Programme, Tree for a Child, Fruit Trees on the Land of Scheduled Castes and Tribes, and the Employment Guarantee Scheme. In July 1981, Maharashtra established a separate Department of Horticulture and Social Forestry and in October 1982

began a shared program with USAID, which greatly increased expenditure on social forestry plantations (Table 3.5). In 1986 this Department was again reorganised, Social Forestry returning to the Forest Department as a separate branch, and Horticulture going back to Agriculture.

The objective of the Maharashtra Social Forestry Project as set out in the 1982 Project Paper was

to develop the institutional capability of the Maharashtra Horticulture and Social Forestry Department (H&SFD) to assist villagers to manage their communal and private lands for increased and sustained production of forest products. Achievement of the purpose will contribute to the goals of: (1) an increased supply of firewood, fodder, fruit, and small timber in rural areas; (2) a reduced rate of deforestation; and (3) an increase in rural employment (USAID, 1982: 1).

The program planned to establish plantations of various types and to distribute seedlings in 4300 villages (out of a total of 41,833 in the State (Government of Maharashtra, Planning Department, 1986: 281)) in all 29 administrative districts of Maharashtra, affecting 6.5 million rural inhabitants. 81,000 hectares were to be planted in 6 years. The Project involves the following types of plantations (Government of Maharashtra, 1986: 87-9):

1. Block Plantations:

- i) Plantation on Panchayat, Public and Revenue wastelands,
- ii) Plantation on private land, including the development of pasture and planting of fodder land belonging to members of the scheduled castes and tribes (SC/ST),
- iii) Supply of seedlings to private cultivators and educa-

tional and social organisations (50 to 250 free seedlings per household).

2. Plantations on identified watersheds:

In some watershed areas where soil erosion has been so heavy that the productivity of the soil is "practically nil", plantation schemes for watershed development are to be implemented under irrigation so as to control the soil erosion and resultant siltation of dams.

3. Strip Plantations:

In order to control soil erosion as well as providing fodder and fuel to villagers and shade to travellers, strip plantations are planted along roadsides, canal banks and railway lines.

The newly established (1981) Department of Horticulture and Social Forestry divided the state into five regions, each headed by a Joint Director. The overall target of planting 81,000 hectares was divided between the Joint Directors of the five Circles, who then distributed them amongst the Deputy Directors of the 29 districts under them. In this way, local targets were assigned down through the hierarchy, from the two Assistant Directors for each District, through ten Plantation Officers, one for each taluka, and twenty Assistant Plantation Officers.

Twenty villages in each district were covered in the first planting year, 1982-83. In each of the following years up to 1987-88, each district had thirty to forty new project villages, each taluka having three to four new villages. Each Assistant Plantation Officer was therefore responsible for two new village plantations, in addition to two one-year-old, two two-year-old and two three-year-old plantations each year (eight in all).

For each new village proposal, a Village Management Plan is

prepared by the Assistant Plantation Officer, including socio-economic information on the village, resource requirements, plans and schedules for nursery production, planting and maintenance of the plantations. The Management Plan is presented to a general village meeting, for discussion and acceptance. If it is approved by the Panchayat, the land agreed upon for the community plantation remains for four years under the custody of the Social Forestry Department, which has the responsibility to set up nurseries, prepare the sites and seedlings, and to plant, maintain and protect the plantations. Villagers are employed as labourers; one as a watchman. Three years after the trees have been planted, the plot is handed over to the Panchayat, which agrees to pay the State Government a royalty of two percent of the sale proceeds of the produce (USAID, 1982).

Although at first villages had to be convinced to join the program, by 1985 others were approaching the H&SFD to request that they be included (USAID, 1986: 2). The USAID Project Officer observed, however, that the first villages covered were the easiest in terms of community land available and villager interest. Although there is significant pressure at the State level to expand the program to reach all 40,000 villages, he expected greater difficulties to be encountered in covering the remaining villages.

The program is run entirely by Indian staff, receiving periodic input from American staff based in Delhi. All officers

from the level of Plantation Officers and above are on deputation from the Forest Department. Of 657 Assistant Plantation Officers in the Social Forestry Department, 281 are on deputation from the Forest Department and 376 have been directly recruited by the SFD on the basis of academic achievement. Extension training was provided for these officers as well as motivation and demonstration workshops for village officials, but less than had been planned (USAID, 1986: 12).

The USAID Evaluation in 1985 was highly concerned that the training component of the program had been significantly under-achieved. It was considered important that staff be well trained in extension and management since their previous experience in the Forest Department was incompatible with Social Forestry objectives. "Staffing for the R&SFD was obtained almost exclusively from the Maharashtra Forest Department. Officers in that department have historically restrained rural inhabitants from using forests and have had no extension responsibility or training" (USAID, 1985: 2).

The total cost of the project was U.S. \$60 million (or about Rs.564 million) of which the USAID contribution was a \$25 million loan and a \$5 million grant. Half the expenditure was contributed by the Government of Maharashtra. The Project has met its target in villages covered (4300) and has almost met its planting targets, except in the last year, 1987, when the increased responsibility of Social Forestry officers for planting under other State

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and Centrally-sponsored social forestry programs resulted in less planting under the Maharashtra Social Forestry Project (MSFP). Where the target for 1987 was 22,000 hectares, only 14339 were planted (Table 3.6).

**Table 3.6: Physical Targets and Achievements
of Maharashtra Social Forestry Project, 1983-87**

Targets	1983	1984	1985	1986	1987	Total
Plantations	(Hectares)					
Block	2355	5730	6950	8400	9800	33235
Private	2355	5730	11950	12400	10800	43235
Watershed	40	90	110	100	400	740
Strip	200	500	590	700	1000	2990
SC/ST lands	50	350	400	-	-	800
Total	5000	12400	20000	21600	22000	81000
Villages (Number of)	540	810	810	1080	1060	4300
<hr/>						
Achievements	1983	1984	1985	1986	1987	Total
Plantations	(Hectares)					
Block	2484	5402	6628	8629	8951	32094
Private	2517	5918	11942	12278	4241	36896
Watershed	170	102	64	37	37	410
Strip	461	678	561	945	1111	3756
SC/ST lands	26	329	428	-	-	783
Total	5659	12429	19623	21889	14339	73939
Villages (Number of)	540	810	810	1080	1060	4300

* 1987 achievement figures provisional
Totals may not add up due to rounding.

Source: Social Forestry Directorate, Pune

The increased responsibility of the Department for other planting programs is due to the rapid expansion in funding of

**Table 3.7: Social Forestry Related Programs and outlays,
Maharashtra State, 1982-1986**

	1982-83	1983-84	1984-85	1985-86
	(hundred thousand rupees)			
State Sponsored Schemes:				
Central Nurseries	53.0	40.5	8.0	4.5
School/Community Nurseries	-	15.0	32.0	10.0
Tree for a Child	25.4	26.4	2.0	10.0
Road/Canalside Plantations	350.4	-	4.9	4.3
Employment Guarantee	-	-	119.2	67.3
Vanamahotsava ("Forest Festival")	-	-	20.0	22.0
Centrally Sponsored Schemes:				
Fruit/fuel trees for small/marginal farmers	-	-	56.0	79.1
Rural fuelwood plantation	32.4	50.0	84.6	51.4
Western Ghats Development Program	-	-	19.0	16.1
National Rural Employment Program	-	-	471.9	730.0
Drought Prone Area Program	-	-	4.5	22.8
Integrated Rural Energy Program	-	-	6.3	-
Rural Landless Employment Guarantee Scheme	-	-	182.4	-
State and Central Schemes	461.2	131.9	1010.8	1017.5
Maharashtra Social Forestry Project	102.4	656.2	800.0	843.1
Grand Total	563.6	788.1	1810.8	1860.6

Source: USAID, 1985, Maharashtra Social Forestry Project: Mid-Term Evaluation Report, Washington, p.35.

social forestry under other programs, which has resulted in a major shift in the status of the MSFP since its first planting year of 1983-84. In that year its budget was almost five times all the other money spent on social forestry programs in Maha-

rastra, both state and central (see Table 3.7). In the following year, however, 1984-85, a variety of state and centrally-sponsored schemes were providing so much additional funding for other social forestry programs that the MSFP's budget was less than half the total funding of other programs.

On Jan.5, 1985 Rajiv Gandhi announced on nationally-broadcast radio that deforestation had resulted in "a major ecological and socio-economic crisis" and that he was setting up a National Wastelands Development Board "with the object of bringing 5 million hectares of land every year under fuelwood and fodder plantations" (NWDB, 1986: 13). The NWDB was established in June 1985 as a separate department under the Ministry of Environment and Forests, with the responsibility for undertaking social forestry on degraded lands.

Programs like those of the NWDB provided funding for planting but not for additional staff. Although the NWDB also funded NGOs to do social forestry work, the personnel of the Social Forestry Department have been made responsible for the plantation work under these other schemes, in addition to their responsibilities for the MSFP. The target of planting 5 million hectares per year was set with no provision for additional staff, with predictable problems resulting in meeting set targets.

The planting component of the MSFP ended in 1987. USAID is prepared to extend the program but the Government of Maharashtra has been considering other alternatives as well. Because of all

the funding available, there is less need for foreign support. New schemes such as village fuelwood depots, community livestock feeding centres and urban social forestry are also being considered. For the Seventh Five-Year Plan period, 1985-90, a budget of Rs. 449.2 million has been approved for the Maharashtra Social Forestry Department, compared to Rs.568.8 million for the Forest Department (Government of Maharashtra, 1986: 115).

Footnotes:

1. Two well-known instances of the negative effects on forest dwellers of forest exploitation for commercial interests, are clearfelling in Bastar to replant pine for the paper industry, and the replacement of existing sal forest by teak plantations in Jharkhand, Bihar (Guha, 1983: 1890).

CHAPTER IV

Methodology for the Village Case Studies

This study of community forestry plantations in Maharashtra was originally undertaken with the primary objective of exploring possibilities for better cooperation within the community in planting, maintaining and distributing the harvest of tree crops on communal lands. I had planned to examine the impact of present social forestry programs on disadvantaged village groups, especially the women in these groups, and to explore the potential contribution of traditional agrosilvicultural techniques, as well as traditional value systems, to modern methods of silviculture.

Due to the circumstances I encountered upon my arrival in India, however, I had to modify the study and my objectives. I had proposed to study intensively two villages representative of dryland farming on Maharashtra's Deccan plateau, assuming I would have at least a month in each village to gather detailed data. In the event, however, I spent a month and a half mostly in Delhi trying to get permission from the Government of India to do the study. Until I had formal permission from the Central Government, the officials of the Maharashtra Social Forestry Department in Pune, although they were willing to discuss the program, could not discuss specific village projects or give me the information I needed to choose villages for study. By the time I managed to receive my permission and to look at possible villages for study,

there was not as much time to spend in the villages as I had planned.

1. The Choice of Villages:

I had intended to choose villages in two different districts of Western Maharashtra for wider representation of that region. Under the constraints of time limitations I decided to concentrate on Pune (pronounced Poo-nay) District where I had easier access to the offices and information required and where I had already established contact with the officials concerned. The Director of the Social Forestry Department of Maharashtra had urged me to study at least four villages for a better sample, so when I was choosing, I was looking for several villages in a similar agro-climatic area for comparative purposes. Although I did initially choose four possible villages, I subsequently found I barely had time to cover two of them.

The primary criterion for the choice of a village was that it had to have a community plantation planted in the first year of operation, 1983, so as to have been handed over to the Panchayat some time before the study. I especially wanted to examine what happens after government support is withdrawn and the plantations are returned to Panchayat management. Only twenty villages had been planted that first year in Pune District and, of them, only twelve had community plantations.

The second major criterion was that one village should have a successful plantation and the other should have a plantation

which was not being properly maintained, so that I could contrast their experiences. The Social Forestry Department defines plantations with a survival rate of over 70 percent as successful, and in those terms there were only two plantations out of the twelve 1983 community plantations in Pune District that still qualified as successful.

When the Assistant Director of Pune District took me to view the plantations of four suitable villages in the same area, it was immediately obvious from the height of the grass that two of them were being protected from livestock and two were not. The grass in the unprotected plantations was cropped right down to the soil level so that the area looked as barren as the surrounding land. The trenches and agave borders along the boundaries of the plantations were not in themselves sufficient protection against livestock, for there were several gaps in them. Only short broken sticks or leafless skeletons remained of most of the trees.

One of the successful villages, Mhalunge, owed its success to the proximity and protection of a farmer living nearby who came over to talk with us. In return for Rs.1800 and protecting the plantation, he had won the auction for the right to the year's production of grass from the plantation (to be harvested only once, in December and January). Because the product was so obviously not being shared, I chose the other successful village, Nane, which I later discovered had also achieved its success

under a similar arrangement. Of the two unsuccessful ones, I picked the larger community so that I would have two of comparable population sizes (around 2500).

In this manner I decided on two villages in neighbouring talukas in the same rainfall zone. They both had community plantations planted in 1983. One had been handed over to Panchayat management in 1986, and was being allowed to be grazed, and the other was handed over in January, 1987, and was being protected. They may be unrepresentative of Maharashtrian villages in general, because of being close to major communication routes in one of the most highly industrialised districts of the state. In terms of community dynamics and economic bases, however, they offer typical examples of communities with the usual social and political tensions, one depending on subsistence dryland farming and the other providing an example of irrigated cash crop farming.

2. Entering the Villages:

I was intending to conduct the study through participant observation in the villages, complemented by interviews of households, village officials and council members. In order to identify the relationships between social dynamics, the management of communal plots, and the involvement of poorer households and women in the plantation projects, I required a village profile, an examination of administrative operations and the implementation of the Social Forestry Project in the villages, and a survey

of village leaders and selected households. I expected to obtain additional information for the village profile and on the administration and implementation of the projects from Department officials in Pune.

Almost no English is used in the villages. A female research assistant, moreover, was necessary in order to establish rapport with the women I wished to interview, but finding a woman with village and research experience in addition to fluency in English and Marathi proved impossible. I chose a female assistant, Jayashree Mali, for her experience as a social worker living in a village in the same district. She spoke less English than I speak Marathi, but I was able to understand most of what was going on. Her ability to approach village women and to sympathise with their perspectives was excellent.

The day I first visited Nane, most villagers were assembled on the banks of the river attending the funeral of a person who had been murdered. I was accompanied by a male research assistant, a female research assistant temporarily replacing Jayashree who was sick, and the Plantation Officer for the village. We arrived in a hired jeep, but without any prior notification. When we asked to speak with a Panchayat member, the Upa-Sarpanch came to meet us in the Panchayat office. I began to ask him questions about the composition of the villages but he told me this was not a good time. We arranged to return in two days and he promised to get people together to meet us.

Unfortunately, I was not able to return on the day arranged because Jayashree was still sick and the others were unavailable. I was not even able to inform anyone in Nane that I would not be coming because there is no telephone connection in the village. When Jayashree and I arrived in the village by ourselves, on foot, four days later, to begin interviewing, we encountered several problems in making contact with the villagers, that may have been at least partially due to missing that arranged meeting.

We went to see the Upa-Sarpanch first, who chided me slightly for not coming when I had promised. Even the Gram Sevak had come that day to meet me, he told us. He seemed to be somewhat hostile and I wondered if he had lost face when we had not shown up. At any rate, he had no reason to help us. Certainly we no longer looked important, for we had no jeep, no apparent organisational contacts, and no government official or even any male with us. Still, he promised he would help us by finding a vacant room we could sleep in overnight. Accordingly we brought bedrolls and luggage the next day, but when nothing had materialised by late afternoon, Jayashree felt it was dangerous to wait any longer. We had no protection, no contacts in the village besides this man, and felt exposed to whatever he decided he wanted to do with us.

The Upa-Sarpanch is the most politically active member of Nane's Panchayat, and is constantly occupied with village busi-

ness on behalf of the Sarpanch, who is too busy with his milk business to do much village work. Although the Upa-Sarpanch was the most powerful man in the village, or perhaps because of that, he was not well liked, to put it mildly. We had major difficulties meeting people and persuading them to talk with us as long as we centred ourselves on his house.

The position of the Upa-Sarpanch in the village must be seen in the context of the occupation and reputation of his caste. He is a Marwadi, one of nine Marwadi households in Nane which have little social contact with other villagers. Marwadis were originally from Gujarat and are mostly merchants and traders. They have spread out over Maharashtra providing store-keeping and grain-buying facilities in villages. As such they are also the main moneylenders in many villages and have bad reputations for extracting high rates of interest from poor and helpless farmers.

Since we could not find any accommodation in the village, we commuted daily by local train from Pune, having decided against hiring a jeep because of how excessively extravagant that would appear to the villagers we were trying to approach. Commuting meant that we could not be there in the early morning and evenings when people were home from work in the fields. This problem was resolved later on when we were invited to stay overnight in village homes.

After we dissociated ourselves from the Upa-Sarpanch, and were being offered tea and meals at other homes, our main problem

was that most people we approached were suspicious of the purpose of the study and what the information would be used for. Since the household questionnaire required one and a half hours and the leaders' one hour to administer, it seemed quite formidable to them and they needed varying levels of persuasion to answer our questions. It was at this point that Jayashree's village experience proved to be indispensable. She was usually able either to make friends, to cajole or to push people a little into consenting to give us an interview.

By the time we were ready to enter the second village, Yelwadi, I had understood the importance of making suitable initial contact, and was able to accomplish this with the help of Professor Bapat from Pune University who accompanied me on my first visit. We had sent ahead a notice that we would like to meet with Panchayat members on a particular Sunday. At Dehu, the nearest neighbouring village, we began to enquire as to bus schedules for Yelwadi, and met a man who was a friend of a colleague of Professor Bapat, as well as of Yelwadi's Sarpanch. He was delighted to show us the way to Yelwadi and to discuss the village with us. This not only gave us an introduction to the social setting, but also provided congenial contact with the village leaders, which Professor Bapat proceeded to consolidate by explaining the study to the Sarpanch and several Panchayat members, including a key woman member, Mrs. Botre, who later introduced us to other women. Our welcome to the village was

firmly established by moving from our meeting in the Panchayat office to the Sarpanch's house where we had a cup of tea.

3. Data collection:

Much of the data was collected as planned. Data for the village profile such as land boundaries, and soil and rainfall conditions were based on statistics and maps obtained from the District Collector's office. Land ownership figures were obtained from the Talathi offices and details on the operation and village implementation of the Project were provided by the State and District Social Forestry Directorates in Pune. Officials at various levels from the Inspector-General of Forests in Delhi to the Assistant Director of Pune District were interviewed on the program's objectives, problems and changes. Panchayat officials and village leaders were interviewed on communal land use, village decision-making, the Social Forestry Project, and village needs and priorities.

The leaders' questionnaire was administered to the Sarpanch, Upa-Sarpanch, Panchayat members, the Police Patil and the Gram Sevak. Seven were obtained in the first village, Nane, and ten in the second, Yelwadi. Jayashree and I did all the interviewing in Nane, while the male assistant interviewed all the male leaders in Yelwadi.

It was very difficult to get specific figures on caste, income and landholding, first, because these are delicate matters that people are reluctant to discuss with strangers, and second-

ly, because laws against excessive landholdings and caste discrimination make it unwise to disclose information to outsiders. Thirdly, official figures and documents often conceal what is actually practiced. Land owned on paper, for instance, may actually be informally owned and cultivated by the owner's creditor.

Sample households were selected on the basis of their caste and landholdings, in order to represent the range of property levels from large landowners of the dominant cultivating caste through to landless agricultural labourers belonging to Scheduled Castes and Tribes. We had to rely on estimates of the caste composition of the villages by Nane's Gram Sevak and a group of Yelwadi's Panchayat members. Representative households were then selected on the basis of caste and landholding, aiming for households with women knowledgeable about village conditions and willing to talk. We obtained twenty household interviews in Nane and twenty-three in Yelwadi. (The questionnaires appear as Appendices.)

Section 4 of Chapter V beginning on page 123 describes the samples in the two villages in detail, and breaks them up into land/wealth categories, which are then compared with caste affiliation. Wealth groups were not easily comparable between villages, because the villages' economic bases differed so markedly. Although the selection of respondents was done informally, by asking previous respondents for households of a particular caste and landholding status, it resulted in a suitably representative

sample of the various village groups. Landless villagers may be somewhat overrepresented, especially in Yelwadi, but because that group was our major concern in terms of their use of public resources for fuelwood, I felt this was appropriate.

We spent nine consecutive days interviewing in Nane, and returned separately after a couple of weeks for two subsequent visits to complete data collection. The last day we spent in Nane we were invited to stay overnight at the house of one of our early respondents with whom we had become very friendly. She was treating us like family, and we called her Maushi, mother's sister. During the night that we stayed with her, we were subjected to some kind of tick or bedbug attack, which would not be worth mentioning except that, in my case, it led to an allergic reaction and sickness that incapacitated me. Thus it was that my direct contact with the second village, Yelwadi, was limited to three visits of two to four hours each. I had to rely much more heavily on the interviews and information collected by two research assistants working over a period of ten days. Jayashree made friends with Mrs. Botre, the Panchayat member I had met the first day in Yelwadi, and stayed overnight with her several nights in order to meet women at home, before or after their work in the fields.

4. Analysis:

As we began the village field work, I was disturbed by

village conditions, which were worse than I had anticipated. Although I had expected to find a lack of resources, the deprivation I saw went far beyond the lack of physical resources I had anticipated. I saw why it is difficult for people even to formulate their needs, and especially the priorities of their needs, when they need so much so badly. Instead of the "community" I had expected, I found political tensions and hostility so strong that at first cooperation seemed impossible.

More important for the subject I was dealing with, I had not expected the villagers to have so little to say about their fuelwood and fodder needs and the social forestry projects. Where I saw wood shortages in Nane of crisis proportions, they were much more concerned about the water supply. Trees and social forestry were so low a priority for most villagers that most of them could not answer many of my questions. As a result, I shifted my objectives somewhat to a more general analysis than the search for specific possibilities of cooperation that I had planned.

Under the constraints and conditions I found in the field, I redirected my objectives to explaining the success and failure of the two village community plantations in relation to villagers' energy use, attitudes and involvement in the projects. I dropped my plan to explore traditional agrosilvicultural techniques. Locating factors and issues involved in explaining the success of community plantations and their application to the more general

problem of large-scale reforestation, became my major concern.

The study is exploratory in nature. Given the small number of respondents, statistical analysis of the data was not possible. Instead I have explored the relationships between a wide variety of variables in order to draw out some hypotheses for further study.

CHAPTER V

Community Plantations in Two Villages

Beginning with a general description of the State of Maharashtra and the region studied, this chapter reports on the two villages studied in Pune District. Their differing physical, economic and social characteristics are explained before describing the samples interviewed in each village. Drawing from direct observation, official documents and interviews, as well as village interviews, energy use and sources, livestock and fodder sources, village needs and the social forestry community plantations in both villages are described and compared. The chapter concludes by indicating the lack of community participation of both villages in their respective social forestry plantations.

1. Physical and Economic Characteristics of Maharashtra and Pune District:

Maharashtra is the third largest state in India. With an area of 307,609 sq. km. and a population of 67,784,000 (in 1981), it accounts for about 9 percent of both the area and population of India. It covers three physically distinct regions of west-central India: a long narrow coastal lowland on the west coast, the Sahyadri hill range, commonly known as the Western Ghats, which forms the western edge of a central basaltic plateau, the Deccan Plateau, sloping gently eastwards and composed of several

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Thesis contains previously
copyrighted maps
between pages 102 & 103
and 105 & 106 which
cannot be filmed.
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smaller plateaus and river valley plains (Map 5.1). The Western Ghats run along the coast about 50 km. inland and have an average elevation of 900 to 1200 metres above sea level, and the plateau varies between 450 and 700 metres above sea level.

The lowest temperatures (between 11 to 15 degrees Celsius) occur in December and January and the highest in April and May, reaching 45 degrees Celsius in the eastern region. The arrival of the south-west monsoon around June 10 is awaited as relief from the heat as well as for the essential water it brings. The coastal area receives heavy rainfall from this monsoon, but as it rises over the Western Ghats, most of the rain is released on these hills, and rainfall is sparse and uncertain on the plateau beyond (Map 5.2). Most of Maharashtra lies on the Deccan plateau and a large part is prone to drought. Rainfall varies from 2000 to 3000 mm. on the coast, 4000 to 6000 mm. on the Ghats, 700 to 800 mm. on the western plateau, to only 400 to 500 mm. in the dry core of rainshadow area. The eastern margin of Maharashtra, the most heavily forested area (Map 5.4), also receives rain from the north-east monsoon so that its rainfall reaches 1200 to 1500 mm. Ninety percent of the annual rainfall in all regions of the state falls from June to September, with some additional storms in October and November. From March to June the water sources on the plateau are greatly reduced, many of them completely drying up.

Water is the main limiting factor in agriculture on the Deccan Plateau, but the quality of soils also varies considera-

bly. Soils range from the fertile black cotton soil of the river valleys and flood plains, to lateritic soils on the high rainfall areas of the coast and the Ghats, and coarse shallow soils with little humus on the higher plateau areas (Map 5.3). Where rainfall averages more than 1200 mm. in the western and eastern parts of the State, rice paddy is grown, mostly without irrigation. Cotton and groundnuts are the principal crops in areas with rainfall between 800 and 1200 mm., sorghum and millet being the main crop in areas with less than 800 mm., as well as the second crop after the monsoon in most areas. Relatively thicker soils are under sorghum and thinner under millet, these two crops providing the farmer's staple food in most of Maharashtra.

About 75 percent of the cultivated area is under foodgrains: 45 percent sorghum and millet, 8 percent rice, 5 percent wheat and 15 percent pulses (Fertiliser Association of India, 1987: II 38-39). Non-food crops such as cotton, oilseeds and fodder crops are cultivated in the remaining 25 percent of the area. Where irrigation has been developed, sugarcane is the preferred crop because it gains maximum profits, but also requires the highest water input. Other irrigated cash crops include groundnuts, grapes and bananas. Only 10 percent of the total area under foodgrains and 13 percent of all crops in Maharashtra were irrigated in 1983-84 (Ibid: II-17).

Because of its well-developed electric and fossil fuel power supplies and with agriculture providing raw materials, Maharash-

tra is a leading industrial state, accounting for 25 percent of India's industrial output, 27 percent of the total value added and 14.5 percent of the total employment in the organised industrial sector (Dikshit, 1986: 86). Industries cover a diversified range, including textiles, chemicals, plastics, food processing, fertilisers, pharmaceuticals, automobiles, transport equipment, and machine tools. These industrial activities, however, are concentrated in only three districts, those of Bombay, the neighbouring district of Thane, and Pune (pronounced Poo-nay) (Map 5.5). It is only a three to four hour trip by the major arteries of the Bombay-Pune highway and railway between the two cities.

The city of Pune was the administrative centre of the Maratha Empire and continues to be the cultural and educational centre of Maharashtra and Marathi speakers. Its population was 1,380,395 in 1981. It continues to grow rapidly as an industrial centre for manufacturing and engineering industries because of its central location and proximity to Bombay. Due to the city of Pune and its industrial activities, Pune District is highly urbanised: its percentage of urban to total population is 47.33 percent, as opposed to 35.03 percent for the State, and 23.31 percent for all India. Population density was 266 per sq. km. in Pune District, 204 in Maharashtra and 221 in India in 1981 (Census of India, 1986: 1).

2. Physical and Economic Backgrounds of Nane and Yelwadi:

Pune district is situated on the western side of the plateau (Map 5.5), with its western edge on the Sahyadri range receiving about 4300 mm. of rain, the eastern side in rainshadow with only 600 mm. rainfall and Pune city in the middle. West of Pune city and just a few kilometres north of the Bombay-Pune highway are the two villages of Nane (pronounced Na-nay) and Yelwadi, the first in Mawal taluka, the second in Khed (Map 5.6). Their position close to the highway and railway lines has meant easily accessible markets for products, as well as increasing possibilities for employment in local factories.

Both villages are agricultural but their production differs substantially, Nane being basically limited to subsistence dry-land farming of paddy in the monsoon season and sorghum or millet in winter. Yelwadi, in contrast, with better soils and well-developed irrigation facilities, grows a large proportion of cash crops and consequently is a highly prosperous settlement. As opposed to what one might expect, it is Nane that has the successful Social Forestry community plantation and Yelwadi's that has been largely destroyed by grazing.

1) Nane: (Maps 5.7-5.9)

Nane receives substantial rainfall, being only 20 kms. away from the heaviest rainfall region in Maharashtra of the Western Ghats, but its inferior soil allows only one crop of paddy in many places. Much of the land is too rocky with soils too shallow

MAP 57

VILLAGE NANE
Taluka : Mawal
DISTRICT : PUNE
TOPOGRAPHY

0 3200
feet

Reference

Hill Range

Direction of Slope

River Bank

MAP 5.0

VILLAGE NANE TALUKA : MAWAL DISTRICT: PUNE VEGETATION

0 3200
feet

NOTE :
ONE TREE REPRESENTS A GROUP OF
TREES OF THE SAME

- Scrub vegetation with intermillent grassy patches.
- ♣ Rānbherdi (*Thespesia populnea*) mostly planted.
- † Babul (*Acacia nilotica*) on farm boundaries & roadsides
- ▲ Gairan
- Rocky patches
- Area mostly under cultivation

Source. Department of Revenue records

to be cultivated. Almost all farmers grow rainfed rice in the monsoon season, and sorghum or millet combined with pulses in the winter. Most farmers have a few cattle and several sell milk in Pune. Although the village land borders the Indrayani River, just as it does in Yelwadi, Nane suffers from a chronic water shortage, due to a lack of wells and piped water. There are only a couple of farmers with irrigated fields, and only one well with good drinking water, which goes dry in summer for two and a half months. In those months women must walk half an hour to fetch water from the river, where it is collected and retained behind a low dam.

A government project to pipe water to the village was completed in 1987 at a cost of Rs. 500,000. The storage tank and taps are all in place but the water ran for only a few days before some pipes burst and the system broke down due to inferior construction and materials. It is common knowledge amongst village workers that government construction projects often break down or fail to work because the building contractor used poorer quality materials than those paid for. The Panchayat has applied for more money to repair the deficient components, especially the concrete under the tank and some of the pipe to the taps.

Nane has 216 households with a population of 1568 in 1981. The houses are clustered together in a settlement surrounded by cultivated land, with one small outlying hamlet. There are four temples, two of Vithoba, the popular regional incarnation of

Vishnu, a Shiva-lingam and the village goddess. A school faces the Panchayat office across an open area. The roads are full of boulders and are only negotiable by jeep even when they are dry, and become extremely muddy and impassable during the monsoon. All water for drinking, cooking and bathing is carried by women from the well just past the Panchayat office. Water runoff flows from holes in the kitchen walls to the street, where it lies in gutters by the roadsides until draining into the ground. Sewage is not a problem since there are no toilets and people use the fields.

The village is dominated by a steep flat-topped hill to the north, one of the rocky outcrops characteristic of this plateau. The land on and north of this hill is owned mainly by the Forest Department, although only a few stunted trees and scrub vegetation remain (Maps 5.7 and 5.8. Note that these maps do not include the 251 hectares of forest land to the north.). Intermittent grassy slopes on the hillsides are mostly grazed by sheep and goats. The Forest Lands to the north constitute almost as much of the total village land area, 251 ha., as the amount under cultivation, 271 ha. (See Table 5.1), and are the major source of fuelwood for the village. Trees planted on the raised field boundaries called bunds provide the other major source of fuelwood, as well as wood for poles and agricultural implements.

Table 5.1: Land Use in the Villages of Nane and Yelwadi, 1981

	Nane (in hectares)	Yelwadi
Forest	251	0
Cultivated	271	453
Culturable Waste	19	11
Not available for cultivation	516	90
Total Area	1057	554

Source: Census of India, 1986, Series 12, Maharashtra, Part XIII, District Census Handbook, Pune District, 1981, Bombay: Maharashtra Census Directorate, pp.65, 173.

There is very little village common land left in Nane. On the east side of the village, the School faces the Panchayat office across an open space that is common land. This space extends out past the village in a large weedy patch of land where the well used for washing clothes and the one for drinking water are located. The traditional village grazing land, called the Gairan, has been reduced to the 14-hectare piece of land used for the Social Forestry Department community plantation (see S.F. on Map 5.9), located to the south-east of the village, a couple of kilometres south of the road. Much of the land in this area, near the river to the east of the settlement, and to the north near the hill, is of poor quality, and has been left uncultivated. Whatever land is lying uncultivated or unprotected is used for grazing, whether it is private land, common land owned by the village, or public land, like the Forest Land, owned and control-

led by an outside authority.

According to the Gram Sevak (the Village Worker), there are 21 landless families in Nane who are dependent on daily wage labour for their living. In addition, those with very small landholdings cannot live on the produce of their land, and require additional income. Many of these farmers and their wives also do some agricultural labour for wages, as well as their own farm work. The 1981 census reports 174 Cultivators, 20 Agricultural Labourers and 198 Other Workers in Nane, for a total of 392 Main Workers (Table 5.2). The 351 women and 38 men who are reported as Marginal Workers are probably also Agricultural Labourers, as that is the main work available, especially for women. No women are classified as Cultivators in Nane. 'Other Workers' include members of several households who have jobs outside the village. The Sarpanch estimates that about 50 villagers have jobs

Table 5.2: Adult Workers in Nane, 1981

	Male	Female	Total
Total Main Workers	386	6	392
Cultivators	174	-	
Agricultural Labourers	17	3	
Other Workers	195	3	
Marginal Workers	38	351	389
Non-Workers	372	415	787
Total Workers	<u>796</u>	<u>772</u>	<u>1568</u>

Source: Census of India, 1986, Series 12, Maharashtra, Part XIII, District Census Handbook, Pune District, 1981, Bombay: Maharashtra Census Directorate, pp.380-1.

in industry and 25 to 30 in railways. The Sarpanch himself, with 5.6 hectares of land, travels daily to Pune to sell milk.

11) Yelwadi: (Maps 5.10-5.12)

The village of Yelwadi stands in considerable contrast to Nane, and provides a good example of well-developed commercial agricultural production and its accompanying market incorporation. Yelwadi's thick and fertile soils of black alluvium combined with widespread irrigation produce high yields of lucrative crops. Rice is grown as a monsoon crop and some sorghum is grown in winter, but most farming households grow cash crops of onions and groundnuts, which provide significant cash income and the base of Yelwadi's prosperity. Most of the land is irrigated either by wells or lift irrigation: there are 51 pumpsets along the river, and more than 150 wells in the fields (Map 5.11).

A serious separation exists in the midst of this highly favourable agricultural economy. Most villagers are members of two intermarrying Maratha families, the Gades and Botres, which also own most of the land. The prosperity of the members of these two families excludes and sharply contrasts with the poverty of a sizeable component of landless villagers, many of whom do not even own houses. About 25 percent of the village population are migrants, most of whom came to Yelwadi around 1972 as a result of the severe drought that year. They remain caught in a precarious economic situation, for their landlessness and dependence on

daily wage labour prevents them from ever attaining the means to acquire land or other resources through which they could improve their standard of living. They are important to the village work, because they provide a pool of agricultural labour, which is more important in Yelwadi than in Nane since cash crop production requires much more intensive labour than does Nane's dryland cultivation.

The village is more widely spread out than Nane, with much more space between houses and several houses scattered in clusters outside the main settlement. More houses are solidly-built, but there are several huts in a couple of groups away from the main settlement. As in Nane, the Panchayat office is located opposite the school, which provides classes up to the Seventh Standard. The road through the village is much better than Nane's, but still becomes impassable in the rains. The road past the village is surfaced, unlike Nane's, so that it remains in good condition throughout the rains.

A low dam across the river retains water for household and agricultural use twelve months of the year. Water for household use is piped up from the river to a holding tank, which supplies seven taps located throughout the village. This system provides water all year round, but at least a couple of taps are usually broken, with the notable exception of the tap beside the Police Patil's house, which is kept in good repair. The water supply scheme was begun in 1982 with Rs.300,000 of government support.

The Panchayat has not yet taken over responsibility for it because it is still not working properly. Yelwadi has just received a further grant from the Zilla Parishad in 1987 to build another tank on higher ground and to extend the pipeline to some of the other houses near the main road which have not been supplied so far. Five percent of the estimate of Rs.500,000 for this work is to be paid by the Panchayat.

Of 554 hectares of village land, 453 hectares are being cultivated, that is 82 percent as opposed to 26 percent in Nane (Table 5.1). There are two gairan areas (village common land) in Yelwadi, one extending south of the main settlement (labelled Gairan A on Map 5.10) and the other to the northwest (labelled Gairan B on Map 5.10), intersected by the main road. The area to the north of the road in Gairan B is the Social Forestry community plantation of the Maharashtra Social Forestry Project planted in 1983 (labelled sf 1). The area to the south of the road is used for grazing, and has very little vegetation. The Social Forestry plantation to the north of the road is no longer protected from animals, so is also being grazed to the point of destruction.

The gairan just south of the village appears to be part of the village settlement because of several illegal encroachments by Botre and Gade households which have built houses on it, subverting it from common to private use. Because of the dominance of these families in the village and their family interrela-

tionships, little can be done to revoke these encroachments. No other Gade or Botre objects because the encroachers are all relatives. It was alleged by some informants that Government officials can be paid to adjust records.

In addition to the 26 Botre and Gade households settled on this gairan, 10 houses have been built on it under a government housing program for those under poverty line. Part of this gairan was also used for a privately-financed plantation of eucalyptus in 1984 of which only 3 trees remain, and another 1.6 hectares were planted with trees and fenced for protection in 1987, under a Central Government grant (sf 2 on Map 5.10).

Table 5.3: Adult Workers in Yelwadi, 1981

	Male	Female	Total
Total Main Workers	431	428	859
Cultivators	234	365	
Agricultural Labourers	111	53	
Other Workers	86	10	
Marginal Workers	-	1	1
Non-Workers	355	316	671
Total Workers	<u>786</u>	<u>745</u>	<u>1531</u>

Source: Census of India, 1986, Series 12, Maharashtra, Part XIII, District Census Handbook, Pune District, 1981, Bombay: Maharashtra Census Directorate, pp.306-7.

The 1981 census reports 599 Cultivators, 164 Agricultural Labourers and 96 Other Workers in Yelwadi, for a total of 859 (Table 5.3). Whereas in Nane, 90 percent of the marginal workers

are women labourers, in Yelwadi 365, or 60 percent of Cultivators are women. In addition, many households have one or more members (about 10 percent of the village) working outside at jobs in industry providing steady salaried incomes. It is only the men in both villages who have these outside jobs, no women. A couple of women in Yelwadi have jobs at the children's nursery - one is a health worker - but most work either on their own land or for wages on others' land.

iii) Wages and Services:

The difference in economic standards between Nane and Yelwadi is reflected in the difference in daily wages for agricultural labour. Daily wages in Nane range from Rs.10 to 15 for men and Rs. 7 to 10 for women. Yelwadi's wages range from Rs.15 to 20 for men and Rs. 7 to 12 for women, which is almost twice the Government minimum wage of Rs. 10 for men and Rs.6 for women. Yelwadi Panchayat members see this as a problem, seven of them complaining that there is not enough labour available in the village, that it has to be attracted from outside and therefore is paid higher rates than the Government minimum. Eight agreed that the shortage of labour affects the choice of crops, because the labour required is so important to the cash crops they grow.

Because Yelwadi is situated close to the towns of Dehu, Dehu Road and the railway and highway, other better paying work is available in the area. Landholding family members spend most of the day working in their fields, thus avoiding having to pay

others to do the work. Even though village landless labourers receive comparatively higher wages for agricultural labour, they do not find this higher level of pay adequate to meet their needs, for they have to pay for everything, due to the commercialisation of all goods and services.

State Transport buses stop on the road outside both villages and both are very near train stations on the Bombay-Pune line. Neither village has medical facilities, but Yelwadi residents only have to walk one and a half miles to Dehu Road to use the primary health care clinic there. Nane residents walk half an hour to Kamshet for medical care or take the bus. Yelwadi has a post office, Nane does not; neither has a telephone connection. Nane has electricity for domestic use, Yelwadi for domestic and agricultural purposes. Both villages have schools up to the Seventh Standard. Nane had 676 literates in 1981, 68.8 percent male (Census of India, 1986: 380), and Yelwadi had 599 literates, 69.6 percent male (Ibid: 306).

3. Social Composition of Nane and Yelwadi:

1) Nane:

Although the separation is not at first apparent, households of various caste groups are located together in specific sections of the village. Marathas live in the village core and along the road that passes the village on its west side. The 32 Teli households (Other Backward Class) live along the northern street, the 23 Nav Baudhdhas (a Scheduled Caste) on the southern outskirts

approached by a separate lane and Thakurs (a settled Scheduled Tribe) in the hamlet outside the village to the east. About 53 percent of the village households are Marathas, 4 percent Marwadi, about 22 percent Other Backward Classes (OBCs) and 20 percent Scheduled Caste households (Table 5.4). It can be seen from the land ownership map (Map 5.9) that a large proportion of the land, and the largest parcels of land, belong to three families: the Andres, Nanekars and Gaikwads, all Marathas. Most of the rest of the land is cut up into small holdings.

Table 5.4: Caste Composition of Nane

		Households	Percentage
1. Maratha		114	53
2. Marwadi		9	4
3. Other Backward Classes			
Gurav	4		
Teli	32		
Mali	1		
Burud	1		
Sutar	2		
Thakur	4		
Dhangar	4	48	22
4. Scheduled Castes			
Nav Baudha	23		
Chamar (Ramoshi)	12		
Nhavi	4		
Bharadi (Gosavi)	3		
Bhui	1	43	20
5. Non-Hindu: Muslim		2	1
		<hr/> 216	<hr/> 100

Nane's Panchayat has 11 members, seven of them Maratha, with two women and two Scheduled Caste members. It is dominated by the Marwadi Upa-Sarpanch described in Chapter IV, page 94-95, who is the most politically active member of the Panchayat, always driving back and forth to Wadgaon, the taluka headquarters, on a borrowed motorscooter. He is the one usually available to represent the Panchayat to outsiders. He has 2.4 hectares of land but has rented all of it to a tenant this year on a half-share basis. His house across the street from the Marwadi storekeeper is also set up as a store at the front, with shelves and a weigh-scale but no goods. We were told that when the Sutar (carpenter) had tried to get electricity lines provided for the Thakur hamlet outside the village, the Upa-Sarpanch explicitly threatened him to stop interfering.

The Sarpanch, in contrast, seemed a well-motivated figure-head, wanting to do the best for the village, but being too busy with his dairy business to be very much involved. One of the woman Panchayat members is of Teli caste; other than her, the two Scheduled Caste members and the Upa-Sarpanch, all members are Marathas. All members have some land and a couple have jobs: they are not the poorer members of the village. It was the research assistant's assessment that the two women members, as is common, are only nominal members. They know little of what is going on, and only provide their signatures when necessary. One had not even heard of the Social Forestry community plantation.

The Scheduled Caste members are dissatisfied with their status in the village but cannot do much about it. They did achieve the right for all village groups to use the common well about five years ago. Traditionally, Scheduled Caste households would have used a separate well, but in a village like Nane where the wells go dry in the summer, it is very important to have access to the best well. Unfortunately, the Scheduled Caste informant said that now that all villagers are using the same well, there is not sufficient water for all.

The police Patil was dissatisfied with what was being done and not done in the village, but feels helpless to do anything about it. He is not a Panchayat member and has no formal powers. He says there are two main factions in the village. He is very much dissatisfied that no general input from villagers is encouraged through Gram Sabha (village assembly) meetings, which are held every month, but are very poorly attended. Since the quorum of 100 is seldom met, the Patil says the Panchayat can thus make its own decisions without village involvement. There is very little money available for improvements, but all decisions as to how to use it are made by the Panchayat.

Six of the Panchayat members and the Police Patil were interviewed.

ii) Yelwadi:

Yelwadi has 241 households with a population of 1531 in 1981, but about 70 percent of the total village population be-

longs to two intermarrying Maratha families, the Gades and Botres. This provides a very different social context, for most of the village members are related to each other. The land ownership map (Map 5.12) shows that the majority of land belongs to Gades and Botres. The village is generally regarded as belonging to these two families, which are the most prosperous, and also dominate decision-making bodies like the Panchayat.

Excluded from the benefits of Yelwadi's prosperity are the landless labourers, who are mostly of non-Maratha castes. They migrated to the village for the work it provides, but they remain in a marginal position, struggling just to get enough to eat. In a village where everything is commercialised, they have no means to improve their position and no freely available commodities to supplement their income.

When asked to identify the caste composition of the village, the Sarpanch and Upa-Sarpanch estimated that 60 to 70 percent were Botres and Gades, that is Marathas, and identified 9 households as Malis, Thakurs and a Sutar (Other Backward Classes) and 35 as Scheduled Castes. In the course of interviewing, a few additional lower caste households were identified, and the existence of more was indicated. When non-Maratha households were identified, and subtracted from the total number of households to estimate the number of Maratha households, the caste composition was calculated as about 81 percent Maratha, 4.6 percent Other Backward Classes and 14.5 percent Scheduled Castes (Table 5.5).

Table 5.5: Identified Non-Maratha Households in Yelwadi

		Identified Non-Maratha Households
1. Upper		
Brahmin	1	
Wani-Lingayat	1	2
2. Other Backward Classes		
Teli	1	
Mali	6	
Sutar	1	
Thakur	2	10
3. Scheduled Castes		
Nav Baudha	28	
Chamar (Ramoshi)	1	
Nhavi	1	
Nomadic Tribes	5	35
Total Number of Households		241

On the basis of villagers' estimates, however, caste composition appears more likely to be 70 percent Maratha, 10 percent OBC and 20 percent Scheduled Castes and Tribes.

The Yelwadi Panchayat has 11 members, two women and one Scheduled Caste member. Eight of the 11 are Marathas, with five Gades and two Botres. Two are Malis (OBC). Both Sarpanch and Upa-Sarpanch are Gades. All have some land, from one to seven acres (0.4 to 2.8 hectares), and four have jobs outside the village. The Sarpanch is educated and would like to see more importance given to education in choosing people for village leadership positions. He complained that the members with jobs outside the village seldom come to meetings, and do not contribute much to the village. One member had to be interviewed at 9:30 at night,

because that was the only time he could be found at home.

One Panchayat member stated that it is the Upa-Sarpanch who makes all the decisions, and claimed that, although other villagers are afraid to say anything against him, "in their minds they are unhappy" with him. Apparently he took over 1.6 hectares of land belonging to this member's household that had been put up as collateral for a loan. The respondent told us that everyone in the village acts like that, making deals, grabbing the land of poor and illiterate people. This claim was confirmed by the research assistant, who was told that the land of several villagers had been taken over by large farmers through the repayment of debts.

One of the women Panchayat members explicitly stated that she is "not involved in any work of the Gram Panchayat" and "goes there only to put her signature down". She says, "Who cares for women?" The other female Panchayat member said that no group opposes the Panchayat now, but at the time of elections, people do oppose each other.

Panchayat members made no mention of the needs of the landless and homeless villagers when discussing village needs, indicating that the poor have no voice in the Panchayat.

All eleven Panchayat members, the Police Patil, and the Gram Sevak were interviewed.

4. Household Samples from Nane and Yelwadi:

i) Dividing the sample on the basis of assets:

Income is not only a difficult question to put to respondents but does not entirely measure wealth, especially in a subsistence farming community. A composite variable of assets was therefore made up consisting of various property items. Respondents were asked how much land they owned, the size of their houses, and whether they owned farm vehicles, motorcycles, bicycles, radios, televisions, refrigerators and their approximate values. They were then divided into three groups of Well-off, Middle and Landless-poor households on the basis of these assets, first by landholding, secondly, taking into account members of the household with jobs outside the village, and third, other assets listed.

ii) Nane:

Of the 20 household interviews taken in Nane, there were eight landless households, seven households with small landholdings, four of which have members with jobs outside the village, and five well-off households. The wealth of two of the latter households was based on large landholdings: one has about 50 hectares, the other 12 hectares of land. These households also have the most livestock in the sample: the first with 4 bullocks, 4 cows, 8 calves, 15 water buffaloes, and 5 buffalo calves, and the second with 10 bullocks, 2 cows, 3 buffaloes and 3 horses. Both are Maratha in caste.

The third wealthy household was that of a Marwadi store-keeper, which is actually landless but whose income places it in the Well-off category. This was the only household reported in Nane using gas for cooking. The fourth wealthy household belongs to a three-member family building an Ashram or temple just outside the village. The couple is of Mali caste, a middle caste, have a one-year-old daughter, and came to Nane in 1981. They only have one acre (0.4 ha.) of land but the contributions they are receiving towards 'God's work' make them well-off. While the temple is under construction, prayers are offered in their house. They are expecting to buy another acre of land soon.

The last Well-off household is a Scheduled Caste household of 14 members that has built up wealth through 2 industrial jobs but is still struggling with low status. They built a spacious house in 1981 for Rs.65,000 and have bought 8 hectares of land. They have 2 bullocks, 1 water buffalo, a T.V., 2 radios, a tape recorder, 2 cycles and a water heater. They also have the only new smokeless chulha (stove) we heard of in Nane, and made it themselves. One brother is a Scheduled Caste member of the Panchayat, but the brother we spoke with went on at great length telling us how all this does not make up for their low caste status. Other villagers do not even talk to them, let alone invite them to their homes, he said. He feels they are not given any respect.

The seven "Middle" households have from 0.15 to 1.6 hectares

of land, few livestock and not much else. They include the carpenter's household, a Teli household working as tailors, a widow, and a Gurav household. The Gurav is a lower caste priest of the local religious tradition, differing from the brahmanical tradition. He looks after the four small village temples and performs the daily religious rituals. (There are no brahmans in Nane.) Three households have outside jobs but, because their property is limited to a radio or bicycle, they have been placed in the Middle asset category.

The household with 1.6 ha. is actually an impoverished one, for it consists of an inactive man of 75 and his wife of 60, who are too old to work their fields. They had 3 sons who died in childhood and their 2 daughters have married, live in Pune and cannot support them. The tenant on their land gives them half the crop but the wife says it is not enough for their needs. Their house is empty: they cannot even afford electricity. Their case

Table 5.6: Asset Groups by Caste, Household Sample, Nane

	Caste				Total
	Maratha	Marwadi	Other Backward Classes	Scheduled Castes & Tribes	
Well-off	2	1	1	1	5
Middle			4	3	7
Landless Poor	1		1	6	8
Total	3	1	6	10	20

clearly shows the superior economic value of sons where daughters leave home at marriage and support is required through old age.

Members of these Middle households work on their own land: the sister of the tailor is the only person in these households to do paid agricultural labour. Four of these households are of Other Backward Classes, three are Scheduled Caste households (Table 5.6).

Eight households have been categorised as Landless Poor because of their lack of resources. Six are Scheduled Castes or Tribes. Most of these households are dependent on paid agricultural labour for income. One woman sells vegetables to earn money, because her husband and son are unemployed. She travels to Wadgaon at 4:00 a.m. each morning by train to buy fruit and vegetables which she then sells in the village (vegetables are not grown here due to the lack of water). One household is a migrant family which makes large bamboo baskets for storing grain and will spend a couple of months doing this work in Nane. A third household is that of the barber. The other five are wage labourers. None have any land. All but one own houses, the basket weavers having a house in another village.

iii) Yelwadi:

Fourteen of the Yelwadi households were landless, but were separated into two categories of Landless Poor and Landless Middle in order to distinguish between their differing levels of income. Four landless households had a member with a job: two had

factory jobs, one a municipal government job. The fourth, the only brahman interviewed, earns income from his traditional work as a priest, performing pujas (religious rituals), drawing up horoscopes and assessing auspicious times for special occasions. These four landless households with jobs have been categorised as Landless Middle, for they are not as resourceless as those depending on agricultural labour for their wages.

The barber and carpenter interviewed earn income from their traditional occupations, but their resources are so meagre that they do not even own a house. They both rent houses, the barber at Rs.50 per month and the carpenter at Rs.20. The women of their households do wage labour, but they still have a difficult time "making ends meet", so they have been categorised with the Landless Poor. Of the ten Landless Poor households, nine do not own houses, whereas in Nane, only two households did not own houses. This is also a reflection of the differing levels of prosperity, since more people leave Nane than come, leaving empty houses, whereas there are no extra houses available for the migrants who have come to Yelwadi for work.

Only one household compares with Nane's "Middle" category, depending on non-irrigated dryland farming. With one hectare of good land, this household does better than most of the small struggling farmers in Nane, but not nearly as well as their neighbours in Yelwadi who have irrigation pumps and pipelines or wells. This household was therefore placed with the four Landless

Middle households in the Middle category between the ten Landless Poor households and the eight which are Well-off.

Most Yelwadi households are Well-off, rich by Nane standards. Eight of the sample can be categorised as Well-off on the basis of land owned and cash crops grown, combined in some cases with jobs outside the village. Four households have from 1.2 to 4.8 hectares of land irrigated by pumpsets, grow onions, ground-nuts, vegetables and sorghum, and own a variety of property such as T.V.s, radios, motorcycles, and bicycles. Two of these households are of Mali caste, whose traditional occupation is gardening, and who have improved and invested in their land to the point of making it very productive. One household is Scheduled Caste with only 0.4 hectares of non-irrigated land, but, because they have two factory jobs, they are doing very well. Three additional households are farming from 0.2 to 2 hectares of non-irrigated land, but each have a factory job and own significant property.

Of these eight prosperous households, two are Botres and three Gades, that is, of the two main Maratha families. Two others are Malis and one is Scheduled Caste (Table 5.7). The Middle category includes two Marathas, the brahman household and two Scheduled Caste households. The Landless Poor are mostly Scheduled Castes and Tribes, but also include three Other Backward Classes. The one Maratha household categorised as Landless Poor migrated to Yelwadi in the 1972 famine year and has very

little contact with the two main Maratha families.

Table 5.7: Asset Groups by Caste, Household Sample, Yelwadi

	Caste				Total
	Maratha	Upper	Other Backward Classes	Scheduled Castes & Tribes	
Well-off	5		2	1	8
Middle and Landless Middle	2	1		2	5
Landless Poor	1	1	3	5	10
Total	8	2	5	8	23

Both these villages are dominated by Marathas, as is the common pattern in Maharashtra (explained in Chapter III). They have the most and the best land in both villages and dominate them politically. Some of the other caste groups which make up about 47 percent of Nane's population, are represented in the Panchayat, but many lower caste households felt completely neglected in Panchayat activities. Three of these lower caste households in Nane complained that at election time candidates (most of them being of Maratha caste) come to them asking for votes and promising to do many things for them, but after the election nothing happens. The separation of the village into caste groups has the positive side that each community provides cohesive support for its members, but most poorer non-Maratha caste groups are resentful at the continuing lack of access to village resources and power over them.

The domination of Marathas is even stronger in Yelwadi, because of their numbers and their ownership of most of the land. Malis (OBC) are in a relatively strong position with good landholdings, but almost all other non-Marathas are landless and deprived of resources. This correlation of property with caste translates into political domination as well. The poor, who are mostly non-Marathas, have no say in Yelwadi's affairs.

5. Energy Use and Sources:

1) Nane:

Most households depend on a combination of fuelwood, cowdung cakes and kerosene for cooking and heating water, and electricity for lighting, but the combination of types of energy and their source varies according to landholding and wealth. Most households use mainly fuelwood for cooking supplemented by varying amounts of kerosene. Except for the large landowning families, the wealthier households use more commercial energy and purchase more of their fuel. The storekeeper without land was the only household we heard of in Nane who had gas. This household also uses ten litres of kerosene per month, but no fuelwood. The Ashram household buy or are given their fuel, both kerosene and fuelwood. The Scheduled Caste household with job incomes (and 8 hectares of land) buy their fuelwood and kerosene. They collect some wood and dung from their animals for cooking. The two households with large landholdings use mostly fuelwood for cooking,

collected mostly from their own land, but also from the hill. They also use dung from their own animals for cooking, and some kerosene (Table 5.8).

Table 5.8: Fuel Use by Asset Groups, Household Sample, Nane

	Main Household Fuel			Total
	Gas	Kerosene	Fuelwood	
Well-off	1	2	2	5
Middle			7	7
Landless Poor		2	6	8
Total	1	4	15	20

The largest landowning household had an inoperative biogas tank behind their house, and certainly enough cattle to run it (16 cows and bullocks, 20 water buffalo). It was built ten years ago and they said it worked for four years but then broke down six years ago. It needs a new cylinder tank but they have no reason to repair it since they feel it will just break down again. There are superior longer-lasting types available but they would require further investment. The respondent told us that their wood stoves were working well, and they collect fuelwood from their own land, so there is no need for gas. Since they feel no lack of fuel supplies, having plenty of land and cattle, they do not feel any need for more efficient fuels, and therefore are unlikely to bother having their biogas tank repaired or replaced.

The Middle asset group and the Landless depend largely on

fuelwood collected from the Forest Lands on and beyond the hill. The Middle Asset households use mostly fuelwood for cooking, but three buy some kerosene, 5 to 7 litres per month. Five Middle households buy some of their fuelwood, three most of it. Their energy use indicates that for households without much land, as money becomes available, energy sources shift from collected public resources to market sources.

It is the Landless who depend almost entirely on public land for their sources of energy. All but the basketweavers collect most of their fuel, and three collect all of it, as fuelwood from the hill and beyond (the basket makers use the bamboo remaining from their basketwork as fuel). Only four Landless Poor households buy some kerosene, about 1 to 3 litres per month. Because they have so little income, they cannot afford to buy much and spend more of their time and labour collecting free public resources.

The main source of Nane's collected fuelwood, supplying most of its cooking energy, is the 251 hectares of Forest Land on the hill and north of it. The villagers are not entitled to take anything from this land and can be fined for doing so, but since it provides a source of free fuelwood, and there is little Forest Department supervision, they consider it their legitimate source of fuelwood and they call it "our hill". The consequence of their use of government Forest Land as the main source for their fuelwood supplies is readily apparent in the barren state of the

hillsides, and in the condition of a nine-year-old teak plantation of the Forest Department on the hill to the east. The saplings have mostly survived but none of them is more than a foot and a half high after nine years, indicating that they must have been lopped by local people and grazed by their animals. Although this plantation was valuable enough to protect, it was obviously not possible to protect it sufficiently.

Most villagers have electricity in their homes, which they use almost exclusively for lighting. Four of the seven who did not have electricity complained resentfully that the other villagers were purposely neglecting their needs. These four were all landless and of lower caste status and complained that when their vote is needed, many promises are made, but afterwards nothing is done. Two of these households were of the Thakur hamlet outside the village. The carpenter, through a desire to help them, attempted to have the electricity line extended out to their hamlet, but was threatened by the Upa-Sarpanch that something would happen to him if he continued trying to help them.

In all the households that collect fuel, it is mainly the women who collect it. Only two households reported the men helping and one was the richest landowner, where the men haul wood back from their own land behind their tractor. Most households, both landless and small farmers, reported they have to walk from 3 to 5 km., to find fuelwood and it takes 4 to 5 hours to collect a headload. How often they go depends on the size of their family

but many go every day.

Almost all households (16 of 20), even those who purchase fuel, store it during the summer for the monsoon months when it is impossible to collect fuel and it is too wet to use. Several report that kerosene is used more during the monsoon when biomass fuel is not available.

Almost all households report that fuelwood was ample just ten years ago, and that the amount available has decreased substantially and is no longer sufficient to meet their needs. Three households reported the change in terms of increased prices for fuelwood and that they now have to purchase it where before they collected it. One of the large landowning households that collects its fuel from their own land has noticed no change in the availability of fuel.

When asked what changes there have been in fuel, cooking and diet from fifteen years ago, twelve out of nineteen households answering said there has been no change in any of these. Five households mentioned an increased use of kerosene and two households said less fuel is used or it is used more carefully, so as to conserve it. The only woman to mention a change in cooking methods pointed out that lentils are now soaked before cooking in order to save cooking time and therefore fuel. Most, however, have not noticed any change.

Seven households agreed that dung used for cooking reduces the amount used for fertiliser. Of the eleven households with

land, eight use a combination of both chemical fertilisers and manure on their fields. One household with no livestock uses urea only and two households whose land is farmed by tenants do not know what is used.

These data show continuing dependence on public resources for energy supplies, especially by poorer groups. As long as there is any wood at all to be collected free from these Forest Lands, increasing supplies of fuelwood for sale at lower prices will not relieve the pressure on them because of the inability of such poorer groups to enter the market fully.

As fuelwood supplies diminish, moreover, their value increases proportionately and more and more forest products from public lands are collected illegally for sale in the market, both by organised entrepreneurs and by village women looking for better income. Entrepreneurs with enough resources to send trucks with workers into well-forested areas cut and load as much timber as possible for sale in urban markets. In many areas, rural women seeking better wages than those offered for agricultural labour collect headloads of wood and carry them back to the village or a larger town for sale. We encountered no-one in Nane, however, selling the fuelwood they collect from public lands.

ii) Yelwadi:

Whereas Nane depends largely on non-market sources of fuel, Yelwadi buys almost all its fuel. Five of the 23 Yelwadi households interviewed used gas as their main fuel source. This is the

preferred fuel in urban areas, since it is efficient, clean and the most convenient to use. It is also the most expensive, however, costing Rs.1700 as a connection charge, Rs.700 for the stove itself, and Rs.58.60 for each cylinder refill. Four of the five households using gas were well-off (Table 5.9). Eleven of the households interviewed use kerosene as their main fuel. It costs Rs.2.50 per litre for the 8 litres that each family is allowed per month under the government rationing system of the Fair Price Shops, and Rs.3 per litre in the open market. A kerosene stove costs about Rs. 100. Seven households use firewood as their main fuel but have to buy most of it, at Rs.8 per 10 kg. bundle. (Exchange rate approximately \$1 Canadian = Rs.9.50)

Six of the seven households using fuelwood as their main energy source were in the Landless Poor category. Of these, two are so badly off that they cannot afford to buy it and have to scrounge it from wherever they can find it, such as strips between farmers' fields and common grazing land. One of these households is a three-member Scheduled Caste household. The mother and son do wage labour, the father is dead, and the second son is disabled. The first son also has a small business renting out a radio as a speaker for public occasions, but does not seem to earn much for this. The mother says she collects branches and twigs from anywhere she can but not much is available. She also collects cow dung to make cakes for fuel and they buy some kerosene in the monsoon when they cannot get fuelwood.

Table 5.9: Fuel Use by Asset Groups, Household Sample, Yelwadi

Main Household Fuel				
	Gas	Kerosene	Fuelwood	Total
Well-off	4	3	1	8
Middle and Landless Middle	1	4		5
Landless Poor		4	6	10
Total	5	11	7	23

The second household that depends on collecting fuelwood for fuel is an ex-tribal household of eight members, who sell needles, tin pots and medicinal seeds for income. Collecting and trading such forest products as these seeds for food and other goods was their traditional occupation, but not much is available now. One son and his wife also do agricultural labour. This family had a much better hut on the community land that was used for the new fenced tree plantation (not the Social Forestry Department plantation). They were dispossessed and the hut torn down in order to plant trees. The hut they had at the time of interviewing was made of gunny sacks and was extremely inadequate, especially during the rains. The mother said they have lived in the village for about 50 years and she was extremely bitter about the loss of their previous hut. In January, 1988, they were given one of the government-built houses on the gairan for families below the poverty line.

The mother and her daughters-in-law collect fuelwood and

some cowdung from uncultivated land and from other farmers, but she says there is not much available. Like Nane's basketweavers, who are finding less bamboo and have to pay more for it, as the forest is destroyed these people also suffer a great deal from the loss of their traditional means of making a living.

The carpenter's household buys a tree (at Rs.500 per tree) and uses whatever remains from the carpentry as fuel. Several of those using mostly kerosene also buy or collect fuelwood and use some cowdung, especially for heating water. Most have electricity for lighting but some use kerosene. Most of those using fuelwood also use some cowdung cakes. What biomass is collected, is collected from around the fields. One woman says she brings back branches on her way home from working in the fields. There is a hill north of Yelwadi, but it is small and is not a source of fuelwood and grazing as in Nane. There is no large block of Forest Land as there is in Nane and there is little other public land available. Village common land, including the 1983 Social Forestry Department plantation, is used for grazing but most of it has little growing on it.

In answer to the question as to how fuel sources have changed from ten years ago, three respondents say it is not available now and has to be bought, eight say there is much less now, and six that there has been no change. One household reports that they used to buy fuelwood but now use kerosene because fuelwood is too expensive. Two poor households say that farmers used to

allow people to collect fuelwood from their fields, but no longer allow it.

In the two households collecting fuelwood it is the women who collect it, but when fuel is bought it is often the men who buy it. Kerosene is available in Yelwadi, gas and fuelwood are bought from stores in Dehu, one and a half miles away. Eleven households report storing fuel for the monsoon, but this is no longer a significant practice because it can be purchased as needed.

Fourteen households report that fuel use has changed from 25 years ago, in that more people now use more gas and kerosene, and use fuelwood more sparingly. Four also mention the use of pressure cookers, which are popular with those who can afford them, because they reduce cooking time and therefore fuel use. Eight households say there has been no change in fuel use, six of whom are Landless Poor, and two are Well-off.

Because of a program introducing the new smokeless chulhas (cooking stoves) in Yelwadi, four of the households interviewed have these more efficient stoves and three of the wealthy households had had them previously. Almost all respondents (19) have heard of them, whereas only four in Nane had heard of them. Three of those who have the new chulhas report that they save about half the amount of fuelwood used and they produce no smoke so that the cook's eyes don't hurt. One woman, however, claimed that the new chulha uses more fuel than the traditional type. Two of

those who had one in the past also say it used more fuelwood, and two other households mentioned this, that it uses more. Another woman pointed out that the idea that it uses more fuel is a misunderstanding and is not true.

Five households said they did not have a new chulha because of the cost, either of the stove itself or of fuelwood. One of the women who has one and likes it says she no longer uses it because of the lack of fuelwood in Yelwadi. She uses a kerosene stove. Only one of the homes with a new chulha uses mainly firewood for cooking, the rest mainly use either kerosene or gas and therefore do not obtain as much advantage from their new chulhas as would the landless poor who use mostly fuelwood. Thus, those who need them the most to make most efficient use of the wood they use cannot afford them. The makeshift huts of the poorest, moreover, cannot accommodate the fixed pipe of the new stoves.

Of the nine households with land, six use both chemical fertilisers and manure on their fields, one uses neither, and one household with one unirrigated hectare uses only chemicals, because, she says, they have no animals to supply dung. One household buys chicken manure. Cultivators who can afford to use chemical fertilisers generally express enthusiasm for the resulting increases in crop yield, but most still see the value in using manure. More manure is used in Nane, more chemicals in Yelwadi.

Nane and Yelwadi differ substantially in energy sources and

use. Nane households use a combination of fuelwood and kerosene for cooking, but most energy used for cooking is supplied by fuelwood collected from Forest Land. Only one household uses gas for cooking in Nane, whereas gas is much more common in Yelwadi. Kerosene is the most common fuel in Yelwadi, and almost all households, even the poorer ones, purchase their fuel rather than collecting it as they do in Nane. There is so little wood available around Yelwadi that even most of the households using fuelwood for energy have to buy it.

Yelwadi shows what happens when wood sources have been exhausted. People shift their energy sources to the market and what wood is used has to be imported from forested areas. As they enter the market fully, they shift to commercial fuels, which are more efficient than fuelwood but are only available to those with enough cash to buy them. The households that suffer the most, and are increasingly suffering as a result of the loss of free fuel and fodder, are those who cannot afford adequate quantities of commercial fuel. They are in a constant struggle to stretch their meagre earnings as far as possible, and therefore will continue to take whatever fuelwood they can find growing around the village. The threat of mere fines have not prevented them, or richer farmers either, from destroying the MSFP community plantation by overusing it. The environment cannot be restored until such people are included at least to some extent in the community's prosperity, and are not so desperate for their daily needs.

6. Livestock and Fodder Sources:

1) Nane:

Of the twenty households interviewed in Nane, only ten have some livestock. Of the eight landless households only three had livestock, two with one cow each, and the basketweavers having four goats. The latter buy crop residues and leaves for fodder, one man brings back fodder from where he works for wages in the fields, and the other household grazes their cow on the hill and collects fodder from public land. Those with the most land have by far the most livestock, which they feed mostly from their own land (Table 5.10). Only four of the households with land of 1.6 hectares or less had livestock and mostly buy their fodder. This indicates a strong relationship between owning livestock and land.

The only poor families with significant livestock are the four Dhangar or shepherd households in Nane, which have little or no land, but tend flocks of sheep and goats for a living. They graze these animals on whatever land they can find, both private uncultivated and public land. Sheep and goats are notorious for eating almost anything and for cropping grass and small shrubs right down to the roots so that they do not get a chance to grow back. On land used for grazing, the grass never gets a chance to reseed itself. Then with vegetation so thin, the soil is very vulnerable to erosion under the heavy monsoon rains. To the east of the village by the river, large areas are eroded down to

sheets of rock.

**Table 5.10: Livestock owned and Fodder Sources,
Household Sample, Nane**

	Landless	Middle (1.6 ha. or less)	Well-off (8 ha. or more)
Source of Fodder:			
Mostly purchased	1	3	
Purchased and public land		1	
Mostly public land	2		
Mostly from own land			3
<hr/>			
Number of households owning livestock	3	4	3
Total number of livestock*	6	9	56
<hr/>			
Total number of households interviewed	9	8	3

*calves are counted as half an adult animal

ii) Yelwadi:

Yelwadi villagers do not keep as much livestock as those in Nane and those who do are mostly the more prosperous farmers who can feed their animals on grass or crop residues from their own land. Of the 12 households owning livestock in our sample, seven were well-off and five were landless-poor. One landless-poor family has a cow, one has a goat, two have one calf each, and one

household has 20 goats and sheep, which they take out to graze wherever they can find grass. The household raising goats and sheep say they graze them on the unfenced Social Forestry plantation because of the lack of alternatives. The latter household and one other depend on other people's fields and whatever public land is available for grazing, and the other three landless households owning a cow, goat or calves, bring them back grass and weeds from their work in the fields. The wealthy feed their

**Table 5.11: Livestock owned and Fodder Sources,
Household Sample, Yelwadi**

	Landless Poor	Middle, Landless Middle	Well-Off
Source of Fodder:			
Other people's fields and public land	2		
From employers' fields	3		
Own land and purchased			2
Mostly from own land			5
<hr/>			
Number of households owning livestock	5	0	7
Total number of livestock*	23	0	22 1/2
<hr/>			
Total number of households interviewed	10	5	8

*calves are counted as half a full-grown animal

animals from their own land; two purchase some (Table 5.11). One Well-off household has 2 bullocks, 4 buffaloes and 5 calves; the rest have from 1 to 4 animals each.

One household pays Rs.10 per animal to have them taken out to graze. This was also reported by the Ashram household in Nane. It is a common practice in Indian villages for young boys to care for a group of cattle, earning a fee per animal by taking them out of the village for the day to graze on either unused or unprotected private or public land, wherever grass is available.

Although it is the larger landholders in both villages who own most of the village livestock, and feed them in large part from their own land, it is the practice to take even these animals out to graze on public and common land in addition to stallfeeding them in the evening and morning. The flocks of sheep and goats that are the main means of support of shepherd families depend almost entirely on public grazing land for fodder.

There is also a traditional practice of farmers paying shepherds to graze their animals in their fields after the crop has been harvested for a day or two, in order to have the benefit of the animals' dung to fertilise the soil. This practice has now diminished in favour of chemical fertilisers, and is, at any rate, only relevant during off-season periods between crops. In order to restore the productivity of land used for grazing, open grazing will have to be restricted through finding some acceptable alternative source of fodder, especially for livestock owners

who cannot afford to buy it.

7. Village needs:

1) Nane:

Water is definitely Nane's first need: without it nothing else matters. All Nane leaders mentioned water when asked of village needs and a couple also mentioned the need for drainage and latrines. Everybody pointed out that there is no water two to four months of the year in the summer when the wells go dry. Four households said this was only a little change from ten years ago but ten households said water had been sufficient all year round ten years ago and was now available only for eight months or less.

Panchayat members all agreed that there is not sufficient water, that the water supply scheme must be fixed, and that the Gram Panchayat is responsible for looking after this problem. Even those who did not see the situation as currently critical, said it is getting worse. The worst effects of the lack of water are that it has to be fetched from far away, it has to be used carefully because it is insufficient, it takes a great deal of time and effort to carry, it causes sickness when it is not clean, and crops are affected. One leader mentioned that conflicts occur because of the shortage. When asked who is worst affected by the water shortage, six Panchayat members said everybody suffers. One female member felt that women are the worst affected because they have to carry it from further away.

The second village need most mentioned is improving the roads through the village, which are almost unusable by vehicles at present. On a later visit to Nane I saw basic stonework for improving the street laid out down half the street past the Sarpanch's house. He said that Rs.6800 had been sanctioned for roadwork by the Zilla Parishad. The partial work done made the street worse for walking than before because of the gaps between the rocks. Gravel and surfacing are still required, but apparently the work stops when the money runs out. When more money is available, probably next year, work will continue until again it runs out.

Five of the seven leaders interviewed mentioned the need for the school to continue classes past the Seventh Standard, up to the Tenth. Children now walk to Kamshet to continue schooling past the Seventh Standard.

Many villagers cannot articulate their needs, either personal ones or for the village as a whole. Their needs are often too many and too overwhelming to be able to begin to specify them. Five of the 20 households could not answer the question on family needs, and six could not say what the village needs. Of those who answered, several mentioned their personal need for jobs or income; five mentioned land; three, houses; three, animals; and four, water. Eight mentioned water as the most important village need; six mentioned roads; three, the school extending past the Seventh Standard; and five, medical facilities. There is no

dispensary, clinic or any primary health facility in the village. Only one mentioned fuel as a village need and two as a household need.

The need for trees was mentioned by four leaders, mostly out of deference to the subject of the study, or after prompting by the interviewer, it seemed. Although the need for planting trees was as obvious to me as the barren hillside above us, the villagers do not see it that way. First, they are used to landscapes without much vegetation, which do not appear barren to them. More importantly, they see other needs as more basic than fuelwood. When the land does not produce enough to feed the family, employment is scarce, and the available work does not pay enough to cover basic expenses, then fuelwood is only one of many secondary needs. For those with little or no land, the need for more food comes before the need for fuel to cook it. Water, improved schools, better roads, more jobs and medical facilities come before trees in most villagers' perspective.

Two questions attempting to elicit information on preferred uses and species had no response. No-one answered the questions of "what tree products do you use besides fuelwood and fodder?" and "what tree products do you need the most?" Perhaps they came after too many other questions, or the interviewer was hurrying to combat boredom, but the main reason they had no answer is that they have little opportunity to choose between tree species and products. They need all tree products and use whatever is avail-

able: preferences seldom come into the question.

Although trees and wood may be lower on their list of priorities, they are recognised as important needs. Most households, when asked how fuel sources have changed over the last ten years, say that there is not enough fuelwood now where there used to be ample supplies. Three households expressed this in terms of current higher prices and three others mentioned having to purchase it because there is not enough left to collect from the hillside.

Although few Panchayat members mentioned trees in response to the question on village needs, when asked if there is a shortage of wood, all members agree. They say they need more trees for fuelwood, timber, to make tools, to build houses, for fruit, fodder, and to sell for income. Two members even mentioned the contribution of trees to increasing rainfall, without such a relationship being suggested by the interviewer. "Where there are more trees, there is more rain", one respondent said.

Panchayat members are very much aware that when there is no wood for fuel or for building houses, it has to be bought and that prices increase accordingly. Five mention the landless and three mention labourers as the worst affected by wood shortages. The "poorest", Scheduled Castes and Backward Class people who do not get fuelwood are also mentioned as the worst affected. One of the female Panchayat members mentioned women as the worst affected, since they have more difficulties collecting it. In answer

to the question of why these people have not planted trees, three mentioned the lack of land or place to plant them, two said the seedlings are not available, one that there is nobody to plant them and one that they have not realised the importance of planting trees.

Although water, village facilities and trees are all important needs, the more fundamental need underlying all these is improved agricultural productivity and wasteland reclamation. Nane has too little to invest in improving its land, and because many families have so little to live on, they are using whatever products they can find in their environment to supplement their resources. Because there is no collective agreement on common management and use of their environment, it is being overused and depleted to the point where much land has become 'wasteland' in the sense that most of the topsoil has been washed away, rock is exposed and the few plants that grow are soon eaten. The continuing deterioration of the environment means increasing hardship for those depending on it for energy and fodder, and with every year that deterioration continues, their need becomes greater and rehabilitation becomes more and more difficult.

ii) Yelwadi:

Water is not as major a problem here as in Nane, since the water supply system provides water all twelve months of the year. It was mentioned by most respondents, both leaders and house-

holds, however, as Yelwadi's main need because the supply system keeps breaking down, with leakages and breakages of the pipes and taps. Periodically, it does not run for two to three days and then the women have to bring water from the river or wells. Not only is this more work, but the quality of the water is not always good and then causes diseases.

Six leaders say the water supply is improving, three say it is deteriorating, two say it is not improving. Most agree that it is the responsibility of the Government to have the water system repaired and extended. The Sarpanch maintains that not all the money that was sanctioned for their water system has been used.

Five leaders and seven households also mentioned the need for better roads; two leaders, the need for sewers, drainage and latrines, and two for the school to be extended past the Seventh Standard. Half the households mentioned water and roads as village needs, two said it needs nothing, and the other half could not say what the village needed.

There is a sharp difference between the perspectives of prosperous and poor households in Yelwadi on village and personal needs. The well-off households mention gas, electricity, more land, good prices for agricultural products, and one a television as their personal needs. Two well-off households and one middle household say they have no needs. Three middle households mention jobs or work. Nine of the poor households have no houses, however, and mention that as their primary need. The poor households

also mention land, two of them, water, and one, work, as personal needs. From their perspective it does not seem that the other villagers need much: three mentioned water or the road as village needs, the rest of the poor households could not say what the village needs.

Those needing houses find it hard to see beyond that need. Other needs that some of them mention are land to farm and drinking water. Of the nine households needing permanent houses, five are living in huts, three are renting houses and a single woman who works for the Talathi is living in his office. Five of all households sampled said they need land, but one of these was the well-off Scheduled Caste household with two outside jobs. Another five households mention the need for jobs and employment in the village.

One of the female Panchayat members, Mrs. Botre, is concerned about the need for more employment opportunities for women. She feels there should be other work for women than field labour and would like to see cottage industries and sewing classes for women.

Six leaders mentioned trees or forestation as a village need but when asked specifically if there is a shortage of trees, all leaders said yes, they do need more trees. Most said they are needed for fuelwood, but also for construction, building houses and for tools. Three said trees would improve air pollution, two that they would improve rainfall, and two that they are needed

for shade. Because of the lack of trees, wood has to be brought from outside and purchased. One leader mentioned the fact that poor people have no houses as a problem caused by the lack of trees, and the woman Panchayat member concerned about employment for women mentioned the lack of medicinal tree products as another problem. Various groups were mentioned as the worst affected: the poor, the landless, Scheduled Caste people, women, animals, and nature. None of the households mentioned trees as a need.

Although this village could definitely use more trees and wood, this is not felt as an important need by most of the villagers. Those doing well on their cash crops are able to afford gas or kerosene as fuel and any wood they need for building or tools. Most of the poorer households have shifted their energy needs to commercial sources, because of the lack of wood available for collection on surrounding land. They now perceive their needs in monetary terms, since they must pay for all they need. Even those dependent on fuelwood for energy are mostly buying it, because there is so little to collect.

Rather than a particular facility or commodity like firewood, the major need of this village, as observed in this study, is to reduce the disparity between the prosperous households and the deprived. The crops will continue to prosper because they are cared for and protected by private owners, but attempts to improve the quality and productivity of common or public land in

this area will face major obstacles in the desperate need of the poorest households for any free resources they can find.

8. Social Forestry Projects in Nane and Yelwadi:

The delivery of the Social Forestry program to both villages was administered and supervised by a Plantation Officer and an Assistant Plantation Officer through the Social Forestry Range Office at Wadgaon, the taluka headquarters, situated halfway between the two villages on the Bombay-Pune highway. The Assistant Director of the Pune District Social Forestry Department, whose office is in Pune, visited the plantation sites every couple of weeks during the planting period.

A public meeting was held in both villages to explain the program, to decide on whether the village should participate in the program and to elicit village opinion on specific plans such as which species to provide. Very few people in either village remember that such a meeting took place and most say that the decision to participate in the program as well as all subsequent decisions on its management were made by the Panchayat. Those who know of the community plantations say that the Panchayat has complete responsibility for their maintenance and use. There were no expectations of any benefit from them other than Panchayat revenue.

1) Nane:

A nursery was set up in 1982 by the Social Forestry Depart-

ment beside the river to the east of the plantation site. A lift pump and pipeline were installed to supply water, and a temporary stone hut built for the watchman. Seeds were planted in the usual plastic bags during the 1982 monsoon for planting and distribution the following year. In the 1983 monsoon the 14 hectare plot belonging to the village and chosen for the community plantation was planted with a mixture of eucalyptus, subabul (Leucaena leucocephala), mango, custard apple and other local varieties. 1600 plants were planted per hectare, as well as extra seeds along the rows of saplings, to ensure a good survival rate. A watchman was paid Rs.300 a month to provide protection for four years from the establishment of the nursery, until the plantation was handed over to Panchayat management in 1986.

A motivator from another village was assigned to Nane from August to October 1984 and a Nane villager from July to August 1985, to interest villagers in the program and motivate them to participate. Both were paid Rs.50 per month, and both were male. The only household respondents who remembered the motivator visiting them, however, were three of the wealthy households, the two with the most land and the Ashram manager. Since most seedlings are normally planted by the largest farmers with the most land, they are generally the main targets of social forestry programs. The Pune office reports that 8750 seedlings were distributed in 1983 to 22 recipients, 10,792 to 22 in 1984 and 9748 to 38 in 1985 (about 360 per recipient), but no-one we spoke with

in Nane remembered receiving saplings from the Social Forestry Department.

The plantation was ready for handover in April 1986 but the Panchayat did not want to take it over, mainly because they had no money to pay a watchman to protect it. It was finally handed over on Jan.26, 1987 with a survival rate of 92 percent, but during the intervening period no-one seems to have taken responsibility for it, because the Assistant Director of the Pune District Social Forestry Directorate saw it in poor condition in October 1986. Even though it is surrounded by farmers' fields and is quite far from the road, it was being allowed to be grazed at that time.

In August 1987, rights to the grass for the 1987 season were auctioned to Raghu Vithu Andre, the head of the richest household in our sample, for Rs. 500. As part of the contract, he took responsibility for protecting the plantation from August to January. The household has about forty members, 50 hectares of land and 4 houses. Someone from the household goes 2 to 3 times a day in the morning and evening to check the plantation. They told us that cattle have been caught grazing in the plantation 5 to 6 times in the two months that they had been protecting it, since August 1987. They were confined to a pen until the owners paid fines of Rs.5 per cow and Rs. 7-10 per water buffalo. The household will be using all the grass they harvest for the fodder needs of their 36 animals and will not sell any.

The Sarpanch reported in December 1987 that the Panchayat has decided to pay a watchman Rs.250 a month from February to July 1988 and probably for the following years as well, to protect the plantation. He expects the Panchayat will get Rs.2000 for the grass in 1988. No plans have been made for the future distribution of the products of the plantation, beyond the yearly auction of the grass. The money earned from the grass is added to Panchayat funds, and is not set aside for any particular use. The Sarpanch says he is also watching the plantation to make sure it is protected.

Half the leaders said it was the Panchayat which was responsible for the community plantation even at the beginning, and half said the Government or Social Forestry Department had responsibility. All said there was no opposition to the project. Two members pointed out rules against allowing cattle in to the plot, and against cutting the grass but the others did not know of any rules. "A servant is looking after it", one said. Only the Sarpanch mentioned that villagers had a responsibility to guard the plantation and not to allow cattle in, the rest said villagers had no responsibility for it. Four saw no problems in the Panchayat taking over management; two said there was a problem in that there was no money for a watchman. When asked why the Panchayat took over, two said it was compulsory and a third mentioned that income would increase. None of them knew of any conditions attached, such as specifications on harvesting and distribution of

produce.

All leaders answering said the Panchayat makes decisions on the distribution of all products, but there are no problems in such decisions because all products go to the Panchayat. Currently the only product is the grass and the income from its sale, but the precedent of Panchayat control and disposal of all products of the common plantation for Panchayat funds, does not augur well for future distribution of tree products from the plantation. It is basically treated as belonging to the Panchayat only. The lack of involvement of villagers in Panchayat decisions points to the effective separation of the Panchayat from the villagers as a group. Other than voting many of them feel they have no say in Panchayat decisions affecting them all.

The plantation was in very good condition in November and December 1987. The grass was over a foot high in places and there were only a few rocky patches that did not have some grass cover. Most of the trees were over six feet high and some whose leaves had been previously stripped off or the top broken, had now grown back. The plantation is thus successful in that it is being protected and will provide valuable tree products within five years. But no family except the one buying rights to the grass is receiving any product from it.

The major issue of who benefits from the plantation brings into question whether Nane's plantation will ultimately be a successful one in wider terms than the amount of wood and grass

it produces. The common land used for the community plantation was previously used by all villagers for grazing. Those who had been using it for grazing have now been displaced to other land, most likely Forest Land. The Panchayat has all the control and decision-making powers over the plantation - there is no involvement of other villagers. Although the use of income from the plantation for Panchayat projects does benefit all villagers indirectly in the provision of needed services, the lack of direct benefit from the plantation means that they have no stake in protecting it. Their only reason to forgo present use of the plantation is a fine if they are caught. In effect, the sale of the plantation's product for Panchayat income has resulted in the takeover of a common resource by Panchayat management.

ii) Yelwadi:

When asked about their Social Forestry plantation, Yelwadi villagers generally speak of the newest one, planted just five months before this study, in the 1987 monsoon. 1.8 hectares of the central Gairan was fenced and planted through funding from the National Rural Employment Program (NREP), administered by the Zilla Parishad. A total of Rs.48,000 was provided, Rs. 25,000 for preparing the land and planting, and Rs.23,000 for the barbed wire fence enclosing it, and a Zilla Parishad Extension Officer supervised the planting. The Panchayat will only be required to contribute financially if the cost exceeds Rs.50,000, or to make up for delays in payments. The program will provide Rs.7.40 per

plant for water and maintenance for the next 2 years.

This new plantation (sf 2 on Map 5.10) is adjacent to the village settlement, and, along with its new fencing, is therefore more visible than the 1983 Social Forestry Department plantation. The latter was planted on ten hectares of village-owned land alongside and north of the main road to taluka headquarters (sf 1 on Map 5.10). As was done in Nane, a nursery was established in 1982, and a mixture of eucalyptus, subabul, babul (Acacia nilotica), fruit and other local varieties were planted in June 1983. Trenches were dug around the boundaries of the plantation and agave planted on these boundaries for protection against grazing animals. A watchman was paid to protect the plantation for three years until 1986, but no motivator was assigned. 1994 saplings were distributed to 19 recipients in 1983, 7706 to 101 recipients in 1984 and 3495 to 52 in 1985 (averaging 77 per recipient).

The plantation was handed over to the Panchayat on May 22, 1986. At that time the survival rate was 80 percent. Even now, enough trees are left that one can see how good a plantation it used to be. But most trees are now stripped of leaves, broken off, or gone completely. The undergrowth is grazed down to the soil level, so that the plantation looks very much like the rest of the Gairan south of the road, rocky and barren. The only difference is the meagre tree skeletons still remaining and the broken rows of agave beside trenches smoothed out by the monsoon

rains.

Most households interviewed had heard of the Social Forestry program but most were thinking of the fenced plantation. They all know it is managed by the Panchayat and it is regarded as the Panchayat's plot. Eight of the leaders mentioned a Gram Sabha meeting as the means by which the decision to begin the new plantation was made. Seven leaders say they were involved in motivating and persuading villagers of its importance, but they say it is the Panchayat that is responsible for it, and that the villagers had no responsibilities. None of the households feel they had any part in the decision to begin either plantation and were not involved in looking after them.

Four leaders reported that there was some opposition to the plantation from some farmers who had been using the land and from those who said they would lose grazing area. A Waidu woman already mentioned was very resentful that her household had been displaced from the new plantation area, especially since the house they had there was so much better than the hut they had afterwards.

Her eviction shows that encroachment is treated differently depending on the social position of the households involved. Those without money to build permanent houses who have huts on government land outside the village can be easily evicted when the land is required for other uses. The Gade and Botre households encroaching on the Gairan, on the other hand, face no such

problems because of the political power in the village of their family members. Most of the villagers are other Gade and Botre kin members who would not object to their relatives' use of common land. The only people who would oppose their encroachment have no power to do anything about it.

There was also a privately financed plantation planted on the central Gairan (Gairan A) in 1984. Although 5000 eucalyptus were supposed to have been planted, there are only three trees remaining, which are now about 10 feet high. The woman who lost her house says that people took trees as soon as they became large. Otherwise, people are very vague as to why so few survived. The main problem mentioned is that the seedlings were supplied by the Government after the rains had begun and therefore were planted too late. Another reason given for the failure of the first eucalyptus plantation, however, was that it was on land that some farmers had been previously using for cultivation. It was in their interest that the saplings did not survive, so that they could use that land again. Similarly, the anger the Waidu woman felt about the loss of her home is an example of opposition that could easily be turned against the growing saplings.

It is not so much opposition that caused the failure of the 1983 Social Forestry plantation, however, as neglect and lack of community interest in the project. The plantation was handed over to Panchayat management in 1986 in good condition. That year the

grass was auctioned for Rs.400 and therefore seems to have been protected better. In 1987 however, because of drought conditions, the Sarpanch says, villagers wanted to graze their cattle there instead of selling the grass, and they were allowed to do so. There would have been less grass anyway, he says, because of the drought. He spoke as though allowing cattle into the plantation to graze the grass is just another way of harvesting it. A group of Panchayat members who were asked about its protection gave no explicit recognition that grazing the plantation directly necessarily involves its destruction. Under pressure of repeated questions as to why it was left unprotected, other excuses were offered: it is difficult to protect because it is far away from the village settlement, it is easily accessible because it is beside the main road, there is no fence and no watchman. They said that no-one can do anything when someone's cows enter the plantation because they are all family members to each other. How can they say anything against each other? they ask helplessly.

The reluctance with which they spoke of this first plantation and the lack of effort made to save it indicates that they have essentially abandoned the responsibility of its management. It seems to have been neglected in favour of the new fenced one. The complete lack of any effort required to protect the fenced plantation makes the other look impossible to protect. No-one even suggests possible effective solutions for protecting an unfenced area, even though they have constant experience in

protecting their unfenced crops from animals. They themselves face no loss of investment in the 1983 plantation, having invested nothing in it, and are looking to the fenced plantation for benefits.

Perhaps their experience with the 1983 plantation has done the good of showing them how important protection is, and the need for fencing, but there seems to be no thought given to the possibility of finding ways to make it worth people's while to keep their cattle off an unfenced plantation. If all they have learned is the need for a wire fence to keep out grazers, this will be no help in solving the problem of rehabilitating remaining grazing land or in increasing resources available for the needy. The lack of interest of the prosperous in trees except as an alternative crop for income, the lack of interest in providing wood for those who need it, and the general lack of interest in helping the needy will continue to act as barriers to the reforestation of common and public land, and to the improvement of grazing land in this area.

9. Community Attitudes and Participation:

All the project plans and documents describing the Maharashtra Social Forestry Project recognise the importance of community participation for the success of such projects. It was quite clear, however, in both Nane and Yelwadi, that the community plantations were the complete responsibility of the Panchayat,

and there was not even any expectation that villagers would cooperate in helping protect them unless they were forced to by negative sanctions.

i) Nane:

Nine of the 20 households in Nane had not even heard of the Social Forestry Program. Of these, four households were landless, four were Scheduled Castes and one was the Marwadi storekeeper. Only one of them was Maratha but was landless. When asked whether there is a community plantation, ten did not know, one said there was not, six said there was and three mentioned a plantation on land given to the temple. Twelve did not know who made decisions about it and no-one had had any part in the decision to begin it, nor in looking after it. Neither are they involved in any other way. Only one household said that other villagers were involved in looking after the community plantation. Only two households thought there were rules for protection of the plot, but one of these could not say what they were and the other mentioned the agave planted around it as its protection. Most households did not know who manages the plantation.

Most leaders mentioned the Government as being involved in the decision to begin the Social Forestry Project. One said it was the Social Forestry Department's decision, another the Forest Department's, a third that it was undertaken by the Department running the Employment Guarantee Scheme. One said the decision was taken by the past Sarpanch and the Social Forestry Department

together. Two said the Panchayat decided. No-one mentioned the meeting of the whole village in which the villagers were supposed to have been involved. Two said they themselves had been involved in the decision as Panchayat members, but the others said they were not involved.

The general lack of knowledge of the plantation's existence and confusion as to its management and the responsibility for it, even on the part of Panchayat members, indicates the lack of participation of the villagers in its management and use. In addition, the fact that those who had not even heard of the program were more likely to be landless or of a caste other than Maratha, points to the neglect of this type of villager in the implementation of government programs. They often do not hear of programs and are not involved in their benefits. They know of this neglect and resent it, but do not know what to do about it.

This village does not have to be convinced of the value of trees. The Panchayat members mention the need for trees for fuelwood, construction and making tools. Several farmers had planted a type of tree known as rambhendi (Thespesia populnea) ten to fifteen years ago for poles, from which poles can be cut every three years. Ten of the households interviewed have planted trees, but either obtained the seedlings from a store or collected the seeds themselves. Nobody we spoke with mentioned the Social Forestry Department as a source, but three got them from the school, which might have been supplied by the Social Forestry

Department. The varieties of trees planted include bamboo, eucalyptus, rambhendi, subabhul and fruit trees, and reasons for planting them include shade, fruit, for beauty, or simply because they "like them". Nobody was planting them for fuelwood.

Those who had not planted trees gave as their main reason that they had no land or no place to plant them. One mentioned the lack of water, and three said they did not get any seedlings. There is some interest in planting trees because some households indicate that they will plant trees if they get seedlings, but few households have the motivation or resources necessary to take the initiative to plant trees on their own. If the program were better publicised and made available to more people, more would likely plant trees. They are aware of the need for trees and it would not require persuasion to have people plant more, as much as the availability of saplings.

Rather than for motivation to plant trees, education is required to generate the necessary cooperation in protecting what is planted, by keeping one's animals away from them. Where trees are planted on common or public land, moreover, in addition to education, people have to have an incentive, some interest in the future product of their sacrifice, to refrain from using the plantation now.

ii) Yelwadi:

Almost all households (18 of 23) had heard of the Social

Forestry program, but when asked whether there was a community plantation, it became apparent that most were thinking of the new fenced one rather than the Social Forestry Department plantation on the road away from the village. The fenced one is nearer, more visible, and more recent. Most respondents knew that the Gram Panchayat manages the communal plot and makes decisions about it. No-one had had any part in the decision to begin the plantation, or were involved in any way. When asked of what protection is being provided, most households mention the wire fence around the new plantation. Three spoke of the cattle grazing the Social Forestry Department plantation but do not mention any rules against allowing the cattle in. The households with twenty goats and sheep admitted that they benefit from the plantation by grazing on it, but no-one else had received any benefit from it and did not expect to.

Twelve of the 23 households had planted trees: half of these have land, and half were landless. Most of the six landless had planted a couple of trees in front of their houses. A Scheduled Caste household had planted some 200 trees on uncultivated government land and had been allowed to harvest them. They are planning to plant more if they are allowed to live there. Another Scheduled Caste household say that they had planted trees but that other people took them. The main reason given for planting was for shade, other reasons were for wood, for beauty, and for fruit. Again, no-one is planting for fuelwood.

The source of saplings was mostly from the Gram Panchayat, but three said they had collected seed and grown their own saplings. Most claim that their trees are better than those in the community plantations because of the better personal care they give the saplings. Nine of those who had not planted trees gave as their reason that they had no land or space: eight of them were landless. Several said they would plant trees or plant more trees if they get seedlings (4), if they get a house (3), or if they get land (1).

10. Successful community forestry:

The situations of these two communities is very different, but several inferences can be drawn about community resource management from the way they handled their respective plantations. It has already been pointed out that Nane's successful management techniques (1) are successful in ensuring a product from the plantation, but (2) are not at all successful in involving the community in resource management and use, and (3) rely heavily on strict enforcement sanctions, rather than any inducements to cooperation.

Nane's success in protecting its plantation was found to be due to a combination of the higher value placed on it as a resource by those in charge of it than in Yelwadi, and the greater control exercised by its Panchayat over village affairs. Because Nane earns so much less in terms of income from crops and therefore in operating budgets from taxes, the same income from a

plantation in Nane is of more value than to Yelwadi farmers who earn much more from their cash crops. Nane's Panchayat, therefore, took the trouble to find a way to protect the plantation, whereas Yelwadi's Panchayat not only had an easier alternative woodlot in the new fenced plantation, but also seemed to find it more difficult to impose unpopular decisions. Panchayat members were concerned that their relatives would not like them to enforce protection rules against them.

Reasons for the neglect of Yelwadi's plantation include the difficulty of protection, especially in comparison with the fenced plantation, the concentration on lucrative cash crops and the lack of felt need for wood by those in charge of management. Very little guidance was given the Panchayat or the villagers in general in overcoming internal political and social conflicts in order to prepare them for managing the plantations and protecting them without watchmen or fences. It was assumed from the beginning of the planting program by everyone involved that the only effective protection possible is constant supervision and negative sanctions. No serious provisions were made for showing people how unfenced and unguarded plantations can be protected by cooperative agreements backed up by effective sanctions. Training, limited to speeches addressed to meetings of male farmers interested in cash crops will not contribute to the maintenance of trees on common land.

In light of the objectives of the Maharashtra Social Fore-

try Project to "contribute to the goals of an increased supply of fuelwood, fodder, fruit, and small timber in rural areas, and a reduced rate of deforestation" (USAID, 1982: 1), success cannot be defined only in terms of the amount of physical product achieved on these plantations. The contribution of the program to the general improvement of a village's wood supplies and to the reversal of the process of deforestation in areas surrounding the villages will be more important in the long run than the product from any one plantation. To achieve these more important objectives, however, all villagers must be given a reason to participate in the project and some control over its management. The ultimate success of these projects depends in the final analysis on the extent to which the particular Panchayat is acting in the interests of the entire community.

CHAPTER VI

Conclusions and Policy Implications

The problem in reforestation is not so much planting the trees, at which Indian forest officers have proven themselves very effective, but protecting the saplings through their long periods of maturation from the urgent needs of local people and their animals. Both plantations studied were successfully planted, and maintained good survival rates while external funds for supervision were available, but when external support was withdrawn, their management became subject to local pressures.

Does the failure of both these plantation projects to involve the villagers in their management and use show that cooperation is impossible? I am arguing against such a conclusion. As difficult as it may be, involvement of the local people in the management of common and public resources is necessary in order to halt and reverse environmental degradation.

In conclusion, I shall discuss the limitations of the Maharashtra Social Forestry Project and other suggested programs in generating this involvement, and summarise some general relationships evident from the study. I shall then point out the advantages that some other organisational forms have to offer to social forestry projects and specify some pre-requisite and necessary conditions for the protection of woodlots and grazing

land, so as to achieve better results from the major investments now being made in social forestry.

1. Success of Community Plantations:

The success of community plantations is generally defined in terms of the survival of the trees. The Social Forestry Department defines any plantation with over seventy percent survival as successful. Successful survival rates are generally attained through coercive protection of the plantations by watchmen keeping out livestock. Without any involvement on the part of community members, a plantation will continue to require such supervision, even more as the product becomes more valuable, because community members have no reason to forgo present consumption of the products.

A second level on which success is measured is the demonstration effect of a good plantation. The provision of free seedlings to encourage farmers to grow tree crops or to plant trees around their fields for domestic use is a major component of the Maharashtra Social Forestry Project. Showing farmers what is involved in planting and managing a plantation has definitely increased the number of trees grown on private land. This increase in trees planted, however, has been mainly on the land of larger farmers who have recognised the market value of tree crops and have enough resources to respond to government incentives. Providing free saplings does not address the needs of the landless and marginal farmers whose dependence for fuelwood and

fodder on nearby common and public land continues.

In terms of reversing deforestation, the product from successful community plantations and their impact as demonstration plots have had only a very limited effect. Even in another three to five years, when products from social forestry projects become available, most of them, if not all of them, will be directed to the market. Whether they are sold outside or within the village, villagers with inadequate cash resources will continue to scrounge whatever is available from surrounding public land. Tree crops grown on private land and on small community woodlots made available only through markets, even at reduced prices, will not reduce the demand of the poor for free fuelwood.

The lasting success of community plantations depends on, first, the recognition of how stratification, both of class and of gender, affects community involvement in their management, and secondly, overcoming difficulties of the bureaucratic tradition. Distrust of government officials on the part of local communities, as well as the tendency for the bureaucracy to reinforce privilege affect the functioning of officials in the village. Difficulties involved in overcoming problems of stratification and bureaucratic control must be addressed in order to achieve the involvement of all community members in the control, management and use of their plantation. Coercive protection is both more expensive and often ineffective, since it is subject to various pressures and interests. Wider community involvement is

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required to ensure that projects will be self-sustaining and plantations will continue to be protected after external support is withdrawn.

Neither of the plantations studied was a success in this sense of common resource management, that is, joint control and use of commonly-owned resources. Both plantations are formally owned in common by all villagers, that is, a limited number of owners, which makes them common property. Under the Maharashtra Social Forestry Project, however, the management and control of both plantations was assumed by the village Panchayats, without direct involvement in their control and use by other villagers, many of whom did not even know of the project.

The result in Yelwadi's case, is the destruction of the plantation after two monsoon seasons of Panchayat management. In Nane's case, the common land previously used for grazing has been redirected to producing income for Panchayat use, which is then allocated by dominant village interests. The grass produced, and probably the wood products later on, are obtained by those who can afford to pay the highest price, which indicates that the result has been the commercialisation and privatisation of the product from common land. This means that the project has had negative consequences from the point of view of village women who find themselves walking further each year to find free fuelwood, and continuing to contribute to the process of deforestation.

2. Limitations of the Maharashtra Social Forestry Project:

From 1983 to 1987, the Maharashtra Social Forestry Project (MSFP) had covered 4300 villages and planted 73,939 hectares, which was 100 percent of its village target and 91 percent of its planting target. 52 percent of the area planted from 1983 to 1985, which were drought years, had a survival rate of over 80 percent at the end of 1987. In terms of physical products, this can be rated an achievement, but in terms of initiating local interest and action in meeting their needs for wood products, very little has been achieved. Neither has enough been accomplished in terms of addressing environmental problems.

As late as 1986-87, the main objective of the MSFP was to meet fuel and fodder needs of the "rural masses" (Government of Maharashtra, 1986: 84). It was soon apparent, however, as planting progressed, that even successful plantations could hardly begin to meet the continually increasing demand for wood products both from within the village and from urban and industrial markets. Community plantations are now regarded by social forestry officials as demonstration plots rather than as major sources for wood products, for it has now been recognised that in themselves they cannot produce sufficient products to meet village needs.

The model emulated by Social Forestry officials interviewed is that of the introduction of Green Revolution agricultural technology and methods through agricultural extension services. One official is convinced that the Social Forestry Department

should concentrate solely on educational work, as do agricultural extension officers, and leave the planting to the Forest Department, which has greater resources for it. He says that as long as officers are required both to meet planting targets and to do extension work, the latter will suffer, because its impact cannot be measured. With their limited time and resources, officers will make sure they meet the measurable target and will end up neglecting the unmeasurable and more difficult objective of education. Because the impact of education work only becomes apparent after several years, it is seldom assigned suitable importance in the current year's targets and budget.

Comparing social forestry work with agricultural extension may be useful in giving education its proper importance, but it is a misleading comparison because of its emphasis on privately-owned land. Different conditions apply to the management and use of common and public land from those applying to private land and different measures must be taken to encourage and support common resource management. Planting on common and public land is much more difficult because it requires generating cooperation and involves different types of education and motivation work.

It was not extension services, furthermore, that accounted for the achievements of the Green Revolution, so much as subsidised modern inputs and guaranteed prices for the products, which are not available to the same extent for forestry production. Although extension and education work is indeed critical for

successful social forestry projects, placing primary importance on them ignores the problems presented by class and gender stratification and the institutional framework involved.

Besides the lack of time and resources available for extension work, the MSFP also suffers from general problems of government programs, namely, the tendency to reinforce existing privilege, and distrust of personnel on the part of villagers. A main defect of the MSFP in fostering the involvement of villagers in the management of their plantations is the background of the personnel. Most of them are forest officers transferred from the Forest Department, whose training predisposes them against working with villagers, especially the poorer ones. Their main duty in the Forest Department is to police Forest Land and to prevent such people from using it. The antagonism felt between local residents and forest officers has been built up through a long history of conflicts over the right to use products of government-owned land.

Officials' disparaging attitudes towards villagers were supposed to be changed in the new Social Forestry Department through retraining, but still present barriers to villagers' full participation. The strength and pride of Social Forestry officers is working with trees; they are not sufficiently experienced in extension work with villagers. The assignment of village motivators to help meet extension needs is again being proposed, but their effectiveness, like that of Social Forestry officers, not

only depends on their commitment and training, but can only be as good as the program within which they are operating.

Another major personnel deficiency in the Social Forestry Department, both in terms of extension work and in dealing with gender stratification, is the lack of women officers. Women extension workers are required to reach village women because of the gender separation of village activities at all levels. Men and women normally work and interact separately. They seldom even sit down together, and find it awkward to do so outside a family setting. Yet women are responsible for collecting and using most of the biomass energy consumed. Any program wishing to change use patterns will be much more effective by including women workers to make contact and work with village women.

Many women we spoke with who had no knowledge of the Social Forestry program in their villages indicated an interest in planting trees if the saplings were made available to them. The fact that they had not been offered saplings under the MSFP showed inadequate contact both with women and with poorer villagers. The study indicated that more villagers would be involved in planting if they had access to saplings. Even if poorer villagers do not have space to plant the numbers of saplings that larger farmers do, their involvement is significant because of their use of public resources.

Many of the village leaders interviewed in this study did perceive a difference between Social Forestry officers and Forest

officers, and between the work of the two departments: they do recognise that social forestry work is being done for the benefit of their village. This recognition indicates that there is potential for Social Forestry officers to do education and community development work. Provided they develop an attitude conducive to motivating all sections of the village, they could have a much more effective impact than when they limit themselves to actual planting.

3. Other proposed programs:

The Social Forestry Department is now renegotiating the MSFP with USAID, and is considering other programs for implementation, such as urban forestry, community stallfeeding enclosures, firewood depots, non-conventional energy sources, and improved training programs. As laudable as are the objectives of such programs, they do little to overcome the deficiencies of previous programs. The answer to the problem of plantations destroyed by grazing is not being sought in a different approach to local residents, but in other programs similar to the one encountering difficulties.

The basic problem of the dependence of the poor on public lands and resources for fuel and fodder can be solved, it is suggested, by two new programs supplying fuel and fodder within the village, which will eliminate the need to collect them from common and public lands. A program is being proposed to establish firewood depots in villages to supply firewood at reasonable rates, in order to reduce 'illicit' cutting in government for-

ests. Because the firewood for this program will have to be obtained from existing government forests, this program will be limited to villages near forests, so as to reduce transportation costs. It would not even be applicable to districts where fuelwood is scarce, which are the ones that need it the most.

It would involve buying firewood from the Forest Department, transporting it, splitting and preparing it for sale, fencing a depot area, and employing depot managers to operate it and keep records. Because it would only provide firewood for sale, whatever the "reasonable rate" set, even though it would probably be below the market rate, the price would still be a deterrent to those with little cash, who would still have an incentive to try to get as much as possible free from public lands. This is not a program attempting to increase supplies, so much as to keep people out of existing forests. It would not be seen as an improvement by poorer villagers and would not change their need to collect firewood.

A suggested grazing control scheme, on the other hand, offers an appropriate attempt to deal with the problem of overgrazing on public and common lands, and of the destruction of tree plantations by grazing animals. Recognising that open grazing cannot be prohibited without alternative arrangements, it suggests the community management of livestock in enclosures with facilities for stall feeding and drinking water. Initial establishment and maintenance would be at Government cost, but the

scheme would be subsequently managed by a village committee of beneficiaries.

In addition to improving the quality of grazing lands and protecting tree saplings all round the village, this program would also have the benefit, it is hoped, of improving the quality of village cattle by better feeding, the castration of poorer quality animals and artificial insemination with better breeds. The use of dung redirected to community biogas production would involve a more efficient use of the dung for fuel as well as fertiliser from the effluent. It is estimated that fodder production could be increased 200 percent by cutting the grass and taking it to the animals rather than allowing them to graze directly (Chavan, undated: 4).

Villagers are accustomed, however, to maintaining their animals on public land at no cost to themselves. The main component of this program would be to prohibit animals from open grazing and to stallfeed all livestock either in household or community enclosures. The success of this program depends on the willingness of villagers to participate in it by withdrawing their animals from land currently used for grazing, so as to allow that land to become more productive. Their willingness will be contingent on what they can expect to get out of the program.

Larger farmers would see the advantage of not having to protect their crops any longer from grazing animals. A large proportion of their fodder requirements is obtained from their

own land and crop residues, and they can afford to purchase their additional requirements, so such a program would not interfere much with their current practices. If there is no cost attached to maintaining animals in a community enclosure, this program could involve the danger of expanding the number of village livestock beyond the capacity to feed them, for those who can afford it would benefit from acquiring as many animals as possible to be fed at community expense.

A poor or landless farmer, on the other hand, cannot be sure of being allowed access to his animals in a community enclosure and of actually receiving his share of dung or gas equivalent. Although his animals may be regarded as unproductive by government officials, even the dung they produce is valuable to him. His previous possibility of gaining offspring from his animals might be jeopardised by the castration program. He has no reason to trust government programs to actually deliver to him what is promised. If he is allowed to cut and collect grass free from government lands to feed his animals, however, or if he is offered additional employment to cut and transport grass back to the village to sell to others, he has something to gain by cooperation. Rather than a community enclosure, he might support a stallfeeding program if it offers him better supplies of fodder or employment and if he can retain control over his animals by keeping them himself.

The case of shepherds with large flocks of sheep and goats

is critical for this program. Their livelihood depends on using public lands for grazing, and would be threatened if they have to pay for fodder or for the labour to cut it. Stallfeeding their animals would go against all their traditional practices. Such interests as theirs must be met fairly for a grazing control scheme to succeed, because it is the needs of the most impoverished groups that are most involved in finding solutions to environmental deterioration.

Programs such as these firewood depots and grazing control schemes do not present mechanisms to overcome similar problems encountered in community plantation projects, in their proposed form. Neither scheme can work without community cooperation, and cooperation cannot be enforced. Fines by themselves are not enough. Measures have to be worked out to ensure that the poorer farmers' interests are protected, and that the program does not work to the advantage of particular sections of the village. Unless everyone, including those without livestock, has some interest in the scheme, it will not work.

4. Derived Propositions:

The following propositions have been drawn from this study:

1. Caste is positively related to class. This relationship is most evident at both ends of the continuum, that is, Brahmans and Marathas generally being more privileged and the Scheduled Castes deprived. It is less clearly articulated in the middle castes and

is further attenuated by stratification within castes, such as the differential access to resources between elite Marathas and Kunbi-Marathas described in Chapter III. Both the choice and implementation of programs will be affected by caste and class which must therefore be taken into account.

2. Caste and landholding are related to control over common village resources and dependence on available public resources. A few Maratha households in both villages owning a substantial proportion of village private land, have a disproportionate voice in the use of common resources such as water resources and the village common land. The less private assets commanded by a household, the more their dependence on free public resources. Programs for rural development and environmental rehabilitation must deal realistically with such relationships in order to achieve their objectives.

3. Control over public and common resources is effected through institutions of local government, namely the Panchayati Raj system. The extent to which these institutions support the interests of privileged groups in the village against the interests of deprived groups, and the extent to which local government decisions reflect or conflict with majority interests must be examined further, so as to find ways to ensure effective representation of excluded groups in new projects.

4. In addition to class stratification, gender stratification is an equally important element in the village, understanding of

which is essential for changing energy use and sources. How it is related with class would be a useful subject for further analysis and necessary for dealing with energy use of public resources. The women from affluent families using mainly commercial fuel, or fuelwood from their own land, do not have a scarcity problem, and furthermore are not responsible for collection of energy. When commercial fuel is purchased, or farm vehicles are used to collect it, the men assume responsibility for purchasing it and bringing it home. The large majority of village women who use free public resources, however, bear the main responsibility for finding and collecting fuelwood and bringing it home. Any attempt to organise women to change energy use or sources must take into account this intersection of gender and class stratification.

5. Rural/urban stratification is another element that must be taken into account in planning forestry projects and in attempting to change energy use. The demands of urban markets take precedence over rural interests because of the resources they command and offer in return for goods. This dominance of urban interests must be addressed in rural development projects in any attempt to meet rural needs, and improve rural living standards and resource use. The penetration of urban interests into rural areas through the urban employment of some members of the village households has also affected their perspectives on energy needs and desirable options. Those who can afford commercial energy through better-paying work no longer consider fuelwood scarcity a

problem or reforestation a priority, and this has implications for the support available from their households for reforestation projects.

6. Traditional institutions and patterns of decision-making and consensus-formation differ from those developed since Independence and should be further examined for the possibilities they offer for communal resource management. In addition to general male-dominated village institutions and modes of decision-making, attention should be given to understanding female modes of decision-making and consensus-formation in order to explore possibilities for extending them to the community. Keeping in mind cross-cutting class interests, women's practical understanding of needs basic to the wellbeing of their families and of the realities of power-broking in their particular village settings should be mobilised to assess needs and priorities for community development.

5. Beyond the Maharashtra Social Forestry Project:

The limitations of various development models must be understood in relation to such underlying social factors in order to deal with the problems involved. The National Extension Service model, for example, which was set up to disseminate the new agricultural technology, had the effect of providing support to the already privileged. Panchayati Raj institutions of the local control model proved unable to ensure effective representation for deprived village groups. The top-down planning and implemen-

tation of projects through the bureaucratic model involve problems of reinforcing the structure of privilege, of antagonism between officials and local people, and of bridging gaps between male officials and the intended female recipients of programs.

In addition to traditional community institutions of decision-making that could be drawn upon, two other alternatives for generating cooperation in self-directed projects are non-governmental organisations and government support cooperatives. A large number of various types of NGOs promote the cooperative use of resources with excellent results in many instances. Several organisations in Maharashtra are working with groups of farmers to establish and improve irrigation facilities, to develop more productive resources and health and educational facilities, and more recently, in social forestry and watershed management.

The Pani Panchayat (Water Council) movement founded by the Gram Gourav Pratisthan in 1974 has become especially well known in Maharashtra for its cooperative approach to the issue of sharing water equally and using it most effectively in drought-prone areas. It requires a substantial contribution from each member in the shared project (members supplying 20 percent of the cost), shares water on the basis of the number of family members rather than on the amount of land owned, gives the landless an equal share of water as the landed so as to allow them share-cropping possibilities, and bans sugarcane cultivation as an inequitable and inefficient use of the scarce factor of produc-

tion, water (Korten, 1987: 187-8). NGO groups such as this one have found that villagers setting up co-operative projects often require help in maintaining cohesion, in persuading recalcitrant members to cooperate, in relating with external agencies for financial and technical support, and in dealing with villagers outside the group.

The main strength of NGOs is their local base and ability to deal with the specific needs and problems of particular projects, but, at the same time, this strength also presents their major limitation: they do not have the resources or personnel to work in more than a few villages at a time. They cannot provide support for enough projects to deal with the extent of the problem. On the other hand, NGO work has longer-lasting results than most government projects. Educators living and working with villagers have been found to have a much more lasting impact than do most government projects, such as those limited to the physical establishment of plantations which are so easily grazed back to their original state. The Central Government has recognised the contribution and strengths of NGO work and now offers them funding support.

Another important possibility for environmental rehabilitation is the revival of producers' cooperatives with government support. The cooperative movement which began strongly in the fifties, under the socialist principles of the new Government, is now concentrated in banking and marketing facilities that serve

the interest of those who already have resources better than those who have none. A study of agricultural cooperative societies formed in the fifties and sixties recommends the revival of agricultural cooperatives because of their advantages in increasing employment of labour through attaining land development and improvement in irrigation more quickly (Sarkar, 1986: 829).

The disintegration of cooperatives and their decreasing yields or lack of profits, this study points out, were due more to organisational problems, inequalities between members, and the withdrawal of government support than to lack of interest in such societies. If cooperative farming were better supported by a suitable administrative infrastructure to implement government promotional measures, Sarkar concludes, they would have a better record. If the state could be redirected to supporting the interests of smaller farmers and the landless, cooperatives would offer the potential for "a much fuller utilisation of our existing material as well as human resources in agriculture" (Ibid: 835).

5. Practical considerations for successful community resource management:

As was argued in Chapter II, cooperative enterprises cannot be dismissed as an idealistic dream. On the contrary, they provide a realistic alternative to the competitive self-interest and market forces that are threatening common and public resources. It may seem impossible to establish them within a market setting,

but it has been done (Oakeshott, 1978). The need for cooperative participation in the development of environmental resources will be evident in the following listing of prerequisite and necessary conditions for the establishment and management of community resource projects.

i) Prerequisites:

The first prerequisite for any successful community project is a subjectively perceived need for the project on the part of potential participants. If they cannot see the connection between their daily needs and the proposed product of the project, they will have no interest in contributing to it. Where their priority of perceived need differs from the suggested program, efforts may have to be made to meet their more pressing need first. In Nane, for instance, until the need for water is dealt with, it would be hard to convince people to contribute any major effort to woodlots.

Secondly, there has to be a perceived need on the part of the well-off to involve the poor. Larger farmers need to be convinced that it is in their interest to find ways to reduce the overuse of environmental resources, or they will have no reason to consider the needs of poorer villagers. They must be reminded of what a community means and stands for and of the mutual need of community members. The most difficult hurdle to community work of any kind is conflicting interests between various segments of the collectivity. The unrestrained drive to increase their hol-

dings and wealth on the part of larger farmers, their search for ways to decrease their reliance on hired labour, to reduce their responsibilities to them in terms of wages as well as other support given in the past, and their political influence at all levels of government, together present formidable obstacles to the improvement of the conditions of the village poor.

Under the present political direction, it may in fact be impossible to convince the wealthy of their responsibility to, and mutual interest with, poorer villagers. It should also not be assumed that just because they have interests in common, the poor will be easy to organise: NGO workers say they are often the hardest to organise. Rather than including the entire village in a community project, it may be necessary to begin with smaller more homogeneous groups of committed members. Although the involvement of the whole village is necessary for some projects like grazing control, it may be desirable (or the only possible alternative) for others, like a small woodlot, to start with a limited group of committed members.

Understanding the reasons why the poor must be involved is necessary to meet the third prerequisite, some means of effective political participation, consensus building, and conflict resolution (other than coercion) between all village groups. All members of the relevant collectivity must be involved on an equal voting basis. It is therefore probably necessary in most cases to develop other institutional mechanisms for community resource

projects than the existing Panchayat representation and Gram Sabha meetings, since these have proven inadequate in representing the needs of the weaker village groups.

Equating the Panchayat with the village community as a whole, as is done under government programs like the MSFP, conveniently ignores this inadequate representation of the poor and landless in the village Panchayats. Dealing only with the Panchayat consequently cannot overcome environmental problems posed by the needs of deprived groups. Working out an arrangement for equal participation in project management will very likely eliminate those who are not willing to work together and will establish a means of reaching decisions that will prove important throughout the life of the project.

Central to the decision to begin a project is reaching some consensus on its character, its priorities, the contribution required from members, how it is going to be protected, what is to be produced and most essential, how products will be equitably distributed to all members. Without such agreement at the beginning, problems will quickly become insurmountable. The guarantee of some direct benefit from the project is perhaps the most crucial aspect of the agreement to cooperate: it constitutes each person's major incentive to participate; without it, he or she loses their interest. The incentive to contribute must be large enough to provide a reason to forgo present consumption. It is essential to recognise that Panchayat revenue is not a direct

benefit. Agreement by members to contribute labour or resources is similarly very important in providing a stake in the project; otherwise, as in Yelwadi, no-one has anything to lose when the government project fails.

Part of the incentive to contribute is the type of product to be derived, so there must be a clear set of priorities as to the final products of the plantation, whether it is fuelwood, fruit, building poles, lumber, or what specific combination of these, and whether these are meant for the direct consumption of members, or for income through the market. A combination of using some and selling some can also be worked out. Rules for protection of the plantation must also be agreed upon, ideally a social fencing arrangement, whereby all agree to keep their animals out of the plantation, along with a sanctioning procedure for violation of rules agreed upon.

One of the main reasons for failed projects under the MSFP is that distribution plans were never drawn up, even though it is understood at all levels how crucial distribution is to people's incentive to participate, and even though possible plans were suggested. Not until 1985 did the Government of Maharashtra set out the following principles for distribution plans: the Panchayat was to pay 10 percent of income from the plantation to the State Government, at least 25 percent of the remaining income is to be used for protection and maintenance of the plantation, and 50% of the total produce (was to) be reserved and sold to

the weaker sections (landless labourers and persons below poverty line) of the village proper at 50% of the market rate, and rest of the produce (was to) be sold by public auction to people belonging to the same village (Government of Maharashtra, 1985).

None of the village respondents seemed to be aware of this requirement to provide a proportion of the produce to the weaker village sections: it was simply sold to the highest bidder. Selling it even at half the market rate, moreover, is still more expensive for the poor than collecting it, and cannot significantly alter their use of free public resources. The commercialisation of hitherto common resources only increases pressure on remaining public resources.

A final prerequisite for community resource projects is to offer an alternative or some compensation for the loss of grazing rights or other common rights such as housing, that will be incurred due to the implementation of the project. Otherwise the aggrieved parties not only have no reason to contribute, they have reason for sabotage. As the plantation begins to become more productive, the cost of forgoing present use increases with the value of the product, and along with it, the payoff for defec-tion.

ii) Necessary conditions:

Once an agreement has been established on the objectives of the project, who is to be involved, and the rules of participation, then the ground has been laid to assemble operational components. The major necessary condition for the establishment

and successful operation of community resource projects is the availability of land, and clear ownership rights and control over it. Only when members can be sure they are in control of the land they are using, can they be sure they will benefit from the investment they are making. Land tenure is even more critical for community forestry than other projects such as common irrigation facilities or improving grazing lands, given the long maturation periods of tree crops.

When the government becomes truly committed to environmental rehabilitation, it will find it necessary to reassess the issue of the ownership and control of forest lands now under state control. Especially for forest dwellers, but also for agricultural communities like Nane's, use of surrounding Forest Land cannot begin to become responsible until the users are returned control over them. Both on grounds of justice and equity to local people, and on grounds of the government's inefficient management of its unenforceable monopoly on these lands, it is currently being argued that the continuing suppression of civil rights, occupancy rights and use rights of forest dwellers on grounds of public purpose or national interests is unjustifiable (Bahuguna, 1985; Moench and Bandyopadhyay, 1985).

The failure of the Forest Department to protect and maintain the resources under its control has therefore led to demands for a reevaluation of the principles underlying Forest Law and policy, rather than enacting the proposed legislation of making minor

adjustments to strengthen it. Commander argues that market prices and the lack of enforcement of public property rules contribute to the rapid depletion of forest resources (Commander, 1986). In order to create economic interests in forest replenishment and long-term maintenance, he suggests that the state give up its monopoly rights and that long-term conditional leases to forest lands be granted to communities, rather than individuals. Lands granted must be large enough to optimise their management in longer sets of time preferences. Providing a vested interest in the reproduction of the resource is necessary to end its depletion.

Under the recognition that any productive use would be better than their current state, wastelands are already being made available to poorer rural people for tree crops under long term leases. Similar contracts could be made with groups or village communities. Consideration should also be given to the possibility of offering more viable resources to such groups before they are reduced to wastelands.

A second necessary condition for community resource projects is the technical and financial support for it. Some institution must be prepared to finance investment costs, either through government credit institutions or under various government programs, such as social forestry programs. Technical advice in preparing seedlings and the site must also be available. Alternative methods to those used by the Forest Department, such as the

direct planting of collected seeds, should also be considered. In the case of woodlots, if a group has been formed and land found for the project, the cost of establishing a plantation can be greatly reduced by direct seeding and hand watering first season survivals. If the whole village is participating, protection would not be a problem. If it is a limited group of villagers that is establishing the plantation, the major investment would then be protection of the plot from the livestock of non-members.

The educational and motivational support necessary should be distinguished from technical support in order to make sure the former is given its due place. In establishing the MSFP plantations, all responsibility for all aspects of the project was assumed by Social Forestry officers. Not enough effort was made to involve the villagers not only in decision making but also in planting, maintenance and protection. They learned from the beginning not to consider themselves competent to carry out such projects and that no results could be expected without total government support and expertise. Thus the Social Forestry program taught villagers that the only effective way to protect plantations is either to fence them or to maintain a full-time watchman.

The possibility of effective village control through cooperative abstention is considered by most government officials as too difficult to be seriously entertained, although such agreements do exist and are shown during training workshops as models

to villagers about to begin their own village plantations. If the Social Forestry Department were to be transformed into a true extension service, it could direct more attention to establishing such agreements. Rather than assuming complete responsibility for planting and operating the woodlots, it could provide technical and financial support, required supplies, such as seeds or advice on collecting seeds, and expertise on planting and maintenance, as do agricultural officers. This would mean that the project would be under member control from the beginning.

In third place, either a committed social development worker, or local leadership acceptable to all potential members would usually be necessary to establish prerequisite agreements, and an institutional arrangement for decision-making, as well as to provide the information and skills necessary to receive the required technical and financial support from external agencies. Such an initiator must have both commitment to cooperation and some experience in the practical problems involved in order to establish viable groups. The more similar the background and experience of workers to that of the members of the cooperative, the more effective they will be.

Fourth, as already mentioned, perhaps the most difficult condition necessary for successful common resource management is the coordination of differing village interests in order to ensure the equal involvement of all members. Mediation between these interests will have to be done on a continuous basis to

ensure the survival of the project. A major problem for village workers is that, in showing poorer villagers how to go about improving their living standards, they are necessarily interfering with and often challenging the existing power structure and political support structure at the village level, with consequent ramifications on levels above. Change in power structures is unlikely to take place in the short run while workers are attempting to establish small community projects. Threats and acts of retaliation and sabotage are not uncommon when work is attempted on behalf of the powerless. On the basis of the experience of NGOs with such threats, it will probably be necessary for successful projects that such workers have the financial and legal support of some outside agency to provide necessary backup resources in cases where projects are threatened by more powerful village interests.

When it is in the interest of larger village landowners to maintain a group of labourers without land or their own resources to work with, so that their only alternative is to work for whatever daily wage is available, then such landowners will have an interest in obstructing efforts, either private or cooperative, by landless labourers to gain resources for improving their position. The well-off in Yelwadi will have to recognise that the poorly-off are also members of the community, if they want to ensure the survival of their plantations. Excluding significant portions of the community from benefits only increases their

incentive to free ride.

Finally, the provisional agreement or consensus reached on priorities, protection of the plantation, and the equitable distribution of the product in the planning stage of the project will probably have to be readjusted according to changing conditions and requirements, on the same equal voting basis as those under which they were established.

Cooperative resource development requires incentives sufficient for cooperation, good leadership and organisation, external financial and legal backup support, and perhaps also a firm belief in the necessity for and rewards of cooperation. All these factors and conditions outlined above should be taken into consideration in the planning of rural development programs.

7. Towards sustainable use:

This outline has indicated several levels at which the managers of a cooperative woodlot have to function, first, in relations with government on land tenure, technical expertise and financing. Secondly, they have to develop good internal management capabilities, not only in technical, financial and marketing aspects, but also in sustaining the motivation for cooperation. Third, managing intravillage relations and mediating between the interests of differing groups or members could prove the difference between success and failure of a project, for it would be almost impossible for any one group to manage a plantation in the midst of other groups' active hostility.

Some of the conditions mentioned for successful resource management, such as financial and technical support, are already being met under existing government programs. Remaining conditions, such as that of village initiators to develop the necessary motivation and agreements, could also be provided in the short-term if suitable priorities were established. The condition of actually involving deprived groups, however, and providing legal support for protecting their rights, probably cannot be accomplished without political change. Although politicians and officials at all levels continually speak and write of the need to provide resources to "backward classes", no effective mechanisms exist to ensure that resources provided reach those for whom they were said to be intended.

Social forestry programs are just one example of government support programs that have been redirected to supporting those who already have the most resources. Farm forestry on private land may be the most successful component of such programs in the short run, but as long as so many landless and near-landless villagers depend on the surrounding land for their energy needs, programs that do not deal with this use will not deal with problems of environmental deterioration. Banning people from public and common land through increased fines and other sanctions will not change their use when they have insufficient means to obtain energy from other sources. Effective long-term political change will therefore be necessary for real progress to be made in

environmental rehabilitation.

Such a conclusion has implications for industrialised nations as well, where significant political change may also be required to establish sustainable use of public resources.

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APPENDIX 1:
HOUSEHOLD QUESTIONNAIRE

1. Household members: Casts, age, sex, education and occupation
2. Daily fuel use: type and source
seasonal variations
3. Do you store fuel for future use?
4. Who collects household fuel?
How far do they walk to get it?
How much time does it take?
5. How have fuel sources changed from ten years ago?
6. How has water availability changed from ten years ago?
7. What changes have there been in diet, fuel and cooking from 25
years ago, in your mother's time?
8. Under what conditions do you substitute one fuel for another?
9. Does the use of dung for cooking reduce the amount used for
fertiliser?
How much dung do you use on your fields?
Would you use more if you had it?
If you had more of other fuels, would you stop using dung
for cooking?
Do you think that dung as fertiliser is a better use?
10. What do you think about the smokeless chulhas?
Why have you or haven't you got one?
How much fuel does it save?
Does it cook well?

11. Livestock: type and number
12. Daily fodder use and sources
13. What do you think of stall feeding?
Reasons for and against

Under what conditions would you stall feed?
14. What are your most important needs generally?

What does your village need the most?
15. What tree products do you use besides fuelwood and fodder?
16. Have you heard of the Social Forestry Project? If yes, who told you about it?
17. Are there any communal plantations in your village? (If no, ask who she thinks the Panchayat plot belongs to)
18. Who manages the communal plot?

Who makes decisions about it?

Did you have any part in the decision to begin it?

Do you have any part in looking after it?

Are you and other villagers involved in any other way?
19. Is the plot protected from cattle and other animals?

Under what rules?

Are these rules properly enforced?

Do you help protect the communal plot? How? Why?
20. Have you received anything from this plot? What benefits do you expect to get? When?
21. Has the village motivator been to visit you? How often?
22. Have you yourself or your family planted any trees since the

program began in 1983?

If not, why not?

Are you planning to plant some?

Why aren't other villagers planting them?

If planted trees, number of trees and species planted.

Survival rate, purpose and previous land use.

Reasons for planting trees

Where did you get the seedlings?

How much did you have to spend on planting in terms of money and your own labour?

Did you hire anyone to plant?

Was the survival rate better or worse than you expected?

Are you satisfied with the results of planting trees? Will you plant more?

Are your trees better or worse than those on village plot? Why?

23. Amount of land rented out and rented in. Type of tenancy agreement.

24. Land owned

Crops, yields, value

Percentage of crop retained for household consumption.

25. Other property (Houses, machines, vehicles, radios, refrigerators)

26. How much chemical fertiliser and pesticide do you use?

How much cow manure and green manure (leaves, etc.) do you

use?

If not using chemicals under what conditions would you adopt them?

27. How does the present condition of the soil (its fertility) compare with what it was in your father's time?

What was done then to sustain soil fertility?

APPENDIX 2:
LEADERS' QUESTIONNAIRE

1. What are the village's most important needs in order of priority?
2. Does the village have enough water?
3. Is the water supply improving or getting worse?
4. What are the worst effects of the scarcity of water?
5. Who is worst affected?
6. What should be done?
7. Whose responsibility is it to do it?
8. Are workers easily available in your village?
9. How much money do you have to pay workers?
10. How does a shortage of labour affect village work?
11. Has labour availability and cost affected the choice of crops?
12. How?
13. How much common land is available in the village?
14. How is it used now?
15. How was it used in your father's time?
16. What is its condition now compared to then? Why?
17. Who uses the common land the most? For what purposes?
18. What was the land now being used for the Social Forestry plantation used for before?

19. Who was using it?
20. What do they do now that they can no longer use that land?
21. Is there a shortage of wood and trees?
22. Does the village need more trees?
23. For what purposes does the village need more trees?
24. What problems are caused by lack of trees?
25. Who is worst affected?
26. Why haven't these people planted more trees themselves?
27. Has the Social Forestry program helped? How?
28. How was the decision made to begin the Social Forestry project?
29. How were you involved?
30. Who was responsible for the communal plot in the beginning?
31. What were the villagers' responsibilities?
32. What rules were there for protection of the plot?
33. Were there any people or groups who opposed the Social Forestry plantation ? Who? Why?
34. When did the Government hand over the plantation to the Panchayat?
35. What were the problems for the Panchayat in taking over management of the plantation after 3 years?
36. Why did the Panchayat agree to take over management?
What conditions did the Panchayat agree to?

37. What products are there? Who gets them?
38. Who made decisions about distributing the products from the plantation?
39. What problems are there in deciding who receives the benefits?
40. Is there any difference between the Forest Department and the Social Forestry Department? What differences?
41. Is there any difference between the Forest officers and those working on the Social Forestry program? What?
42. How has the Forest Department's work affected the village?
43. Has the Social Forestry project helped the village?
Who has it benefitted the most?
44. Has it been worth doing?
45. What did the Social Forestry officials tell you you would get from this project?
46. What did you expect to get?
47. What have you actually got?
48. What problems are there, and why?
49. What suggestions do you have for improvements?
50. Do you think the village should begin to grow another plantation before the first is ready for harvest, so as to have a continuous supply of fuelwood and fodder?
51. What would be the major problems in beginning another plot?
52. Could the village manage one itself?
53. What help would it need?

54. Caste, occupation, age, education, family size

55. Landholding: owned and rented out

Yield

56. Other property:

House

farm machines and vehicles

radio, T.V., refrigerator

57. Does any person or group dominate the Panchayat or control village affairs?

58. What possibilities are there for weaker sections to have their needs and opinions taken into account?

59. Are there any particular people or groups who oppose the Panchayat? Why?

60. What needs to be done for this village?

END

1|7·0|2·90

FIN