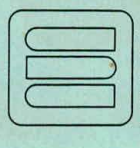

World
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Strategies for the involvement of the landless and women in afforestation: Five case studies from India

A technical co-operation report

International Labour Office Geneva

Strategies for the involvement of the landless and women in afforestation: Five case studies from India

A technical co-operation report

by

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PREFACE

The landless and women are two major target groups of ILO anti-poverty programmes. ILO research of the past ten years has demonstrated the key role of women in meeting their families' basic needs, food production and income earning. More recently, the crucial linkages between rural poverty and environmental degradation, both as cause and effect, have begun to receive increasing attention.

In most rural economies, people depend on natural resources for their livelihoods: agricultural land, rangelands and fisheries provide food, forest and bush areas provide biomass for fuel, fodder, housing, tools and other minor forest products, and water sources determine health and sanitation. The rural poor especially rely for their survival on "common property" - forests, grazing areas and land - that belongs to the community rather than to individuals. These common resources are increasingly becoming privatised, overused and degraded. Rural women are hardest hit by this environmental crisis, as their traditional responsibilities for fuel and water collection become more difficult and they lose access to fuel and raw materials necessary to their income-earning activities. Promoting rural employment and rural development in the future will depend critically on preserving, creating and improving ecological systems that can provide food, basic needs, income and employment for the poor, including landless and women, on a sustainable basis.

Afforestation is one of the major strategies being promoted in developing countries with the objectives of simultaneously improving the environment and providing employment and livelihood in rural areas.

The present study documents and assesses five cases of afforestation programmes in India. It was carried out under an inter-regional research project on energy and rural women's work, with the support of the Netherlands Government under the Programme on Rural Women of the Rural Employment Policies Branch of the ILO. Comparative studies have been completed in Peru, Ghana, Mozambique, India and Indonesia. The present study is a more policy-oriented effort intended to offer lessons and promote discussion in India as well as in other developing countries.

Similarly, the ILO's Programme on Rural Women has initiated pilot projects involving rural women's groups in afforestation and wasteland development in the Indian States of West Bengal and Gujarat, which, it is hoped, will contribute some fresh ideas on creation of collective asset base, new forms of community and women's organisations ensuring their control over resources. It is intended to further promote the experience and approach in other countries. The documentation and exchange of experiences such as those recounted here is an essential part of this development.

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INTRODUCTION

Over the past 40 years, India has lost 45 million hectares of forest, and forests continue to be depleted at a rate of 1.5 million hectares a year. Officially, it is admitted that barely 10 per cent of the country is under forests, even though a minimum of 33 per cent is judged necessary for environmental stability. A number of Indian wood-based industries such as pulp and paper are operating below capacity due to the lack of raw materials. Poles are in short supply in urban markets. Rural people are increasingly forced to cook using substitutes for fuelwood like dung and crop residues, which would be better used as manure for crop production and as fodder for livestock. How has this situation come about?

Up until the mid-1800s, there was no state control over forests in India, rather village and tribal communities had developed a variety of social and cultural institutions that enabled the prudent utilisation of forest products. The British Colonial Government asserted its monopoly over forests as part of the railway expansion and denied village rights in the imperial interest. After 1947, the Indian Government continued to exercise state control over forests in the national interest, primarily with a view to managing forests to meet the requirements of the forest industries sector and to earn revenue.

At the same time, other forces combined to put pressure on forest resources: increasing human and animal populations, agricultural expansion due to resettlement programmes, submersion by irrigation and hydropower projects, urban demand for building materials and fuel, and forest fires. By the mid-sixties, traditional forest management was unable to meet the rapidly growing industrial demand for wood products. Production forestry was tried, in which large areas of natural forest were clearfelled and planted with quick-growing, exotic species, many of which gave poor results under Indian conditions. In the meantime, rural India was increasingly suffering from shortages of fuel, fodder, timber, and raw materials for small industry. Foresters - whose job it was to protect the forests from local villagers so that wood products could be made available to industry in the "national interest" - were increasingly coming into conflict with people, who desperately needed the biomass products from forest areas for their survival.

"Social forestry" was introduced by the National Commission on Agriculture in India's Fifth Five-Year Plan in 1976 with a view to promoting plantation of trees by rural communities to meet their needs of fodder, fuel, small timber and fruits. Most major states began social forestry programmes in the early 1980s, augmented by various centrally sponsored schemes like the Rural Fuelwood Programme, the National Rural Employment Programme, and the Prime Minister's afforestation initiative, the National Wasteland Development Board. The Sixth Five-Year Plan in 1981 provided for Rs. 692.49 millions of investment in forestry, more than had been spent in the entire previous 30 years of planned development. In addition, a number of foreign donors and the World Bank have supported social forestry projects in different states.

Social forestry has three components: farm forestry, encouraging farmers to plant trees on their own farms by distributing free or subsidised seedlings, woodlots planted by the forest department for the needs of the community, along roadsides, canal banks and other public lands, and community woodlots planted by communities themselves on community lands to be shared equally by them. The second two components have had little impact. The real success story has been farm forestry, where progress has been spectacular and targets have generally been exceeded. Since 1980-81, 1,000 crore of seedlings have been distributed to farmers for farm forestry on private lands.

This success story has none the less been challenged by many critics on a number of grounds. Critics charge that:

- social forestry is primarily a response to the failure of production forestry and is oriented towards meeting the needs of wood-based industry and urban areas, while the glaring fuel and fodder crises facing the poor continue to grow. In fact, the species planted - mainly eucalyptus, pine, and other non-fodder species - are mainly being marketed as poles and raw materials for industry. Wood has become too valuable for the poor to burn, and they are forced to use dung, crop residues and leaves as fuel.

- natural forests, especially sal forests, provide many benefits to the poor that plantation forestry cannot provide - foodstuffs, such as edible fruits, roots and small game animals - especially during the lean period of the year and as insurance against famine, grazing lands for domestic animals, food and other commodities collected for sale and barter, such as fruit and flowers, seeds, leaves, grasses, building materials, fuel, and social and ritual needs.

- big farmers are the primary beneficiaries of farm forestry, enjoying incentives and subsidies from the state while profiting from the lucrative cash cropping of trees. With the current high profits available, large farmers are even converting good quality agricultural land and using irrigation in tree farming. Tree farming also has lower labour requirements than food crops, which some studies claim is reducing rural employment and promoting absentee landlordism.

- eucalyptus and other monocultures do little for ecological restoration for enhancing soil fertility or for soil and water conservation, and indeed may be leading to irretrievable environmental degradation. One of the attractions of these species for wood-growing is that they are not palatable to cattle, and therefore cannot be used for fodder, even though fodder is one of the most critical biomass needs in rural India.

Proponents of social forestry reply that wood production of any kind will help to take pressure off India's forests, and that it is not surprising that farmers respond to the lure of cash income rather than production of firewood for household use, since household fuel is collected mainly by women whose time is seen as having a low value. They admit, however, that social forestry in general has failed to reach its purported objective of producing fuelwood for domestic use, and has rather encouraged farmers (and mainly large landholders) to grow trees as a commercial crop for poles and paper mills.

This is a continuing debate whose complexities can only be alluded to here, but it is against this background that the present study must be viewed. The CSE authors argue that while social forestry as initially promoted has failed to benefit the poor, opportunities do none the less exist for involving landless and marginal farmers and women in afforestation programmes. Indeed, afforestation could potentially be the basis for a fundamental development in the countryside. As the Indian Law Institute has explained in its analysis of the Forest Act, afforestation is in fact a major campaign for land reform in India, in this case for reform of the laws governing rights of use and ownership of public rather than private lands, to shift land use policy from the current framework used to control and exploit forests to fresh laws needed to carry out afforestation. In the future, the Institute argues forestry is an important alternative to agriculture on degraded public lands and may even engage an equal labour force. Between 100 and 150 million hectares, roughly one-third to one-half of the land area in India are classified as wastelands - due to wind and water erosion, water

logging, salinisation and alkaline lands. A portion of these lands is already in the hands of poor households, who under earlier land reforms have received low-quality land that they have hitherto been unable to cultivate. Others belong to large private landholders. Some is community land, which village councils have hitherto been reluctant to use for forestry as this is the only land available for grazing. Most wastelands, however, are government-owned, officially classified as forests, but actually degraded lands. Afforestation could potentially rehabilitate these barren lands environmentally, while providing land and employment to the poor. As the authors state, "With the crying need for biomass today, India will never get a better opportunity to harness the power of its people to the power of its land, to strike at the roots of landlessness, poverty and unemployment, all at the same time, through the massive afforestation of these wastelands."

The problem which the authors of this study deal with here is, what are the social, institutional and other conditions for making these wastelands more productive, while taking into account the needs of the poor and women? They first describe the biomass-based subsistence economy of the poor in India, how the poor have become alienated by the state from their traditional common lands, and how the present social forestry programme has generally failed to improve this situation. Five cases of afforestation in India are then identified where "dealienation" of the common lands has been attempted, in an effort to involve and benefit the landless and marginal farmers and/or women. The five cases are in West Bengal, Maharashtra, Haryana, Uttar Pradesh and Gujarat, and the projects selected are being implemented by both government and non-government agencies. In one case (West Bengal), the commons have been privatised, by parcelling them out to individual families through a land reform. In the other four cases, entire village communities or sub-groups have been involved in afforestation and protection; two of the cases (Haryana and Uttar Pradesh) are relatively homogeneous villages in terms of social structure, the other two (Maharasthra and Gujarat) are villages having a high degree of social stratification.

The lessons learned are both inspiring and sobering. Although farm forestry of the degraded lands received in the West Bengal land reform has been highly successful in providing employment to the poor beneficiaries of the land reform and in raising their incomes, their privatisation has reduced the area of common lands available to non-beneficiaries. Farm forestry has not reduced the grazing pressure on forests, since the species grown do not produce fodder. For these and other reasons, the authors favour a strategy of protecting and enriching common lands while still retaining them as commons, rather than privatising them as in farm forestry. In this way, benefits can in theory be shared by the community, with provisions built in to ensure that the landless and land-poor benefit on a priority basis. The remaining four case studies document such attempts.

The world-famous Chipko Movement in Uttar Pradesh and a watershed management effort in Haryana are uplifting examples of community mobilisation around environmental preservation that is perceived as having direct economic benefits for the community. Innovative resource management mechanisms and effective new community organisations have been created as a result. But as the authors point out, these are probably exceptional cases in India, in that the communities are relatively homogenous and favourable climatic and soil conditions prevail, making the returns to simple conservation measures higher and co-operation easier.

In the two remaining cases, community co-operation has been a failure. In Maharashtra, despite the project objective of providing fuelwood for the poor, it has proven impossible even to transfer management of village woodlots established by the Forest Department to village panchayats (elected councils),

due to the multiplicity of interests in the villages; the poor, who have no voice in the panchayats, have also had no voice in afforestation. In Gujarat, successful farm forestry on degraded lands by a lower-caste group has provoked class conflict and violence by the upper caste, who have seen their traditional low-wage labour supply escaping to find an alternative economic option in afforestation. Noticeably, with the exception of the Chipko experience, the involvement of women, even in these cases, is minimal.

In conclusion, the authors lay out some conditions under which community involvement in protection and enrichment of the commons can be successful by assuring community control, unity and equity. A plea for new forms of community organisations, in particular to ensure the more effective involvement of women as well as of the poor, is also made. Finally, the authors point out that even these attempts at taking into account the needs of the poor ar still the exception rather than the rule in India. Certainly, it is clear that even in cases where there is a focus on the rural poor in social forestry, there is a need for further innovative approaches and experiments.

CHAPTER I

BACKGROUND TO THE CASE STUDIES

Biomass-based subsistence economy of the poor

The vast majority of rural households in India meet their daily household subsistence needs through biomass or biomass-related products, mostly collected freely from their immediate environment. In short, the poor in India live within what can be called "biomass-based subsistence economy". Food, fuel (firewood, cow dung, crop wastes), fodder, fertiliser (organic manure, forest litter, leaf mulch), building materials (poles, thatch), herbs and clothing are all biomass products.

Water is another crucial input for survival. Water is not biomass itself, but its availability and quality are closely related to the level of biomass available in the surrounding environment. Once the forests disappear, local ponds silt up, village wells dry up and perennial streams get reduced to seasonal ones. The water balance is totally upset by the destruction of vegetation. In a monsoon climate like India's, with highly uneven rainfall over the year, the reduction in tree cover translates into greatly increased run-off and floods during the peak water season, and greatly increased drought and water scarcity in the dry season.

The magnitude of India's dependence on biomass for meeting crucial household needs can be appreciated by looking at the energy situation. Despite India's large industrial sector, over 50 per cent of fuel consumption is for an activity as fundamental to survival as cooking. In developed countries, cooking consumes less than 10 per cent of total national fuel consumption. Even more important is the fact that over 90 per cent of cooking fuel in India consists of biomass: firewood, cow dung and crop wastes. Even urban households are heavily dependent on biomass as fuel. Annual urban household expenditures on fuelwood alone in India are well over Rs.500 million.[1]

Biomass resources not only meet crucial household needs, but also provide a range of raw materials for traditional occupations and crafts and are thus a major source of employment: firewood and cow dung are important sources of fuel for potters; bullock carts and catamaran fishing boats are built of wood; bamboo is a vital raw material for basket weavers and so on. Traditional crafts are being threatened not only by the introduction of modern products, but also by the acute shortage of biomass-based raw materials.

A study by the Indian Institute of Science - the first in India on the changing market for bullock carts - reports that farmers in Ungra village in Karnataka can no longer afford to buy bullock carts constructed in the traditional way with wooden wheels, because wood has become too expensive.[2] A recent report by the Murugappa Chettiar Research Centre in Madras adds that traditional fisherfolk now find it very difficult to make catamarans because the special wood required is scarce and costly.[3]

State government and forest department policies are in many cases responsible for shortages faced by local producers. In their bid to attract industry, forests have been leased at throw-away prices by state governments to industrial producers, while local producers face shortages and higher prices. Studies from all over India portray the extreme difficulties faced by hundreds of thousands of basket weavers in eking out a bare existence, because of the acute shortages of bamboo. In the Bhandara and Chandrapur districts of Maharashtra, nearly 70,000 basket weavers face this problem. In Karnataka,

following a series of protests by basket weavers, the Indian Institute of Science undertook a study on the use of the state's bamboo forests by paper mills. The study found that whereas bamboo was available to paper mills at Rs.15 per tonne, basket weavers and other small bamboo users were obliged to pay Rs.1,200 a tonne in the open market.[4] Social activities in Saharanpur have also pointed out the travails of baan makers who have recently been deprived of their earlier sources of bhabhar grass. The Forest Development Corporation of the State of Uttar Pradesh discriminates in favour of paper mills and this policy has turned thousands of baan workers into destitutes, landless labourers and urban migrants. Wood is now difficult to get even for making agricultural implements like the plough, especially the species of wood that have traditionally been used for these implements. For example, one factor that led to development of the now famous Chipko Movement was the anger of local people over the Forest Department's refusal to provide them with ash wood, traditionally used for making ploughs, while the same ash wood was being allocated by the Forest Department to sports goods manufacturers.

Even common biomass resources like thatch are becoming so scarce that maintenance of mud and thatch huts has become difficult. A report form Bastar (still one the the most heavily forested districts in the country) points to a village where no new hut has been built over the last two decades because the entire area around the village has been deforested.[5] Traditional mud roofs have disappeared from many parts of the country because of the large quantities of timber needed to construct them. Mud roofs are being replaced by tiled roofs, but baking of tiles still requires large quantities of firewood.

Fodder is another vital resource in acute shortage. With only 2.45 per cent of the world's land mass, India supports 15 per cent of the world's cattle, 52 per cent of its buffaloes, and 15 per cent of its goats. All these animals play an extremely important role in the integrated system of agriculture and animal husbandry practised by Indian farmers. A study from the tribal areas of Gujarat shows that the shortage of fodder, especially from public lands, prevents poor landless households and marginal farmers from benefiting much from the milk co-operatives and animal improvement schemes that have been introduced in the region.[6] Grazing lands have also been neglected and today their productivity is not even one-tenth of their potential.

With 80 per cent of India living in villages, millions of people are heavily dependent on biomass sources for their daily existence. In such a situation destruction of the environment, or policies that reduce access of the poor to biomass resources, will have an extremely adverse impact on the daily lives of rural people.

Despite this near-total reliance on biomass resources for bare survival, nature in India has steadily undergone a major transformation over the past decades. There are two major pressures operating on the country's natural resources today. The first is generated by population growth and leads to increased household demand for biomass resources. The second pressure is coming from modernisation, industrialisation and the general penetration of the cash economy. This modernisation has affected nature in two ways. Firstly, it has been extremely destructive of the environment in its search for cheap biomass-based raw materials. Secondly, modernisation steadily transforms the very character of the natural environment. In biological terms, the tendency is to reduce the diversity in natural forest areas and transform them into high-yielding monocultures. The ecological role of the original natural area is usually disregarded in this transformation. In social terms, the transformation is generally away from a natural environment that has traditionally come to support household and community needs, and

towards an environment that is geared to meeting urban and industrial needs, a "forest" that is essentially cash-generating. Excellent examples of such transformations are the replacement of old oak forests by pine forests in the Himalayas; of sal forests by teak in the Chottanagpur Plateau; and of natural forests by eucalyptus plantations in the Western Ghats.

The new, commercial "nature" that is created is of little help to village communities and their daily needs. For this reason, there are people's protests in many parts of the country against the conversion of oak forests into pine forests and of sal forests into teak forests. Neither pine nor teak is of much interest to local communities.

The effect of this massive environmental change has been disastrous for the people, especially in a country like India where, on the one hand, there is high level of poverty and, on the other, a high level of population density. In such a situation, there is hardly any ecological space left in the physical environment which is not occupied by one human group or another for its subsistence. If in the name of economic development, any human activity results in the destruction of an ecological space or in its transformation into something that benefits the more powerful groups in society, then inevitably those who were earlier dependent on that space will suffer. Development in this case leads to displacement and dispossession and inevitably raise questions of social injustice and conflict. The Indian experience shows clearly that it is rare to find a case in which environmental destruction does not go hand in hand with social injustice, almost like two sides of the same coin.

One area where government policies have consistently increased conflicts is forests. The entire tribal population, and millions of other forest-dwelling people, depend on the forests for their existence. Destruction of forests has meant social, cultural and economic destruction of the tribal populations in particular. The Government leaves little or no control over forest resources in the hands of the forest dwellers. Government control over forests has definitely meant a reallocation of forest resources away from the needs of local communities and towards the needs of urban and industrial India. The end result is both increased social conflict and increased destruction of the ecological resource itself.

Those with limited access to the major resources of biomass, namely, the landless, near-landless and cattle-less poor, are invariably those who are most affected by reduced access to or the destruction of biomass available on the commons, as well as by the transformation of biomass growing on private or common lands.

The planting of eucalyptus in farmers' fields - and even on so-called "barren" fields - is an excellent example of adverse biomass conversion. In a village in Punjab, a rich farmer with over 100 ha of land stopped growing cotton and switched to eucalyptus. As long as he grew cotton, enormous quantities of cotton sticks were available for the landless labourers in the village to use as fuel. Because of the shortage of firewood, crop wastes from the landlords' fields were the major - and almost the only - source of fuel for these poor landless villagers. Now that eucalyptus has replaced cotton, their main source of fuel has dried up, putting these landless labourers in a precarious household energy position. The firewood that the landowner gets from the trees is a commodity which can fetch cash as compared to the crop wastes for which there was little commercial demand. Fuelwood is thus "too valuable" to distribute free as fuel to labourers. Also firewood, as compared to crop residues, is harvested mainly only once in six to seven years - a long wait for fuel-hungry labourers. This is a case where afforestation has actually created a fuel famine for the neediest sector of the community.

What happens when eucalyptus is grown on a "barren" piece of land? Usually no land is barren, unless of course it is highly eroded in which case even eucalyptus cannot be grown on it. Generally, barren lands have large quantities of weeds growing on them. With the destruction of India's original vegetation, several aggressive weeds like Lantana, Parthenium and Eupatorium have taken over the country. None of these weeds are palatable to animals and they therefore survive the pressure of grazing. These weeds now play an extremely important role in the vital supply of cooking fuel for the poor.

A weed is a plant which has no economic value, but in the socio-economic reality of India, even weeds have a role. For poor households who have no lands of their own, weeds growing on public lands are extremely useful, exactly because of the very fact that weeds are not desired by the modern sector of the economy. Once weeds acquire an economic value, even they go out of the hands of the poor.

Thus, when a patch of barren land is planted with eucalyptus, even weeds are no longer available to poor landless households and their fuel crisis intensifies. Reports from all over the country show that women often sweep away dry eucalyptus leaves form eucalyptus plantations for use as fuel.

As even those "waste" forms of biomass used by the poor become commercialised, access by the poor to these biomass sources is automatically reduced because of their limited purchasing power. The trend towards commercialisation of firewood has been so rapid in the last 15 years that it is now rare to find poor households using much firewood at all, especially in the form of logs. Firewood is less and less a fuel of the poor, but rather a fuel of the relatively rich. The poor now subsist on qualitatively inferior sources of biomass fuels: crop residues, weeds, twigs, cow dung and whatever organic wastes they can find. The commercialisation of biomass, and its drain towards those who have the power to purchase, will inevitably harm the poor and erode the non-monetised, biomass-based, subsistence economy.

The maximum impact of the destruction of biomass sources is on women. Women in all rural cultures are affected, but especially women from poor landless, marginal and small farming families. Given the culturally accepted division of labour within the family, the collection of household necessities like fuel, fodder and water is left to women. As the environment degrades and survival needs become increasingly difficult to collect, women have to spend an extraordinary amount of time foraging for fuel, fodder and water in addition to their normal household work, agricultural work and caring for animals. Although various studies have been done, there is still not enough data on the time spent by women on their daily household activities and how it differs across different eco-climatic zones of India.

The worst situation is in the arid and semi-arid parts of the country and in the hill and mountain villages. In all these areas trees and forests have been steadily destroyed. Because of a number of factors - soil and climatic conditions, very small landholdings, lack of irrigation, etc. - the Green Revolution has not reached these areas (as it has in the Punjab and Haryana, where trees are few but the Green Revolution has meant an enormous increase in biomass from crop lands). As a result, there is now an acute biomass famine in these areas. In these arid regions, women can spend as much as five or six hours every day, and in some households as much as ten hours daily, just collecting fuel and fodder. On the contrary, in a state like Kerala, where eco-climatic conditions permit a rich green cover, the work burden of women is much smaller, probably the lowest in the country. Even the minimal land reforms in Kerala, in which each landless family has been distributed one-tenth of an acre as a homestead plot, have meant access to a few dozen

coconut trees, which are already enough to provide at least half the household's annual fuel requirements.

The penetration of the cash economy is affecting relationships between men and women in a peculiar way and is creating a real dichotomy in their respective relationships with nature. Men have become more involved with the cash economy than women. Women continue to deal with the non-monetised, biomass-based subsistence economy of the household.

Various estimates have put the total wastelands in India at anything between 100 to 150 million hectares, roughly one-third to one-half of the country's land area. These wastelands cover both private as well a public lands. With the crying need for biomass today, India will never get a better opportunity to harness the power of its people to the power of its land, to strike at the roots of landlessness, poverty and unemployment, all at the same time, through massive afforestation of these wastelands. But such a programme of afforestation must involve landless and near-landless households, and especially the women in these households on a priority basis to ensure that the biomass demands of the neediest are met first.

The alienated commons

But why do the poor and landless, who suffer so much from the shortage of biomass, not plant all the trees and grasses they need? Why does one-third to one-half of India increasingly become a wasteland? Clear answers to these questions are crucial to developing afforestation strategies in India.

The answer really lies in the alienation of village communities from their commons created by the modern state. Crop lands have traditionally been almost entirely private property, but until the advent of the modern state, grazing lands, forest lands and water bodies were mostly common property, and village communities played an important role in their use and management. The British colonial administration was the first to nationalise these resources in India and to bring them under the management of government bureaucracies. In other words, the British initiated a policy of converting common property resources into government property resources. The management of forests was taken over in the name of conservation - officials were called forest guards and conservators of forests. But in reality, both in British and in post-independent India, these common resources have been ruthlessly exploited and sold to contractors by these very officials almost to the point of their decimation. This exploitation has been mainly to meet the needs of the elite, whereas the needs of the poor, who survived on these resources, were neglected and even blamed for the ecological destruction. Thus, both colonial and post-colonial governments have expropriated these common resources from the poor and reallocated them to the more powerful in society. This perfidy towards the poor can even be noticed in the terminology that officialdom uses. For people dependent on forests produce such as fruits, medicinal herbs, small timber for building purposes, firewood and fodder, and so on are the major products of forests. But government forest departments call these "minor forest produce" whereas timber is designated as the major forest product. Forest dwellers seldom have any need for timber, except for minor building purposes. Timber is the major forest product only for the modern urban-industrial system.

This expropriation has alienated the people from their commons and has started a free-for-all in exploiting India's forest resources. Today, India's tribals, who have lived in harmony with the forests for centuries, are so alienated that they do not feel anything when they fell a green tree to sell it off for a pittance. Repeatedly, these forest dwellers ask, "What is the

point in saving the forests, because if the poor do not take them first, the forest contractors will take the trees away?" Their desperate economic condition, made worse by ecological destruction, has left the poor with no other option but to cut trees.

In a region of the Aravali mountains, near the city of Udaipur, there is a tribal village in which no forests are left. The people there are extremely poor and men regularly migrate in search of jobs to Udaipur. The women are left to survive by scrounging around for weeds and twigs for cooking fuel. Even headloading of firewood came to a halt in this village seven or eight years ago because of the scarcity of wood. When asked, "Where have all the forests gone?" the women replied, "They have gone away to Udaipur." But when asked, "If your lives are so dependent on the forests, why did you allow them to cut so ruthlessly?" the women replied, "But at that time everyone was doing so, including the government." Today the alienation from common resources is total.

The Chipko Movement was the first major ecological movement in the country to assert the rights of the village communities. When, in 1974, the women of Reni village prevented the felling of the Reni Forest, they were essentially saying, "This may be a government forest, but we live next to it, and our needs (for ecological security from landslides, for basic needs like water, fuel, fodder and wood for agricultural implements) have priority."

Unless people's alienation from their commons can be arrested and reversed, there cannot be any proper afforestation of common lands. In a country like India where agriculture and animal husbandry are closely intertwined activities and the pressure of the animals on grazing resources is extremely high, plantations and grasslands will have to be protected from animals, especially if the biomass that is grown is to be "multipurpose", that is, capable of meeting the crucial need of fodder. Any attempt to enclose an area of land will be strongly resented by the people, however underproductive it may be for fear of loss of grazing land. All such attempts will be subverted unless the poor are fully assured that the biomass which is grown inside those enclosures will meet their felt needs on a priority basis. If public participation is not assured, then either survival rates of seedlings will be very poor or anti-social, non-browsable plants like eucalyptus will be planted - a technical fix for a social problem.

What are these common lands, and why are they so crucial to meeeting the basic survival needs of the poor? Common property resources, broadly speaking, are the resources accessible to whole village communities and over which no individual has exclusive property rights. According to land use classification figures in the country, a total of 119.12 million hectares or as much as 40 per cent of the land area of the country is under forests, arable and non-arable wastelands and grazing lands.[7] These common property resources constitute both lands exclusively demarcated for community use as well as lands under the forest and revenue departments of India, which are under state control but are used by village communities despite laws and restrictions.

Poor small and marginal farmers and the landless have no option but to get their biomass needs from these lands - and with an increasing intensity of use. Firstly, more and more land is being privatised, either legally or illegally, and this means that the poor are squeezed onto smaller pieces of common lands which are then over-exploited. And secondly, community lands - the permanent grazing lands which are mostly under the panchayats (elected village councils) - total only roughly 12 million hectares, or 4 per cent of the land area,[8] grossly inadequate to meet the survival needs of the majority of the people in the country. In contrast, as much as 3 per cent of

the country's land area is under sanctuaries and national parks - reserved exclusively for animals and birds. This scarcity again drives the poor to eke out their subsistence needs from lands which are by law inaccessible to them.

How great is this dependence on the common lands? Studies carried out on the poor's dependence on common lands in dry regions have found that even though totally neglected by policy-makers, common property resources play a significant role in the life of the rural poor. Dr N.S. Jodha, an eminent economist, has extensively studied common property resources in the country. His study, based on data from over 80 districts in 21 districts spread over dry regions of seven states of India, reveals that these resources contribute a significant proportion of the poor household's subsistence and cash income needs. According to his study, the area under common property resources has declined by 26 to 63 per cent during the last three decades. This area includes both village pastures as well as government wastelands. Jodha's study found that while between 84 and 100 per cent of poor households gathered food, fuel, fodder and fibre items from these lands, only 10 to 28 per cent of large farmers made use of common lands. "Poor" were defined as households with less that 2 ha of dry land equivalent. Studies also show that poor households meet 66 to 84 per cent of their total fuel requirements from common lands and use them throughout the year. In contrast, large farmers used the commons sparingly and met only 8 to 13 per cent of their fuel needs from the same lands. Similarly, between 70 and 90 per cent of the total grazing of the poor's animals was done on common lands. The situation is likely to be largely the same in most unirrigated regions of India, and certainly true in all ecologically sensitive areas such as hill and mountain ranges.[9]

Given that the poor are so dependent on common property resources, these common lands will continue to be used and degraded, leading to lower productivity and further scarcity. But these are the people and lands towards which social forestry has to be directed.

A critique of the ongoing social forestry programme

India has seen a major thrust towards afforestation in the last five years. Following Rs.483.22 crore of investment during the 20 years of planned development between 1950 and 1980, the Sixth Plan (1980-85) provided for an outlay of Rs.6,925 million for forestry - a 40 per cent increase over total expenditure during the previous 30 years. By the Seventh Plan (1985-90), proposed investment was raised to the level of Rs.1,790 million, another substantial increase.

A number of ambitious social forestry programmes have been launched by state governments with the support of foreign aid agencies, namely, the World Bank, United States Agency for International Development, and Swedish, Canadian and British bilateral agencies. Forest departments in most states have set up separate social forestry wings.

The social forestry programme has four basic components:

(a) farm forestry, which encourages farmers to plant trees on their own lands by distributing free or subsidised seedlings;

(b) village woodlots on village common lands, planted by the forest department to meet the needs of the community;

(c) strip plantations created by the forest department along roads, canals and railway tracks, on lands belonging to the government departments dealing with public works, irrigation and railways; and

(d) afforestation of degraded forest lands by the forest department.

The two components which involve the people directly are farm forestry and village woodlot plantations. Within these, the most spectacular success has been that of farm forestry.

In Gujarat the off-take of seedlings increased fourfold between 1975 and 1979, from 12 million to 48 million per year; it doubled again to 100 million by 1981 and increased further to 150 million in 1983.[10] Assuming all these seedlings were planted, this amounted to an average planting rate of more than ten trees per person in the state. In most social forestry states like Uttar Pradesh and West Bengal, the farm forestry component has overshot original targets.

But in spite of this spectacular "success", farm forestry has totally failed in its primary purpose - meeting the fuel and fodder needs of the poor. Farm forestry involves planting trees on private land. This has meant, of course, that the landless have been completely left out of the programme. But small and marginal farmers have also failed to benefit much from the programme, because they cannot afford to wait the long period for their investment in the plantation to mature. In Gujarat, for example, it is the medium and large farmers who have largely benefited from farm forestry. In this state, more than 85 per cent of the participating farmers have more than 2 ha of land.

Given the acute shortage of raw material for wood-based industries, farm forestry has essentially become extremely lucrative tree farming for industry and cities. Farm forestry is thus being driven by an urban market demand and, in some places, has led to tremendous distortions in the socio-economic fabric of villages. Larger farmers, who can afford to wait for their trees to mature, have often brought good agricultural land under tree crops by replacing other cereal or cash crops. In many cases, even irrigation facilities and chemical fertilisers have been used to get a high biomass output while reducing the gestation period. In Gujarat, more than 60 per cent of the land planted under farm forestry had earlier been under food and cash crops. Because the driving force behind farm forestry is the high price that timber fetches in the urban and industrial market, tree farmers have generally chosen fast-growing, non-browsable exotics like eucalyptus, casuarina, Prosopis juliflora and Acacia auriculiformis, which do not provide any fodder. In addition, where tree farming takes place on lands that were previously under food and cash crops, it can adversely affect the landless poor in the village by reducing the availability of free crop residues used by poor for domestic energy purposes. Rural energy surveys show increasing dependence on crop residues for household energy needs and on landed people for the supply of these crop residues.

In addition, tree farming has been a boon to absentee landlords, who now have a long-term crop which does not require constant supervision. Some studies also claim a loss in rural employment opportunities when farmers switch from short-rotation food and cash crops to long-term tree farming. In any event, it is clear that landless agricultural households have benefited little from farm forestry.

A study undertaken by the State Government of Karnataka found that in the years between 1984 and 1985, 96.2 per cent of the eucalyptus wood produced in Bangalore district and 97.5 per cent of the eucalyptus production from Kolar district was marketed. Almost the entire quantity was consumed as industrial raw material by just one industry, Harihar Polyfibres, and only 3 per cent was sold as firewood.[11]

The second component of social forestry programmes is the village woodlot or block plantation. These plantations have generally been created on village panchayat (village council) lands, and in principle should benefit the entire village community, including the landless and marginal farmers. In reality, however, the scheme has been badly throttled by village politics, and in most states the village woodlot component has been a non-starter. In West Bengal, for instance, the programme fell 42 per cent short of the proposed target and the scheme was drastically reduced at the time of the mid-term appraisal of the project.[12] Not only are panchayats uninterested in the scheme, but also where the forest department has planted trees on village panchayat land there has been no attempt to distribute the increased biomass resources to the village community on an equitable basis, let alone on a preferential basis to the landless and the poor. In fact, in this quagmire of village politics, the landless have in most cases lost a part of their erstwhile grazing lands.

Under the third component of social forestry, the forest department undertakes afforestation on lands owned by government departments. Plantations are created on strips along roadsides, canals and railway lines. The produce of these plantations belongs to the respective departments after deduction of the plantation cost. An enormous amount is spent under this component just to protect the plantations from grazing and firewood collection. In West Bengal, for instance, while the farm forestry component costs only Rs.792 per hectare, strip plantations cost a high Rs.6,000 per hectare.[13]

No indication has been given about who should be the beneficiaries of these plantations. In most states, when the plantations have matured, they have been auctioned off to wood-based industries. In a few states, efforts have been made to involve landless households by encouraging them to undertake a certain length of the strip plantation with financial and material assistance from the forest department. But this strategy in the case of strip plantations has been used only to an extremely limited extent.

Afforestation of degraded forest lands is the fourth component of the social forestry programme. There are two approaches towards the implementation of this scheme. The first and most commonly used approach is to create the plantation as a conventional departmental plantation programme. In this approach, the department simply plants trees on lands under its control - invariably planting non-browsable exotics - and no attention is paid to the distribution of the resources generated to neighbouring village communities. The general assumption is that these trees will be revenue earners for the forest department and will be sold to wood-based industries. Landless and marginal farmers can benefit from these plantations only by cutting wood illegally.

The second approach to tree planting on degraded forest lands has been to lease out small parcels to landless or land-poor tribal households to afforest and protect themselves. The forest department provides financial and material assistance for the plantation work and takes a share in the final income from the sale of timber, while leaves, grasses, deadwood and other benefits like fruits belong entirely to the tribal beneficiaries. Every year, new land is given to the beneficiary family to afforest and protect if the previous year's plantation has been a success, and new land is continually leased to the family till it acquires sufficient land to earn an income well above the poverty line.

However, there are several problems with this approach. Firstly, these schemes are entirely on an experimental scale. In the entire country not more than a couple of thousand hectares have been afforested with this approach. There is a general reluctance amongst the forest departments to lease out

government forest lands because it is argued that the land will go out of their control and possibly into ecologically adverse land uses like agriculture. Secondly, even in these experimental schemes, little effort has been made to involve the beneficiaries in making the choice of trees to be planted. The species choice has invariably been imposed upon the beneficiary families by the forest department. Thirdly, and this is the most important criticism of these schemes, is that they reduce the availability of the commons to the remaining poor households who are not participants.

It is clear from the above description of the social forestry programmes that though they may have been successful in planting many trees, they have not benefited many poor, landless families and the involvement of women has been minimal. Trees are being planted largely as a cash crop, not to meet basic fuel and fodder needs. Those components of the social forestry programme which could have benefited the landless and land-poor households have generally been neglected or have fallen way behind their targets.

Rationale for selection of case studies

Experience and studies in India have clearly shown that afforestation must meet the survival needs of the landless and marginal farmers on a priority basis and to do so must focus on common lands, which means the state forest lands, revenue lands and village common lands.

There are two basic ways of dealing with this problem:

(1) by privatising the commons, that is, by parcelling them out to individual families; or

(2) by protecting the commons and involving entire village communities in afforestation.

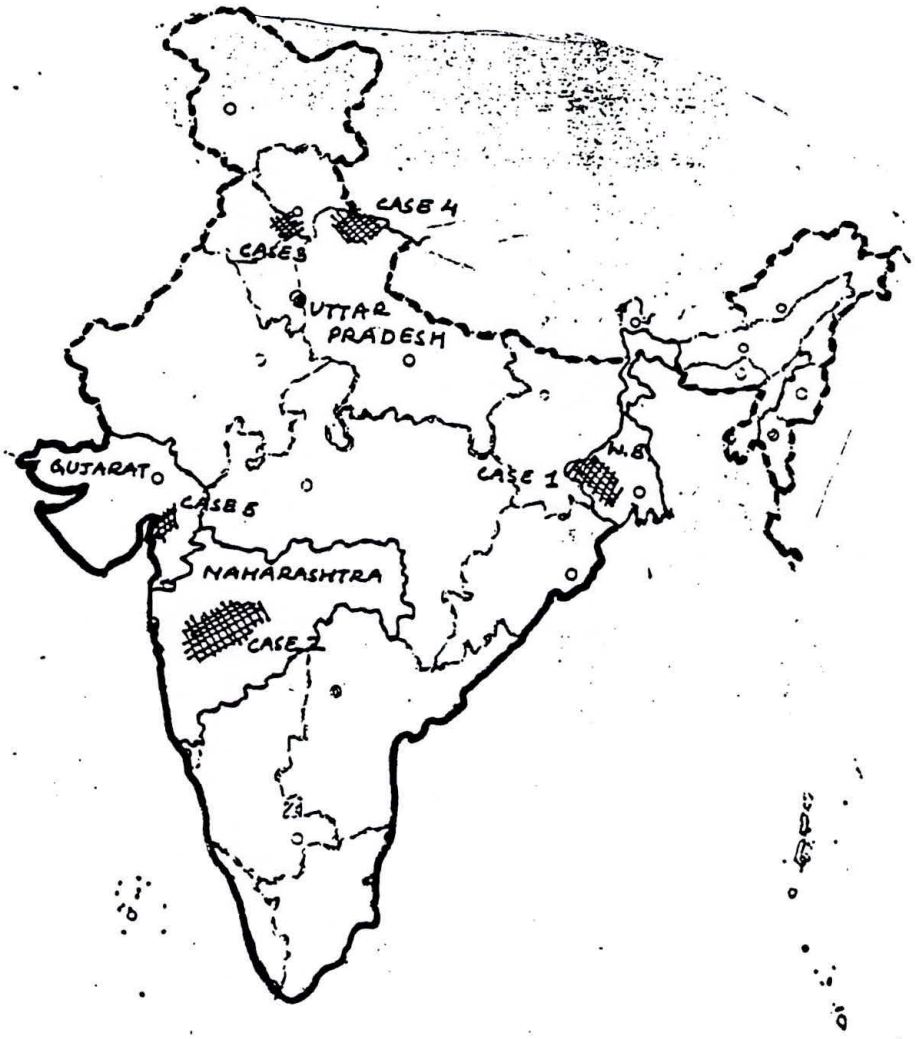
The five case studies presented in the following chapters are an attempt to understand the various approaches being tried out in India today and to document the experiences gained in each attempt. Table 1 lists the five case study projects, their locations, ecological conditions, implementing agency, legal ownership of the land planted, and beneficiaries. Their location is shown on the map.

In the country today there are various schemes under which common lands are being parcelled off as small plots to landless and marginal peasants in the hope that they will take a special interest in developing these lands. In the State of Rajasthan, for instance, there is a scheme to lease government forest lands to landless and marginal peasants for afforestation. The scheme includes a monthly stipend for afforesting and protecting a piece of land. Every year the family is given two additional hectares to plant and protect, and in this way the family can come to control 15 ha of government land under a lease. The beneficiary family has full rights over the grass and other produce but shares the final wood harvest with the Forest Department.

Table 1. Description of case study projects: State, ecological conditions, agency, legal ownership of land planted, and beneficiaries

Project	State	Ecological conditions	Agency	Legal ownership of land planted	Beneficiaries
West Bengal farm forestry	West Bengal	Lateritic soils, high rainfall areas of Chotanagpur Plateau	Government Forest Department	Private land	Individuals
Maharashtra village woodlots	Maharashtra	Semi-arid drylands of the Deccan Plateau in Marathwada	Government Forest Department	Common land (panchayat land)	Village community
Sukhomajri watershed development	Haryana	High rainfall watershed in Sivalik Hills near Chandigarh	Government research agency working with non-governmental social workers	Common land (government forest land)	Village community
Chipko afforestation	Uttar Pradesh	High rainfall, steep slopes in the high Himalayas of Uttar Pradesh	Non-governmental agency	Common land (largely panchayat land)	Village community
Bhal afforestation	Gujarat	Arid to semi-arid dryland with high salinity near the coast of Gujarat	Non-governmental agency	Common land (cooperative wasteland obtained under a land reform programme)	Specific caste within the village

Map 1. Map of India showing locations of case studies



We have not studied any of these schemes, normally known as tree patta schemes or social security schemes, but have studied the farm forestry programme of the State of West Bengal, where the underlying principle is the same as in the tree patta schemes. In both, the approach is privatisation giving individual families control over the tree produce in order to secure their interests in afforestation. Poor marginal farmers and landless are given control over land, as in the case of West Bengal, or usufruct rights over that land, as in the case of the tree patta scheme, for the purposes of afforestation. West Bengal has evolved an innovative scheme which links ongoing land reform programmes with the planting of trees. In the state, landless and very small farmers have been distributed land - often marginal land - under land reform programmes, and the farm forestry programme is now providing them with the opportunity to plant trees on these lands.

The main problem with such schemes is that, in a densely populated country, privatisation effectively closes access to common lands for the large number of people within the village community who are not participants in the schemes while giving land exclusively to a few members of the community.

The second, more difficult option, is to afforest common lands while retaining them as common property. The questions then are who will plant the trees and who will get the benefits, and how will the fuel, fodder and other benefits be distributed? Which community organisation will take on this work? Will it be through existing village-level organisations such as panchayats, or will new community organisations be needed to develop and manage plantations on common lands?

The State of Maharashtra has focused on the creation of village woodlots on village grazing lands and used village panchayats to manage the plantations. The village woodlots are important for the landless households because the other component of the social forestry programme in Maharashtra - farm forestry - only benefits landholders.

The case studies of watershed management in Sukhomajri village near Chandigarh and the work of afforestation by the Chipko Movement present two examples where entire communities have been involved in the afforestation of the commons, through the creation of new community organisations and equitable sharing of the benefits of afforestation.

The village of Sukhomajri and the villages in the high Himalayas where the Chipko Movement is working in both instances have relatively homogeneous societies where poverty is shared comparatively equally by all. In the fifth case study, therefore, we have chosen an area with strong social stratification and where afforestation work has exclusively involved one lower-caste community. This case study deals with afforestation in the Bahl region of Gujarat by co-operatives of landless and small farmers belonging to one caste group in the village.

Notes

[1] Anil Agarwal and Bhubanesh Bhatt: Firewood in the cities I and II (New Delhi, Centre for Science and Environment, 1984).

[2] H.I. Somashekar, et al.: Studies on the Ungra village agricultural ecosystems, Part II: Animal drawn carts and transport (Bangalore, ASTRA, Indian Institute of Science; mimeographed).

[3] Murugappa Chettiar Research Centre: How many hectares per kattumaram? (Madras, Nov. 1983; mimeographed).

[4] Anil Agarwal, Ravi Chopra and Kalpana Sharma (ed): The state of India's environment - 1982 (New Delhi, Centre for Science and Environment), p. 49.

[5] Government of Madhya Pradesh: Impact of Bastar forestry project on tribal economy (Bhopal, Tribal and Harijan Welfare Department; mimeographed).

[6] J.M. Heredero: "Milk cooperatives and tribal poverty: The need of education and management", in Social Action (New Delhi), July-Nov. 1983, pp. 285-306.

[7] Government of India: Agricultural statistics at a glance (New Delhi, Directorate of Economics and Statistics Department of Agriculture and Co-operation, Ministry of Agriculture, Apr. 1986), p. 72.

[8] ibid.

[9] N.S. Jodha: "Common property resources and rural poor in dry regions of India", in Economic and Political Weekly (Bombay), 5 July 1986, pp. 1169-1181.

[10] World Bank: Gujarat Community Forestry Project - Mid-term review mission (Washington), p. 27.

[11] Government of Karnaka: A short review report on the impact of social forestry programme on land use in Kolar and Bangalore districts (Bangalore, Bureau of Economics and Statistics, 1984).

[12] World Bank: West Bengal Social Forestry Project - Mid-term review mission (Washington), table 1.

[13] ibid., table 2.

CHAPTER II

CASE STUDY: FARM FORESTRY IN WEST BENGAL

West Bengal has 1.18 million hectares of forest land, that is, 13 per cent of the total land area of the state. Per capita forest land area is only 0.02 ha, however - the lowest in the country.[1] Forest land actually under trees is even smaller, only 7.8 per cent of the state's land area according to a 1982 mapping of the forest cover based on satellite imagery.[2] This forest-poor state, none the less, has the largest concentration of forest-based industries in the country even though studies undertaken in 1965 and 1975 showed that the state forests could supply only 10 per cent of the total needs of these industries.[3] Subject to this enormous pressure, forests are bound to suffer, as are the poor whose basic needs for wood to cook and fodder for their animals are obtained from these forests.

Various energy use estimates for the state put annual firewood consumption at about 8 million tonnes. According to official figures, the annual supply of firewood from government forests plus estimated illegal removals account for only 0.7 million tonnes.[4] In West Bengal, especially in the dry lateritic zones, the energy shortage is truly frightening. Poor women and children have no option but to spend hours foraging for twigs, weeds and branches and now increasingly sweep the forest floor to collect leaves to burn.

With a sizeable area lying waste and a poor rural population starved of basic needs of fuel and fodder, the state has since the early eighties started a number of forestry programmes. The largest of these is the Social Forestry Project funded by the World Bank.

The Social Forestry Project

The Social Forestry Project started in 1981 and planned to afforest 93,000 ha, or about 1 per cent of the total land area of the state, by 1987. The project aims to increase supplies of fuelwood, fodder, small timber, poles, bamboo and fruits to meet the subsistence needs of the rural population. Within six years, the project hoped to establish 6,000 ha of village woodlots, 15,000 ha of improved degraded forests, 20,000 ha of strip plantations and 52,000 ha of farm forestry on private land, and to set up 10,000 smokeless chulhas in homes. The total project cost is US$43 million.[5]

Every component except the village woodlot scheme had surpassed its targets by the fifth planting year - 1985-86. By then, an area of 90,229 ha had been afforested through the various schemes.[6]

The farm forestry component has been the most successful. Under this scheme, privately owned wastelands have been taken up for afforestation. Table 2 shows the progress in the farm forestry programme in West Bengal. By the end of 1985-86, about 55,000 ha of land had been afforested in the state, about one-and-a-half times the target set for this period.[7] Farm forestry - as in other parts of India - involves planting of trees on private lands by landholders with assistance from the Social Forestry Wing of the Forest Department. The West Bengal farm forestry component has three schemes.

The first component entails the distribution of free seedlings with a cash incentive. This scheme is designed primarily to encourage poor farmers with small holding of wastelands to take on afforestation. Unlike most other states, in the West Bengal scheme there are strict limits on the size of

landholding which can benefit, so that only small farmers will get encouraged. Incentives are available only to farmers with less than 2 ha of land and taking up to 750 seedlings (equivalent to 0.5 ha of plantation). Another stipulation is that land for plantations has to be classified as wasteland to qualify for the cash incentives.[8] In many cases, this wasteland had been obtained by the poor under earlier land reform programmes.

Table 2. Progress in farm forestry programme in West Bengal, targets and achievements, 1981-85[1]

Year	Target (ha)	Actual (ha)	Actual as per cent of target
1981-82	1 460	2 902	199
1982-83	4 280	6 360	149
1983-84	9 040	11 442	127
1984-85	10 740	15 157	141
Apr.-Dec. 1985[2]	12 240	17 973	147
Mar. 1981-Dec. 1985	37 760	54 834	145

[1] Government of West Bengal: Social Forestry Project: West Bengal - Monitoring information series No. 3/85, (Calcutta, Monitoring and Evaluation Cell, Social Forestry Wing, Forest Directorate, May 1985), p. 1.

[2] Government of West Bengal: Social Forestry Project - West Bengal: Highlights on progress (1981-85), (Calcutta, Monitoring and Evaluation Cell, Social Forest Wing, Forest Directorate).

The cash incentive amounts to a total of Rs.300 for half a ha of plantation, given in instalments over a period of three years. This cash payment is partly to cover the farmer's labour costs. In the first year, Rs.125 is given in kind in the form of fertilisers and insecticides. In the second year, Rs.0.10 is given for each surviving seedling up to Rs.75, and in the third year an incentive of Rs.0.14 is given for each surviving sapling up to a limit of Rs.100. Labour for land levelling, pit digging and plantation as well as protection is invested by the landowner. Over a period of three years the total sum works out to Rs.0.03 a day paid to the landowner for afforestation.

The second scheme tries to tie together land reform with afforestation. Under this scheme, a total of 10,000 ha are to be allotted to poor landless families by the Land Reforms Commissioner for the purpose of planting trees. State-owned wasteland is to be allocated to the landless in small parcels of up to 0.5 ha. In this case, rights over the land are given to the landless family, not just the rights to the produce from the trees. Families also get free seedling and cash incentives similar to those in the first scheme.

The third scheme is a standard farm forestry programme. The social forestry directorate distributes seedlings free of charge to the farmers. There is no restriction on farm size, but the farmers do not get any cash subsidy.

Thus, under farm forestry, an attempt is being made in West Bengal to tie together the distribution of state-owned, non-arable wastelands to the landless poor and afforestation. This strategy ensures that the poor benefit directly from afforestation and that the landless are involved in the programme. It is this linkage with distribution of land to the landless, either explicitly for afforestation, or under earlier land reform programmes, which is the crucial difference in afforestation in West Bengal as compared to other states of India.

The State of West Bengal has a sizeable area of unproductive land. The forest department puts the figure for both private and government wastelands at 17 per cent of the land area of the state.[9] Through the enforcement of two Acts, the West Bengal Estates Acquisition Act of 1953 and the West Bengal Land Reforms Act of 1955, the state has acquired large areas of what are called "vested" lands - lands which can be distributed under the land reform programme. These vested lands comprise both agricultural and non-agricultural lands.

The Government claims that the vested non-agricultural lands have not been distributed, but government assessments have found that portions of the "vested" agricultural land are also unfit for agriculture.[9] In fact, this is the rule rather than the exception, especially in districts with expanses of lateritic land, according to some administrators. Thus, large tracts of wastelands are either vested with the state waiting to be redistributed to poor peasants, or have already been distributed to poor landowners who find little use for it. The Government of West Bengal had by 1984 distributed about 0.3 million ha of agricultural land to about 1.5 million people - an average of only 0.2 ha per beneficiary.[10] Many of these lands have never been cultivated because they are too marginal. In Paldhari village (Midnapore district) for instance, poor Lodha tribals have had land rights for the last 15 years, but the land is too marginal for agriculture. The tribals have largely continued their lives as agricultural labourers, often migrating on a seasonal basis over long distances to look for work.

Farm forestry is a technical solution which enables the poor to use these wastelands. In the three districts of Midnapore, Bankura and Purulia, which have almost 0.3 million ha of unirrigated, lateritic wastelands, the farm forestry programme has had many takers. In Nepura village (Midnapore) the planting of trees has started a mini-gold rush. Out of a total of 2,000 families in ten villages, almost 1,500 families have planted their meagre landholdings with trees.

There are really two reasons for this great interest in farm forestry in the lateritic tracts of West Bengal. First, as explained above, a lot of poor peasants possess small pieces of land which are very poor for agricultural purposes and therefore lie idle most of the time. Second, the massive destruction of forests has led to very high prices of poles and timber in the urban markets of West Bengal.

Reasons for planting trees

People in West Bengal are clearly planting trees for the financial benefits. According to the Forest Department figures given in table 3, in the four districts with major social forestry activity, almost 90 per cent of the trees planted are eucalyptus and Acacia auriculiformis.[11] Both are non-browsable exotics which do not provide fodder but fetch a good price in the market. On average, 1 ha of degraded, non-irrigated land planted with eucalyptus promises to yield Rs.45,000 at the end of six years, or as much as Rs.7,500 annually. In Nepura village, for example, a schoolmaster sold 1,500

eucalyptus trees for a net price of Rs.56,000 or Rs.37 per tree in just five years. Under agriculture, the crop yield would be extremely uncertain and would never be worth more than a few thousand rupees a year.

Table 3. Species planted in four major districts, West Bengal Social Forestry Project (per cent)

District	Eucalyptus	Acacia auriculiformis	Fruit and other species
1. Bankura	74	15	11
2. Purulia	14	84	2
3. Birbhum	62	28	10
4. Midnapur	80	12	8
Average	57.5	34.75	7.75

Source: Government of West Bengal: Evaluation: An interim report, West Bengal, Social Forestry Project (Calcutta, Monitoring and Evaluation Cell, Social Forestry Wing, Forest Directorate, Dec. 1983), p. 20.

These non-browsable trees are also popular because the land is so degraded that growing any other species would be slow and difficult. In addition, eucalyptus and Acacia auriculiformis need little investment of time for protection from grazing.

In West Bengal, the Social Forestry Directorate promotes what is called "group farm forestry". While in farm forestry, farmers are encouraged to plant on their individual lands, in group farm forestry, instead of a single plot coming under trees, a number of families with land in contiguous stretches together take up the planting of trees. Group forestry is convenient for the small landowners because protection of one large tract of land is easier than protecting many small pieces of land. It would be a mistake though to call this "community forestry". The land and the produce is individually owned, and only the management is done on a group basis. Group farm forestry thus allows plantation owners free time to continue their lives as agricultural labourers and even to migrate to other parts of the state to look for work.

In the drier district of Purulia, large tracts have been planted with Acacia auriculiformis using the group farm forestry approach. This tree has been promoted by the Social Forestry Directorate - and apparently is liked by the people - because it sheds large quantities of leaves, which are used as cooking fuel. No tree owner wants to use the wood for cooking though since it is all destined for the urban market. "Who wants to burn currency notes?" asked one peasant.

The people of Deuli - a village in interior Purulia - have had to evolve an interesting system of group management to protect their plantations. Because of the extreme shortage of firewood, women in this village had to walk 6 to 7 km every day to collect leaves and twigs from distant forest lands for burning. Against this backdrop, almost all villagers in this multi-caste village have put their private wastelands under trees. These trees now stand out in a barren landscape and are therefore valued not just by the villagers

of Deuli but also by villagers from neighbouring areas. This has made protection against theft by outsiders almost impossible. The villagers of Deuli therefore decided that only one day a week on Sunday would people be allowed into their plantations. If anyone was found in the plantation, even in his or her own plantation, on any other day of the week, the fine would be one male goat. This checked entry into the plantation. But to make sure that all villagers would get some benefit from the plantations, the fallen leaves were turned into a community resource which could be taken by anyone from the village or even from outside of the village. The twigs, branches and grass under the trees, however, belonged only to the landowner. This management approach has greatly helped to reduce any emerging tensions.

Farm forestry has been very successful in many states of India but has been criticised for mainly benefiting large farmers and the urban market rather than meeting subsistence fuel and fodder needs of the rural poor. But the West Bengal project has a distinct bias towards the poor and marginal farmer. Firstly, the programme stipulates that 61 per cent of the financial allocation for farm forestry go to farmers owning less than 2 ha of unirrigated land. Cash benefits are given only to farmers planting not more than half a hectare. In the first two years, in fact, 72 per cent of the total participants owned less than 2 ha of land. Table 4 shows the landholding patterns of participants in the four major districts in the project. The average number of seedlings planted by the farmers over the two years was 282, indicating that the area planted by each farmer was small, about one-fourth of a hectare.[12]

Table 4. Landholding patterns of participants in four major districts, West Bengal Social Forestry Project (per cent)

District	2 ha or less	More than 2 ha
1. Bankura	49	51
2. Purulia	91	9
3. Birbhum	73	27
4. Midnapore	78	22

Source: Government of West Bengal: Evaluation: An interim report, West Bengal Social Forestry Project (West Bengal, Monitoring and Evaluation Cell, Social Forestry Wing, Forest Directorate, Dec. 1983), p. 26.

Erstwhile landless household included in land distribution programmes are not the only beneficiaries of the farm forestry programme in the state. Achievement has in fact been highest in the third scheme of farm forestry, which does not restrict the size of landholdings of the beneficiary. Still, in contrast with other states, landless and marginal farmers have been involved in a far greater proportion in West Bengal.

Another crucial difference from other states is that in West Bengal the lands being planted are mostly not cultivable lands, so cereals or cash crops are not being displaced. In West Bengal, the lands being used for farm forestry are mostly wastelands. Almost 60 per cent of the lands under farm forestry are in districts with extensive wastelands namely, Birbhum, Bankura,

Midnapore and Purulia. A detailed study contrasting the alluvial and lateritic regions of Midnapore highlights this difference. In the lateritic tracts, the majority of participants planted trees on wastelands, while in the alluvial plains, farmers preferred to plant trees on bunds and boundaries, showing that land is obviously scarce. The species also differ in the two areas. In the lateritic wastelands, almost 70 per cent of the trees planted are eucalyptus, and the rest are Acacia auriculiformis. In the alluvial plains, the share of eucalyptus drops to 20 per cent, and the favourite trees are subabul (leucaena), karanj, sal and arjun.[27]

Choice of species

Despite this success, however, the farm forestry programme in West Bengal meets the basic fuel and fodder needs of the rural population only to a limited extent. Eucalyptus and Acacia auriculiformis are listed by the Forest Department as firewood trees, but the wood of these trees is, in fact, too valuable for the poor to burn. In a state where industries are starved for forest-based raw materials and wood prices are soaring, the poor woman's stove does not stand a chance against the buying power of these industries. The poor who plant trees can, however, meet a part of their energy needs by keeping the barks, twigs and leaves of the trees they grow for household consumption.

The main problem with West Bengal's farm forestry programme arises out of its complete neglect of the issue of increasing fodder supply. The main species chosen - eucalyptus and Acacia auriculiformis - are entirely non-browsable. In a state with a large animal population and an acute shortage of fodder, this neglect has wide ecological ramifications. West Bengal has little revenue or panchayat land left for grazing. In many areas, the only large tracts of "common land" available for grazing are forest lands. These state-owned forest lands are the mainstay of most villages in the lateritic and hill areas. People use these forest lands to collect twigs and leaves for fuel and to graze their animals. To the extent that private fallow land comes under farm forestry with non-browsable species, the grazing pressure will remain or even increase on the existing forest lands, which will be further degraded. Thus, whereas the farm foresty programme in West Bengal has evolved an innovative approach by linking afforestation with its ongoing land reform programme, it is not yet clear whether the species chosen are promoting ecologically sound land use in areas where forest lands are already under heavy pressure.

Notes

[1] Government of West Bengal: Social Forestry Project - West Bengal (Calcutta, Forest Directorate, Oct. 1980), p. 8.

[2] National Remote Sensing Agency: Mapping of forest cover in India from satellite imagery, 1972-75 and 1980-82 (Hyderabad, Department of Space, Government of India, Dec. 1983), pp. 5-6.

[3] Government of West Bengal: Social Forestry Project - West Bengal, op. cit., p. 15.

[4] ibid. p. 16.

[5] World Bank: West Bengal Social Forestry Project: Staff appraisal report (Washington, Education and Agricultural Institutions Division, South Asia Projects Department, Sep. 1981).

[6] Government of West Bengal: Social Forestry Project - West Bengal: Highlights on progress (1981-85) (Calcutta, Monitoring and Evaluation Cell, Social Forestry Directorate, West Bengal, 1985-86).

[7] ibid.

[8] World Bank: West Bengal Social Forestry Project, op. cit., p. 14.

[9] Government of West Bengal: Social Forestry Project, op. cit., p. 30.

[10] Government of West Bengal: Seventh workshop on land reforms: Field problems, suggested actions and government decisions (West Bengal, Board of Revenue, 1985), p. 26.

[11] Anon: "Land reforms in West Bengal" in West Bengal (Calcutta, 16 Feb. 1985), pp. 63-66.

[12] Government of West Bengal: Evaluation: An interim report, West Bengal Social Forestry Project (Calcutta Monitoring and Evaluation Cell, Social Forestry Wing, Forest Directorate, Dec. 1983), p. 20.

[13] ibid., pp. 25-27.

[14] Government of West Bengal: Field testing of an operational guide to the monitoring and evaluation of social forestry in India (Calcutta, Monitoring and Evaluation Cell, Social Forestry Directorate, Feb. 1985).

CHAPTER III

CASE STUDY: VILLAGE WOODLOT SCHEME IN MAHARASHTRA

The villages of Maharashtra, like those in other parts of the country, face an acute shortage of cooking energy. Official estimates put the extent of deforestation at 207,000 ha, or 9 per cent of the forest area in the last 20 years, which has left the state with only 12 per cent of its land area under forests.[1] The National Council for Applied Economic Research has estimated that the state's rural areas consume an equivalent of 17 million cubic metres of firewood every year, while the State's reserved forests produce only some 1.5 million cubic metres - a bare 9 per cent of the state's annual requirements of household energy. The rest of the energy consumed is met from cow dung, crop residues and twigs, branches and weeds on panchayat, revenue and private lands, and desperate acts like digging out the roots of sugar-cane to burn.

The situation of availability of fodder is equally dismal. Maharashtra has a high livestock density, and the fodder requirement was estimated in 1965-66 to be 107 million tonnes annually.[2] Production of green fodder is only a fraction of the total requirement. There are no accurate accounts of where animals graze, but one government report has estimated that 20 per cent of the total livestock of the state graze in government forests.[3] The majority of the poor and the majority of the livestock most probably meet their fodder needs from common grazing lands in the state. There are 1.5 million hectares of permanent grazing lands (or panchayat lands) in Maharashtra, and given their importance in meeting basic needs of the poor, their management is vital. Permanent pastures and other grazing lands are lands which have been demarcated for the exclusive purpose of meeting the needs of village people. These lands are resources accessible to whole village communities and on which no single individual has exclusive property rights. Under the direct control of the panchayats, these are the true common lands in the country. Others, like non-cultivable wastelands (under the control of the Revenue Department) and forest lands (under the control of the Forest Department), are common lands by default.

The social forestry project

The social forestry project in Maharashtra is made up largely of two components - forestry on private lands and forestry on panchayat lands. The project envisaged planting of trees on 18.5 ha of land in each village, with about half the trees being planted on panchayat lands and the remaining half on private lands. The project aims to cover 4,300 villages between 1982 and 1990, that is, 76,000 ha spread over 11 per cent of the total inhabited villages of the state.[4]

The implementing agency for the project is the Maharashtra State Horticulture and Social Forestry Department, and the project has been funded by the United States Agency for International Development (USAID).

The component envisaging planting of trees on panchayat lands essentially aims at creating village woodlots, or block plantations, meant for the collective use of the entire village. Under the scheme, the Forest Department obtains panchayat land with the consent of the village panchayat, and bears the total expenditure incurred in planting, protection and maintenance for three years. At the end of three years, the plantations are to be handed over to the village panchayat. The panchayat is from then on to be responsible for protecting and maintaining the plantation and for harvesting and distributing

the produce to the villagers. The mode of distribution has been left to the panchayats to decide, but the panchayats are to be told that priority must be given to the landless and small and marginal farmers. The project document states that at the end of eight years, when the project comes to an end, all the plantations are to be managed and operated by village communities, and these plantations will be able to meet 20 per cent of the current firewood needs of the participating villages.

The scheme's particular importance is that while afforestation on private land only benefits landed villagers, village woodlots in principle should be able to benefit all villagers, including landless and small and marginal landowning households who suffer from an acute shortage of fuel and fodder needs. Therefore, in the choice of species to be planted under the village woodlot component, the major objective is to plant trees and grasses that will meet fodder and fuel needs.

Planting trees in the drought-prone region of Marathwada (in central Maharashtra), where the major portion of the planting work has been undertaken, has turned out to be a challenge. For instance, in 1986 the drought in Aurangabad district was so acute that water was not easily available even for creating nurseries. One after another the wells used for watering plants in nurseries were requisitioned by district authorities for drinking water. To tackle rainfall failure and poor soil conditions, the Forest Department has had to undertake elaborate soil and moisture conservation works. The plantations, with all these efforts, have survived reasonably well.

The Forest Department has protected these plantations by employing local villagers to guard the trees. The total amount spent in protecting each hectare is Rs.1,170, or 18 per cent of the total expenditure on the plantation over the first three years.[5]

The Forest Department in the three years from 1982 to 1985 planted 14,723 ha of village woodlots in a total of 2,160 villages. This meant that on average 6.8 ha were planted in each village instead of the 9 ha planned at the stage of project formulation, as shown in table 5.

Table 5. Progress in Maharashtra in village woodlots, villages and area covered, 1982-85

Year	Number of villages covered		Area covered (ha)		Average area covered per village (ha)
	Target	Actual	Target	Actual	
1982-83	540	540	2 355	2 639	4.9
1983-84	800	810	5 730	5 441	6.7
1984-85	800	810	6 950	6 643	8.2
1982-85	2 140	2 160	15 035	14 723	6.8

Source: United States Agency for International Development (USAID): Maharashtra Social Forestry Project - Mid-term evaluation report (Washington, 1985), p. 45.

Reluctance of panchayats to manage woodlots

By 1986, there were 540 villages where village woodlots were three years old and were hence ready to be handed over to the panchayats. Here the problems in the project really started as panchayat after panchayat refused to take over the management of these plantations. The reluctance of the panchayats stemmed from reasons meshed in with village politics, settlement patterns and finances. An obvious hesitation arose out of the daunting problems posed by the need to protect the plants.

Firstly, the panchayats argued that protection of plants required a unity of purpose amongst the various village factions on the issue, and the panchayats felt unable to forge such a unity. It was even feared that the village factions opposing those elected to the panchayat might destroy the plantation by stealth out of sheer vendetta.

Secondly, the panchayat leaders argued that the panchayat would have to hire a guard to protect the plantation as the Forest Department had done, but the panchayat's financial position was too poor to undertake this. In Murgaon village (Ahmednagar district), for instance, the panchayat has an annual income of only Rs.5,000 to Rs.10,000 and could not spend the Rs.2,000-odd needed to hire a guard to protect the village woodlot.

Thirdly, many panchayats covered several hamlets/villages. In these cases, though the panchayat land near one village/hamlet had been planted, the panchayat itself was often dominated by people from another village/hamlet. The villagers belonging to the village/hamlet near the plantation were therefore afraid that they would not derive any benefit from the plantation, and in any case did not want to share the income of "their" plantation with the other villages/hamlets in the same panchayat.

Fourthly, the panchayat leaders argued that the panchayat had no power to prosecute offending villagers as did the Forest Department. For all these reasons, therefore, the panchayats suggested that either the Forest Department pay the panchayats the cost of hiring a guard for all those years till the plantations were ready to be felled, or that the Forest Department simply manage the plantations itself until they mature.

In Dhorigaon village (in Aurangabad district), the panchayat wanted the Forest Department not to hand over the trees, but rather to cut the trees itself, sell the wood, and give the panchayat the money. In Erandeshwar village (Parbhani district), a panchayat leader said, "Why do you want to hand over charge to us? The Social Forestry Department has American money and a trained staff. Give us charge at the time of auctioning the produce and we will decide what to do."[6]

Vagpur village (Ahmednagar district) sent word to the Forest Department to take back the charge of the plantation which the panchayat had taken over. In Aurangabad district's Tisgaon village (where the plantation was to be handed over next year), the panchayat has already stated that it does not want to manage the trees. The villagers in Tisgaon said trees would be cut illegally and result in fights in the village. They had visited a neighbouring village where within six months of the handing over of the plantation, the trees had disappeared. According to the villagers, wood was so scarce that protection of even private trees was a problem. "If we don't protect our trees for a few days, they are cut. There are occasional clashes over firewood in the village. Then how can we protect what is not ours?", said one villager.

In Murgaon village, the panchayat took charge of the plantation. But within a fortnight, villagers who were forced to take a circuitous route around the plantation in order to get to their fields had cut a path through the plantation for their bullock carts. Although these villagers never cut a path during the three years that the Forest Department protected the plantations, the panchayat did not want to take up a fight on this issue with the individuals responsible for destroying a part of the plantation.

Only in village Dhorkin (Aurangabad district) did the panchayat express interest in taking over the village woodlot when it was ready to be handed over. At that time, the social forestry plantation was only two years old and would take another year to be handed over. The Dhorkin panchayat was already managing a 20 ha plantation which was 15 years old and would take another 5 years to mature. The plantation had been created under an earlier scheme of the Government. The panchayat was spending Rs.250 each month protecting the plantation and waiting for the eventual benefit. But Dhorkin has an unusually rich panchayat. It has an annual revenue of about Rs.60,000 coming from taxes and rents. The village is situated along a major road and has many shops, including a cinema hall.

All this has meant that the forest department now has to protect small, 5 to 10 ha tree plots, scattered over a vast land area. The Forest Department is trying to persuade the panchayats to take over responsibility, and has recently started to try to persuade the panchayats long before the date of transfer. Meanwhile, however, it has reconciled itself to the management of these plantations for periods longer than three years. This has increased the cost of these plantations. Instead of the original cost estimate of Rs.4,500 per hectare spread over three years, the cost has turned out to be Rs.6,581 per hectare. And now this cost is being revised to Rs.8,131 per hectare over five years, making it a reasonably expensive investment.

Would the poor actually benefit if the management of these village woodlots so assiduously created by the Forest Department were to be taken over by the panchayats? Several case studies show that in most villages the dominant interest groups monopolise the panchayat. Most development benefits, be they oil engines, gobar gas or drinking water facilities, have been cornered by these groups. As a result, there is mistrust among the poor in the villages about how the benefits of these village woodlots will be distributed, since this has been left to the panchayats to decide.

Problems of the poor

The village woodlots planted by the Forest Department so far may already be creating problems for the poor. Panchayat lands are used extensively by the landless and small and marginal farmers for grazing their animals. With the planting of trees, their access to panchayat land has been restricted. No doubt there is the hope that increased biomass productivity will bring higher benefits later. But this promise may prove to be illusory. With increased protection, grass starts growing rapidly and production tends to increase multifold. Because of green fodder scarcity, this higher grass output could potentially greatly benefit the poor. But in most cases, panchayats do not want to develop the elaborate distribution procedures needed for equitable distribution. They simply prefer to see the grass as a marketable commodity and have invariably decided to auction the right to cut grass to the highest bidder. In Pahela village (Bhandara district), the grass from the village woodlot now goes to an individual who is in the dairy business, and the poor are left with nothing. They now increasingly rely on government forest lands to graze their animals and to collect fuel, leading to greater pressures on these forest lands.[7] In Dhorkin village, too, entry to the older village

woodlot was closed, and grass was auctioned every year. No agreement has been worked out with the panchayats by the Forest Department regarding distribution of the produce from the village woodlots prior to the start of the project. It is difficult to expect government trees to become community trees overnight.

Little effort has been made under the project to involve the priority target groups in the management of the village woodlots from the start. Even the project's objectives are not known or understood by many poor villagers. In Tisgaon village, when the plantation was over two years old, women expressed surprise when asked whether the panchayat had worked out the distribution of the benefits from the village woodlot. The women said that they had always thought it was the Forest Department's plantation from which they would get no benefits.

There has been little involvement of the people in the choice of species planted in the village woodlot, e.g. whether they would prefer slow-growing fuel and fodder species or fast-growing commercial species. A question difficult to answer is whether increased productivity of panchayat lands through fast-growing, commercial species like monocrops of eucalyptus would also increase the vested interests of the panchayats in management of the village woodlots, and if so, whether the distribution problem would not become even more difficult. The panchayat leaders would probably then wish to obtain the maximum benefits for themselves.

Getting panchayats to lease land to the Forest Department for creating a village woodlot has not been an easy task. In Aurangabad district there are instances of villages which had woodlots under older schemes like rural fuelwood plantations, which have been destroyed over time. The Forest Department has had to go back to the same villages to plant new trees amongst the old dead trees, because of problems in finding land. Kashyap Mankodi, in a case study of Pahela village in Bhandara district, has found that panchayat land has been encroached upon or distributed for private cultivation, but not incorporated in land utilisation statistics.[8] In some villages the panchayats have refused to give over land for village woodlots to the Government, fearing loss of their grazing lands. In a few others, panchayats have given land to the Forest Department only to get rid of encroachment, or to keep these lands from being encroached upon. In Erandeshwar village (Parbhani district), the poor felt that the land had been given over to the Forest Department for the village woodlot only to prevent its redistribution to them. In the same village, the powerful Maratha landowners had prevented the poor from taking possession of land which had been officially allotted to them. This created mistrust among the powerless poor about the intentions of the panchayats and the Forest Department. The Forest Department, finding it difficult to get land, has simply accepted these situations.

The crucial issue with village woodlots is a just distribution of the benefits generated by them. In most Maharashtra districts, soil and meteorological conditions are too adverse for good tree or grass growth. The rainfall is barely 400-500 millimetres annually and the soil depth is poor. Thus, a plantation of an average size of 6.8 ha is inadequate to meet the needs of an entire village. This means that there is little interest in the plantation amongst panchayat leaders and by the people. When there is little to go around, distribution usually becomes more difficult.

The mid-term appraisal has recommended restructuring the transfer date for the woodlots on the basis of plantation yields, soil types and agro-climatic zones. The Forest Department will have to manage the plantations for three to seven or more years. Secondly, the report has stressed involvement of the community from the outset. Thirdly, it has recommended that the component of block or community plantations in the scheme

be reduced from 50 to 40 per cent. It is proving difficult to get community lands for afforestation because of encroachment and grazing needs. The village woodlot scheme will clearly succeed or fail in the quagmire of village politics.

Notes

[1] United States Agency for International Development (USAID): Project paper on Maharashtra social forestry (Washington, Aug. 1982), p. 9.

[2] A.R. Rajapurohit and M. Vivekananda: Bovine feed availability and requirement in India - A district-wise analysis (Bangalore, Agricultural Development and Rural Transformation Unit, Institute for Social and Economic Change, 1981).

[3] Government of India: Report of the Committee for Review of Rights and Concessions in the Forest Areas of India (New Delhi, Forest Division, Ministry of Agriculture, Mar. 1984).

[4] USAID, op. cit., pp. 3-4.

[5] USAID: Maharashtra Social Forestry Project - Mid-term evaluation report (Washington, 1985), pp. 52-57.

[6] Jagdish Godbole: Social forestry in Maharashtra - A case study of Erandeshwar village, Parbhani district (India); mimeographed, p. 30.

[7] Kashyap Mankodi: The Maharashtra Social Forestry Project in Bhandara District: A tale of three villages; mimeographed, p. 30.

[8] ibid., p. 17.

[9] Jagdish Godbole, op. cit., p. 14.

CHAPTER IV

CASE STUDY: WATERSHED MANAGEMENT IN SUKHOMAJRI VILLAGE (HARYANA)

The village of Sukhomajri is located in the Sivalik mountain range at the foothills of the Himalayas. The Sivalaks being a young mountain range, are susceptible to severe erosion, which has been accentuated by the destruction of the forest cover over the last century. Old accounts of this area speak of drastic changes from 1815 onwards, after the British defeated the Gurkhas in the lower hills and came to control the hills and their resources. Forest exploitation started from 1840, with the growth of the railway-building industry across Northern India. Forests soon gave way to clay-covered banks and boulders in the upper catchments of the rivers.

The threat posed by this massive erosion was so evident that the British as early as 1902 passed the country's first legislation to control erosion, called the Land Preservation Act. The Act demarcated and closed land from grazing as well as making provisions for various soil conservation measures such as countour bunding, gully plugging and tree plantation. From 1934, improved grazing lands were "voluntarily" closed under the above Act or under the Indian Forest Act. About 80,000 acres of badly gullied Sivalik foothills had already been closed to grazing by that year. The Government at that time also responded with other measures, including the management of wastelands in the villages by the newly formed Cho Reclamation Co-operative Societies. The Forest Department and a special staff of co-operative inspectors provided technical help to these societies. In spite of these efforts, the condition of the Sivaliks and its people have only worsened. The National Commission on Agriculture (NCA) stressed again in 1976 the enormity of the soil erosion problem in the Sivaliks and recommended soil conservation measures. According to the NCA's estimates, 0.26 million hectares of fertile land in Punjab had been devastated. The main reason was that the thrust of all efforts, by both the British and the Indian Governments, had been to curtail grazing by animals against the will of the people, an approach that was doomed to fail.

Siltation of Sukhna lake

The city of Chandigarh in north India is surrounded by the Sivalik mountain ranges which are administered by the two States of Haryana and Punjab. These hills are so degraded that the artifical lake Sukhna, which is situated at the edge of the hills and provides the water supply for Chandigarh, was lost to mud and gravel within just 15 years. The lake was silting at the rate of 3 per cent annually and had lost 60 per cent of its storage capacity by the early seventies.[1] Forest lands consisted of 76 per cent of the total catchment of the lake and totalled 3,214 ha.[2] Studies in the area found that on average, 150 tonnes per hectare per year of sediment were being deposited in the lake from these degraded forest lands.[3]

By the early seventies the city administration was exploring the option of digging yet another lake to augment Chandigarh's water supply. Then in 1974, the Chandigarh Centre of the Central Soil and Water Conservation Research and Training Institute (CSWCRTI) was asked to look into the problem of watershed management of the area. The city authorities, however, regarded tackling the problem at the source, a massive catchment area, with scepticism.

Undaunted the research centre spent a number of days surveying the catchment. The head of the Centre, P. R. Mishra, and his colleagues walked from the lake to the start of the gully heads. Their survey found that 80 per cent of the erosion was from the higher catch ent area and was concentrated in

pockets of severe erosion. Of the six gully heads contributing to the silting of the lake, Kansal cho was the largest, and at the start of the cho, they found the village of Sukhomajri. The forest area of this village, 15 kms upstream from the Sukhna lake, had contributed a great deal to the silting of the lake.

Environmental poverty in Sukhomajri village

This small village had a total population of 455 in 1974. The 59 families were mostly Gujjars (shepherds). It was thus a homogeneous village from a caste point of view. Most people in the village - 85 per cent of the total - were illiterate and dependent on agriculture and animal husbandry. The total land area in the village was 120 ha, of which 100 ha was under crops and 20 ha was abadi or wasteland. But of the 100 ha cultivated, only 52.3 ha were owned by individuals and the rest - a little less than half - was communal panchayat land, which had over the years been encroached by the villagers for cultivation. The average landholding in the village was only 0.88 ha. Out of the total of 59 families, 37 owned less than 1 ha and 20 families onwed between 1 and 2 ha of unirrigated land, only two families owned more than 2 ha of land.

There was no source of irrigation in the village. The annual rainfall of 1,137 millimetres was received almost entirely during the four monsoon months and lead to heavy soil erosion. Because of small landholdings and low productivity, farmers of Sukhomajri were forced steadily to move onto inferior wastelands for cultivation. Cultivation had started even on steep slopes, exposing the land to further erosion. In 1968, several acres of land had plunged 40 to 50 feet into a deep gorge at one end of the village, and since then the precipice of the gorge had been moving closer to the village, destroying cultivated fields each year. Given the marginal quality of the soils and the lack of irrigation, yields were meagre. Average yields of wheat and maize, grown on relatively better lands, was only 7 to 12 quintals per hectare. The poverty of agriculture forced the villagers to keep a large number of animals. Total livestock population in the village in 1974 was 411, of which 206 were goats. The village faced an acute shortage of fodder, and in most years had to import wheat straw from other villages.[4]

In their bid for survival, the villagers of Sukhomajri made intensive use of the watershed of Sukhna lake. The watershed - legally, forest and panchayat land - had long been demarcated as government property and the people of Sukhomajri had only restricted use rights. They consequently had no interest in protecting the watershed. In fact, one of the main reasons for cultivating the steep slopes, in spite of low returns, was to obtain property rights over panchayat land. Animals were left to graze on this land, which was by the 1970s highly degraded producing only a few quintals of grass per hectare. The fuel needs of the village also came from this forest land. With life becoming impossible in the village, villagers were fast joining the stream of urban industrial migrants. By 1974, about 67 per cent of the adult male population had found employment in Chandigarh city or in the nearby cement factory.

P.R. Mishra and his colleagues at CSWCRTI identified this village and its catchment as their starting point in controlling the siltation of the lake. Measurement of erosion at Sukhomajri showed that the catchment area of the village alone lost as much as 900 tonnes of silt per hectare every year. Despite the severity of the problem, the villagers greeted the Centre's proposals for soil conservation works with antagonism and hostility, fearing the loss of their grazing lands. One villager told Mishra, "The people of Chandigarh are very rich. We will continue to send mud and they will continue

to remove it. We are poor and have no other way to survive but to graze our animals and get some milk."

In the first year of soil conservation work, people continued to take their animals to graze in the watershed, rendering the work of the soil scientists useless. Soil conservation structures were destroyed by the villagers and disappeared overnight. Check dams were broken, and brushwood dams - piles of wood and twigs placed horizontally between two wooden pegs to check erosion - were uprooted and the wood taken home to burn. The CSWCRTI team doggedly continued work. An entire package for sediment control was devised, many soil conservation structures like staggered contour trenches, a series of check dams and grade stabilisers were built, and trees were planted. But grazing continued, and hence so did the destruction of their team's work.

Water management attempts

In 1976, the CSWCRTI scientists built a small earthen dam to prevent further erosion of the watershed and fields by diverting water into a reservoir. This structure controlled a gully which was about 15 m deep; in just one year agricultural land 10 m in width had turned into a gully 10 m deep. The reservoir not only salvaged the agricultural land, but also saved water. This was the turning point for the project.

The following year - 1977 - was a bad year for the village. The rains failed and the wheat crop was withering. The villagers approached the soil scientists for permission to use the water in the reservoir. This supplemental irrigation from the stored water not only saved the crops of villagers close to the dam site, but even improved yields from 12 to 25 quintals per hectare.

At that time, the potential of the project became clear to both the villagers and the Centre scientists. That same year Daulat Ram, an enterprising villager, showed the CSWCRTI staff another good site for a dam - this time an irrigation dam and not just a soil conservation structure. A second dam was built in early 1978 with assistance from the Ford Foundation. The dam had a catchment of 9.12 ha and a total command area of 16.14 ha.[5] An underground pipeline was laid to take water to the fields, and undulating terrain was levelled in order to maximise the benefits from irrigation, with farmers sharing the cost of levelling. So great was the felt need and perceived benefits that one farmer sold two goats on the spot to pay for the work. The only condition for the use of the water was that villagers had to stop taking their animals to graze in the watershed. Since their own vested interest in the dam was dependent on this prerequisite, the assumption was that the grazing would stop.

None the less the grazing continued. The team from the Ford Foundation and CSWCRTI soon found that this newly created wealth from improved agriculture had in fact only created further divisions in the village. When Madhu Sarin, a social worker employed by the Ford Foundation, asked the women about the benefits of the water from the dam, she was told bluntly, "What water? We don't get any water. It is given to a few and that also in exchange for a bottle of liquor." The new water available had not only benefited merely a few household, but had also led to corruption in the management of the resource. Further investigation showed that cultivable land in the village was divided into two parts by the village road, and that the water conveyance system benefited only the land on one side of the road. Since only half the farm households had land within the natural command area of the system, only half the village was prospering, increasing inequality in

the village. Secondly, to get the maximum benefits from the water, a few farmers had started to irrigate high water-consuming crops like paddy and sugar- cane, even though the project was only based on provision for supplemental irrigation. Furthermore, the water was distributed through a functionary of the Government stationed in the village, who had started taking bribes in exchange for providing the precious water.

As a result, tensions started to mount. Villagers sabotaged anti-erosion efforts by taking their animals to graze in the watershed. In the drought of 1979, events reached a head. The unirrigated maize crop perished, while the crops with irrigation from the dam survived. At a village meeting, Sarin found that women were extremely resentful. A woman from a family not getting any water said she would rather see the dam break and threatened to take her cattle to the dam with the intention of sabotage.[6]

The team realised that if the benefits of irrigation water - a common resource - reached only a few, then only a few would have a vested interest in the protection of the resource. If the watershed was to be protected effectively, then the entire community which used the watershed for grazing would have to be given an equal share in the resources of the watershed.

Resolving fundamental equity issues

These problems raised fundamental issues of equity, the basis of water distribution and the creation of community organisations to manage village resources.

Traditionally, irrigation water distribution has reflected and followed inequities in land distribution. Those with land also get irrigation water increasing inequality. A meeting was called in Sukhomajri to try to resolve this inequality. After some discussion, it was decided that each and every family would get an equal share in the water, irrespective of the size or the location of their land. A family unit was defined as one sharing a commom chulha (stove), as this functioned as a decision-making unit. To effectively manage this system, maintain the dams and distribute the water, the villagers then started a Water Users' Association, registered under the Societies Act. Each family was represented in the association. Water was sold to each household at a nominal charge to meet maintenance costs at Rs.4 per hour initially. Under the rules of the association, a member whose cattle was found grazing in the watershed stood to lose her or his right to water. Landless and other households could make use of their share either by share-cropping or by selling their water to others in the command area of the dams. According to one estimate, as much as 12 per cent of the agricultural land is being share-cropped in the village.[7] These arrangements ensure that each family has a vested interest in the protection of the watershed, and a common resource like water thus can benefit the entire community.

With the assurance of benefit to each and every family, protection of the watershed was immediate. The village did not have to build a wall or a trench to protect the vast catchment area. Instead, voluntary closure, or in Mishra's words "social fencing", stopped people from taking their animals to graze. Already in the same year, 1980, the goat population decreased from 116 to only 39. With the exception of one household, all sold their goats voluntarily and started stall feeding their buffaloes.

Creating ecological infrastructure

In Sukhomajri today, an ecological infrastructure for village development has been created and economic growth has been based on the biomass potential of both private and community village lands and water.

Since the late 1970s, the village has made an effort to harvest rainwater through the simple principle of "holding every drop of water where it falls." Two hundred trenches per hectare have been dug to hold rainwater and reduce run-off from the village watershed. This has improved the moisture regime of the soil and induced rapid plant regeneration. Structures like contour bunds in gullies help in the percolation of water. Dams at the edge of the catchment harvest run-off for use by the village to increase productivity from croplands. By 1985, a total of four dams had been constructed with a command area of 33 ha. This water is harvested from 17.5 ha of forest catchment. Each hectare of what was formerly denuded forest land is now providing supplemental irrigation for 2 ha of agricultural land.[8] Hydrological observations by CSWCRTI recorded from 1982 to 1984 revealed that 55 to 58 per cent of the annual rainwater was being converted into run-off; and the utilisable water available after transpiration losses for rabi (winter) irrigation was still 25 to 39 per cent of the monsoon rainfall.[9] The water conservation structures and the thick vegetation growth have also stabilised the soil. In the catchment areas of the dams, the erosion rate has fallen drastically to a negligible 1 to 0.1 tonnes per hectare per year in just three years. Siltation of the dams has thus also been prevented.

This ecological infrastucture has transformed the economic face of the village. The first immediate benefit has been fodder production. According to Mishra, this tangible benefit to the entire village was actually responsible for crystallising the interest of people in community management of their natural resources. Fodder production from forest lands increased by more than 150 per cent between 1977 and 1983. The average yield from the forest watershed increased to 2.6 tonnes per hectare by 1983 (see table 5).

Table 6. Benefits of watershed protection to Sukhomajri village, in fodder yield and milk protection before and after

	Before protection (1973)	After protection (1983)	Change 1973-1983 (per cent)
1. Fodder yield from forest land (tonne/ha)	1	2.6	+ 160
2. Annual milk production (lakh litres/year)	1.22	2.40	+ 97

Source: Soil Conservation: Annual Report, 1983 (Central Soil and Water Conservation Research and Training Institute, Dehra Dun, Sep. 1984), p. 151.

Present production of fodder from forest lands in the village is now 3,077 tonnes.[10] This increased fodder availability has given an impetus to

the dairy industry in the village. Animal holdings have changed steadily from goats to buffaloes (see table 6), and dairying has become a profitable activity for the villagers. Goats are no longer kept not just because of the restrictions on grazing, but also because it makes more economic sense to keep high milk-yielding buffaloes. Milk production has doubled in the village, but total milk yield per buffalo has not changed. In 1977, when there were 79 buffaloes, total milk yield per day was 334 litres (4.2 litres per buffalo). In 1985, milk yield was 4.5 litres per buffalo per day.[11] Milk production has thus increased with an increase in buffalo population. Increased fodder availability provided both the incentive and the means to keep more animals. Milk is marketed in the nearby towns of Pinjore and Kalka. It has been estimated that about 75 per cent of total milk production is marketed and brings Rs.4.5 lakhs into the village annually.[12] Since fodder is a common resource in Sukhomajri, poor and marginal farmers also benefit from this "White Revolution", not only landed farmers with resources to grow fodder. Nearly 95 per cent of the families in this village own buffaloes.

Table 7. Number of milch animals in Sukhomajri before and after watershed protection, 1977-1983

Milch animal	1977	1978	1979	1980	1981	1982	1983	Change 1977-83 (per cent)
Buffaloes	79	83	95	111	140	144	146	+ 85
Cows	5	5	5	6	6	7	7	-
Goats	206	202	116	39	36	35	32	- 84

Source: S.P. Mittal, et al.: "Dairy development through hill management in in the Sivaliks", in Indian Cooperative Dairy Journal, (Oct. 1982).

Control over commons

With improved grass production there has also been a change in the management of the state-owned community lands - the reserve forest land in the watershed of the village. Earlier, the Haryana Forest Department would auction the right to cut grass to a contractor, who in turn would charge villagers Rs.450 per sickle per season (from November to June) for the right to cut grass.[13] But the villagers argued that as they were protecting the watershed, they should also be given control over the increased biomass resulting from their protection efforts. In 1985, after many years of insistence, the Forest Department agreed to give joint management of grass cutting rights to Sukhomajri's village society against payment of a royalty. This means that the village society now controls the developmnt of and the benefits from grass growth on its common lands.

The society, now known as the Hill Resource Management Society, in turn charges villagers a nominal amount of Rs.100 to Rs.150 per season to cut grass. This income - unlike the income earned by the contractor - is used to generate yet more community resources for the village, in particular biomass-based resources. For instance, income from grass cutting is ploughed back to plant more grass on the catchment, which then benefits the village, providing more fodder and more milk. This "cyclic development" of resources,

as it is called by P.R. Mishra, can continue to expand the biomass resource base of the village.

On private crop lands, the availability of irrigation water has helped to increase wheat production in the village by 300 per cent.[14] While previously, agriculture met only three months' food needs of the village, and food had to be imported from outside, now food needs are met entirely from cultivation within the village and there is even a surplus for sale. Sales of food grains are estimated to bring a total annual income of Rs.1.35 lakhs into the village. One indication of the rise in land productivity is that land values in the village have gone up from Rs.17,000 per ha to Rs.36,000 per hectare since the 1970s. In neighbouring villages, land values have increased only from Rs.17,000 to Rs.18,000 over the same period.[15]

With basic subsistence needs like firewood, fodder and food now being met, the village is next moving towards growing biomass as raw materials for industrial production. Villagers are planting Eucalyptus citrodora and lemon grass on private lands to sell for oil extraction, and are also contemplating setting up an essential oil extraction unit as a village industry.

Another successful attempt has been to use bhabbar grass (Eulaliopsis binata) to generate an income for the village. Bhabbar grass is used for rope making and as a raw material for the paper industry. This grass, which can be both used for fodder and as an industrial raw material, grows in abundance in the forest watershed above Sukhomajri. With the protection of the catchment, (about 1,179 ha of reserved forest area) by the villagers, the availability of this grass has gone up manifold. But the watershed forest being state-owned land, the Forest Department practice was to auction the rights to cut the grass to an outside contractor. But, as in the case of grass and tree fodder, the Forest Department eventually agreed to give the contract to cut bhabbar grass to the village society. In 1986, for the first time, the Sukhomajri society received the rights to harvest bhabbar grass on payment of Rs.22,000. That year, however, because of lack of funds the society auctioned its rights to a contractor, making a profit of Rs.13,000. The following year, society members cut the grass themselves and by mid-February had harvested 150,000 kgs of bhabbar, which at the current market price will fetch the village at least Rs.1.2 lakhs. If processed further into rope, which would also create artisanal employment within the village, the price could be more than doubled to almost Rs.3 lakhs.[16]

The village society in Sukhomajri has started to play a crucial role in the management of its common resources. The society, which started off managing and distributing common water resources, has over the years moved on to take control over other resources, such as fodder, bhabbar and even the option of fish production in the village dams. The name of the society has been changed from the Water Users' Association to the Hill Resource Management Society. But the underlying logic for its activities remains the same - to ensure the interests of the entire village. In the case of the society obtaining a contract for harvesting fodder or bhabbar from reserved forest land, each villager has a vested interest and an equal share in the produce. This in turn has ensured villagers equal involvement and interest in the protection of the reserved forest.

Sukhomajri is clearly and example of how to plan the enrichment of a village ecosystem, including its common lands, its private lands, and its water resources, to meet the basic biomass needs of the village and to generate enough for export outside the local ecosystem. Even more importantly, Sukhomajri is an example of how to ensure the rights of the poor over common resources. Sukhomajri shows that meeting this objective requires not only sophisticated use of technology, but also an extremely sophisticated

community control system, which will be both equitable and sustainable. This village experience demonstrates that village-based organisation that controls common resources is possible when the entire village is involved and when the rights of every household are protected.

Notes

[1] P.R. Mishra, et al.: Operational research project on watershed development for sediment drought and flood control - Sukhomajri (Chandigarh, Central Soil and Water Conservation Research and Training Institute, Research Centre, Sep. 1980), p. 3.

[2] Anon: Hill resource development and community management; Sukhomajri and Dasholi Gram Swarajva Manadal) (New Delhi, Society for Promotion of Wasteland Development, Aug. 1984), p. 4.

[3] P. R. Mishra, et al., op. cit., p. 3.

[4] ibid., pp. 10-16.

[5] ibid., p. 25.

[6] ibid., p. 32.

[7] P.R. Mishra and Madhu Sarin: Social security through fencing: Sukhomajri and Nada's road to self-sustaining developments (Paper presented to the Conference on Sustainable Development, International Institute for Environment and Development, London, Apr. 1987, mimeographed), p. 8.

[8] Society for the Promotion of Wasteland Development: Case studies of Sukhomajri and Jawaya (Paper presented to the International Conference on the Economics of Dryland Degradation and Rehabilitation, Canberra, Australia, Mar. 1986, mimeographed), p. 15.

[9] Central Soil and Water Conservation Research and Training Institute: Soil conservation: Annual report 1985 (Dehra Dun, Aug. 1986), pp. 123-124.

[10] Central Soil and Water Conservation Research and Training Institute: Soil conservation: Annual report 1984 (Dehra Dun, Sep. 1985), pp. 86-87.

[11] Central Soil and Water Conservation Research and Training Institute: Soil conservation: Annual report 1983 (Dehra Dun, Sep. 1984), p. 131.

[12] S.P. Mittal, et al.: "Dairy development through hill management in the Sivaliks", in Indian Cooperative Dairy Journal (Oct. 1982).

[13] ibid.

[14] P.R. Mishra and Madhu Sarin, op. cit., p. 11.

[15] Society for the Promotion of Wasteland Development, op. cit., p.14.

[16] P.R. Mishra and Madhu Sarin, op. cit., pp. 11-12.

CHAPTER V

CASE STUDY: COMMUNITY FORESTRY BY THE CHIPKO MOVEMENT IN CHAMOLI (UTTAR PRADESH)

The region

Uttarakhand forms the northern part of Uttar Pradesh, India's third largest and most populous state. Uttarakhand, which largely consists of high Himalayan mountains, is made up of eight hill districts and covers an area of 51,122 km^2, with a population of 4.8 million people. Uttarakhand is one of the poorest regions in the state and witnesses high rates of out-migration.

After the Indo-Chinese War, several border districts in Uttarakhand were opened up and connected with roads for strategic reasons. In 1950, the border district of Chamoli had only 30 km of motorable roads, but by 1980, its mountains had been blasted to make 1,100 km of roads. These roads not only took a heavy toll on forest cover during their construction, but the explosives used also disturbed the sensitive hydro-geological system of these young mountains. Even more importantly, roads also opened up the forests to felling by contractors. A large part of the catchment of the Alaknanda river - a major tributary of the Ganga - is located in this district. Between 1960 and 1970, the forests of the Alaknanda catchment were extensively cut. Today, much of the region is prone to landslides and floods. Destruction of the forests has led to repeated floods which have had far-reaching effects in the plains. In 1970, the Alaknanda witnessed an unprecedented flood. The entire village of Belakuchi was washed away by swirling torrents.

Fifty-eight per cent of the land area of Chamoli district is still officially classified as forest land, but today these slopes are barren. The forest area in this region is legally classified into three categories: reserved and protected forests; civil forests and panchayat forests. The reserved and protected forests are under the control of the Uttar Pradesh State Forest Department. These forests cover an area of 370,486 ha, or 40 per cent of the total land area and about 70 per cent of the forest area of Uttarakhand. These forests are felled and afforested according to Forest Department working plans. Civil forests are under the control of the Revenue Department of the state and directly under the district magistrate. These forests are afforested by the civil-soyam wing of the Forest Department only after receiving an application from the village. These forests cover 104,300 ha. Panchayati forests controlled by the village panchayats are demarcated for the exclusive use of the village. These cover only 52,149 ha, 10 per cent of the forest area and 5 per cent of the land area of the district.[1]

As compared to other parts of the country, where there is acute land hunger, in this district there are vast stretches of barren common lands, which were once under forests but are now unsuitable for agriculture. For instance, in Pokhani village, while the total land area is 353.3 ha, the land under agriculture is a mere 41.4 ha. The bulk of 306.6 ha is civil forest land. In Pakhi village, out of a total land area of 259.5 ha, 163.7 ha is civil land, now degraded and waste. This is the situation in most villages in this district. Because of this degradation, in spite of the availability of land, the grazing pressure on Chamoli's forest lands is extremely high. This pressure prevents regeneration of vegetation and maintains the common lands in a state of barrenness.

Agriculture is the predominant occupation of Chamoli's people, though the area under cultivation is small - only 13.2 per cent of the land is net sown

area in the district as compared to the state average of 59.9 per cent. Land suitable for agriculture is not only smaller than in the rest of the state, but is relatively less fertile. Except in valleys, the soil is shallow and of poor texture. With a predominance of cereal crops, agricultural cropping is of a subsistence nature.

Non-agricultural sources of income are few. The manufacturing sector contributes 4.5 per cent to total income and accounts for 3.7 per cent of total employment in all eight districts of Uttarakhand.

Degradation of the environment and the consequent soil erosion are further reducing the fertility of the land and the already meagre returns. Men follow the road to the plains in search of jobs and cash. The women, elderly and children are left in Chamoli to tend the soil. Women are the backbone of the villages' subsistence economy. According to the 1981 census, the five districts in the State of Uttar Pradesh with the highest proportion of female cultivators are Tehri, Pauri Garhwal, Uttarakashi, Chamoli and Pithoragarh. In Chamoli, as compared with the state average of 6 per cent, 43.5 per cent of all women are classified as workers, and 95 per cent of women workers are cultivators who do all agricultural work except ploughing.[2] The sex ratio in rural Chamoli is 1,088 women to 1,000 men whereas the national sex ratio is 933 women to 1,000 men, an indicator of the high levels of out-migration.

With the decimation of the environment, the task of these women has become more and more difficult and inhuman. A study carried out in Dwing village (Chamoli district) found that women walk at least 10 km three out of every four days for an average of seven hours per day to bring back about 25 kg of wood with each headload.[3] A study of three villages in the Kumaon region of Uttar Pradesh shows that women have to put in an extraordinary amount of time in the fields in addition to fetching fuel and fodder. In these villages male migration is also high. The survey showed that 0.9 persons per household had migrated. Sometimes the incidence was as high as 2.33 persons in households with five persons each. Consequently, the male-female ratio in the villages was 1:1.4 for the working age group of 15 to 50 years. During the peak agricultural season, women worked as long as seven hours daily in cultivation and animal husbandry. The amount of energy expended as human labour for fuel and fodder collection averaged 2.5 times the amount of human energy spent on cultivation in these villages.[4]

The Kumaon study notes that with receding forest cover, energy expended in direct agricultural activity as compared to energy expended in fodder and fuel collection will continue to decline every year as women will have to go further and further to gather wood and forage, and this will lead to a shortage of labour for cultivation.

The future spells disaster both for the environment and for the people in these villages, especially for the women left behind. Because of the small size of landholdings - the majority of which average 0.5 ha - farmers do not have the space to grow forage crops in their fields. As firewood grows scarce or too difficult to collect, increasing amounts of dung - traditionally used as manure - will be burned as fuel, and because of the lack of manure, the productivity of the land will decline further. The final consequence will be a highly degraded physical environment and an increasingly undernourished, overworked population, especially of females unable to eke out a decent living.

People's movement against deforestation

The forest bureaucracy in Uttar Pradesh has consistently blamed expanding agriculture and the fuel collection activities of local people and their grazing animals for the extensive deforestation in the region. But local people themselves see the Forest Department as the plunderer of the region's forest wealth. Large areas of forests in the region have been cut under the Forest Department's working plans. Corruption has ensured that instead of just one marked tree being felled as indicated in the plans, ten other unmarked trees have typically also been felled. The 1970 Alakananda flood and the associated landslides make people acutely conscious of the link between deforestation and floods, landslides, soil erosion and the dependence of their survival on the preservation of their immediate environment. At the same time, these disasters heightened their alienation from the Forest Department, an agency which the local people see as one which denies them access to their neighbouring forests but readily allocates these same forests to the needs of powerful and wealthy outsiders from the plains.

The now world-famous Chipko Movement against deforestation was born in March 1973 in the remote hill town of Gopeshwar in Chamoli district. Representatives from a sports goods factory situated in distant Allahabad had come to Gopeshwar to cut ten ash trees near Mandal village. The villagers had themselves been denied the use of the wood of these same trees for making their agricultural implements. In their anger, the villagers courteously told the sports good manufacturers not to cut the trees but when the contractors persisted, the villagers hit upon the idea of hugging the earmarked trees - "Chipko" being the Hindi word "to hug". The sports goods manufacturers returned to Allahabad empty-handed.

The Chipko Movement reached a high point in 1974 when the women of Reni village, some 100 km from Gopeshwar, got involved in saving the Reni forest in a dramatic way. One day when the men were away, the forest contractor arrived in Reni to begin felling trees. Undaunted by the number of men or their axes, the women of Reni, led by Gauri Devi, an illiterate woman of 50, barred the path to the forest which went through the village.

The expert committee later set up by the state government to inquire into whether the Reni forest should be felled or not found that the Reni women were more right from a scientific point of view than was the Forest Department. This gave the movement considerable respectability. The committee concluded that because of the highly sensitive nature of these watersheds situated deep in the Himalayas, all felling should be banned to allow regeneration.

Another dramatic movement took place in Dungari-Paitoli village in 1978, where the battle was not only bitter but set wife against husband and mother against son. In 1978, the Government's Horticulture Department negotiated with the male-dominated panchayat for the acquisition of a nearby community forest in order to set up a potato seed farm. The men were led to believe that the village would in turn receive a motorable road, electricity and a health centre, and that the primary school would be upgraded to a high school. When the women learnt that the forest had been given away by the panchayat, they protested strongly. The destruction of the forest for them would have meant walking at least another 5 km every day to fetch fuel and fodder. Emboldened by the support they received from the Chipko activists, the women refused to let the forest be destroyed. After a bitter struggle in which the women were strongly opposed by their men and threatened with arrest by the district administration, the women finally won. None of the men's tactics, including threats to Chipko workers, worked in the end, and the district administration decided not to fell the forest.[5]

The local people's sense of alienation towards government bureaucracies controlling forest resources has strong historical roots. The progressive minution of forest communities' rights to the use of their forests had evoked a sharp reaction against the British Government during the 19th and early part of the 20th century. The Forest Settlement Officer of British Garhwal, at the time of the constitution of reserved forests in 1913, commented that "... the notion obstinately persists in the minds of all from the highest to the lowest, that the Government is taking away their forests from them and is robbing them of their own property ..." In Garhwal, the reservation of forests in 1913 was followed by extensive social movements in 1916 and 1921, the latter coinciding with the first national non-cooperation movement by Mahatma Gandhi and engulfing large areas of the Garhwal and Kumaon regions of Uttarakhand.[6] The post-colonial forest policy has essentially been a continuation of the colonial forest policy asserting state monopoly rights at the expense of forest communities. The Chipko Movement in Uttarakhand, thus, has deep roots in the history of the region's resistance to the colonial policies of the British.

People's movement for afforestation

Even as the world heard of Chipko, in Chamoli the Dasholi Gram Swarajya Mandal (DGSM) - the local agency that had pioneered the Chipko Movement - had begun a new phase of the movement. DGSM is an old Gandhian organisation in the region set up in the mid-1960s to promote village-level industries based on local raw materials. It has a small cottage unit to produce turpentine from pine resin, and a saw mill.

DGSM workers began to plant trees in degraded areas in 1975 with the help of concerned students. In 1976, the DGSM held a month-long tree-planting camp above the town of Joshimath. Through the camp they drew the attention of the civic authorities to the increasing deforestation being caused by the military encampment above the town. As a result of their work, the Uttar Pradesh Government set up a committee to investigate the ecological problems around the town. But there was limited involvement of the local population. The tree-planting exercises only helped the DGSM workers and local students in their own education. The survival rates of the trees were also poor.

Around that time there was a landslide near Pakhi village which was used to show the local villagers the consequences of the growing ecological crises. A camp was organised to take up tree planting to stabilise the landslide. This led to a dialogue with the local villagers and their involvement in tree planting. Soon women also began to participate, and simultaneously the survival rate of the trees planted began to crawl upwards from a dismal low of 10 per cent. As word of this effort began to spread, DGSM's contacts began to grow with other villages, especially through the youth who had participated in the campaign against the felling of the Reni forest. The camps also began to become more than tree-planting camps, as villagers began to discuss their other problems of health, roads and the absence of various services. From Pakhi the afforestation effort spread to Dwing village and then to Bemru village. Today DGSM is working with some 250 villagers along the Balkhills, Patalganga, Garurganga and Kalpganga rivers, all of which are tributaries of the Alakananda.

"We now plant few trees ourselves. Our work is mainly to create conditions in which the villagers can plant trees themselves", explains Chandi Prasad Bhatt, the leader of the Chipko Movement. This change is the result of a slow but steady process of understanding the problems of local communities and gaining credibility with them.

Bhatt says that there were several reasons why DGSM took to tree planting. Firstly, we realised that we not only have the right to prevent the Government from causing further deterioration in the ecological situation, we also have the duty to do something to improve the environment. Secondly, we knew there was not enough time to wait for the Forest Department to afforest the mountains. Given their dismal record in planting, this would be a near-impossible tasks for them. Moreover, the trees planted by the Forest Department would not be of any use to the local people and in most cases would not be given to the villagers. Lastly, for the women, every passing day meant worsening hardships, as forests moved further and further away form the village and their daily walk for survival lengthened.

DGSM decided to concentrate work in a few micro-catchments of the Alakananda watershed which had witnessed the worst impact of the 1970 floods. This watershed, in the upper reaches of the Himalayas, is extremely degraded. Every year tonnes of silt from these mountains flow down into the river below and the land frequently caves in, burying fields and houses.

Initial meetings and strategy

The first meeting with local villagers' participation was held in Bemru and was exclusively attended by men, recalls Bhatt. The men did not exhibit much enthusiasm for planting trees. Women soon started coming hesitantly to village meetings. They, too, had many reservations but were more receptive to the idea of planting trees. DGSM workers continued to visit neighbouring villagers to convince people to plant trees around their villages, and slowly build contacts with village elders, women and young men. In many instances it took repeated visits and much persuasion to involve people in planting trees, but today this has changed.

Up until 1982, DGSM was actively working in about five villages. By 1983, afforestation work had started in 16 villages and by the end of 1986 more than 250 villages were working with DGSM. People have already planted more than 2 1/2 lakh trees, making this the country's most successful community afforestation programme. DGSM has organised over 60 village camps in the last five years in which at least 5,000 villagers have participated, the majority of whom have been women.

Today, DGSM receives dozens of requests from villagers keen to afforest land around their villages, requests for trees and for assistance in making smokeless stoves, and invitations to hold camps in their villages.

DGSM's strategy for involving people in afforestation is multi-pronged. The first step is to spread awareness about the importance and benefits of afforestation. Once people realise the value of trees and evolve a system for community management of the plantations, DGSM then supports the villagers in planting trees on their degraded lands.

The main tool that DGSM uses for education, exhortation and involvement of the local people is what it calls "eco-development camps". On the face of it, these camps are simple two- to five-day meetings of some 50 to 300 villagers, students, scientists and social workers to undertake community tree plantation work. But in truth these camps are the first step to helping local communities gain enough confidence to take control of their lives and of their natural resources. For DGSM, tree planting is but a symbol of the integrated development of the environment and of the people dependent on it.

Nearly 75 per cent of participants in the camps are women. Women from many neighbouring villages come to attend these camps, leaving their families

and husbands back home. The programme of the camps is divided between discussions on local concerns, planning for the future of the village, and physical work. All participants join to dig pits, to plant trees and at times to carry stones to build walls. In the evening, everyone participates in songs and prayers.

While creating people's organisations to deal with the task of environmental enrichment, DGSM clearly recognises the role of women in all development work in this region. DGSM has therefore made special efforts to develop women's organisations, known as "Mahila Mangal Dals". Every village has a Dal which includes women from each family. These organisations have no written constitution but effectively take on the work of afforestation. The members of the local Mahila Mangal Dal are the main participants in the camps and often its organisers. Women chair the meetings and put forward their proposals for the development of their village. To organise youth in support of the environment, a village youth group is simultaneously formed called "Dalyon ka Dagadya" - "Friends of Trees" - which often supports the Mahila Mangal Dal in its work.

Obstacles and opportunities

The camps organised by DGSM hve demonstrated several obstacles that lie in the way of organising people to take control and management of their immediate environment to improve their living conditions. The camps also illustrate some major opportunities. The biggest obstacle is the lack of confidence and attitude of abject dependence on the Government felt by the villagers. The region is marked by acute poverty, illiteracy and a high rate of male migration. The camps organised by DGSM greatly help the villagers to gain confidence in themselves, to assert themselves against external interference, and to explore ways within their control that could help to improve their lives.

The second finding of these camps is that once the people are ready to act, they want to set their own priorities. To plant trees in an area with a high animal grazing pressure, it is essential to build walls to protect the trees from animals. At one of the initial camps, villagers pointed out that they were less interested in making walls to protect trees and more interested in making walls to protect their crops from marauding wild animals from nearby forests. Because of these wild animals, many peasants had to stay out all night next to their fields to protect their meagre crops, and losses were often heavy. They therefore told DGSM that they first wanted help to make walls around their fields. Fortunately, DGSM was able to convince a government agency to use funds available to it under a food-for-work programme for this purpose. The villagers were thus paid to make walls around their fields, and DGSM gained enormously in credibility with the villagers as it was seen as an organisation responding to their priorities. The walls not only helped to increase agricultural output, but at the same time, the entire experience led to one crucial fall out. Space was left between the fields and the walls, and trees were planted along this corridor. Long before the trees started giving any returns, grass started growing profusely in the corridors because animals were not longer grazing there. The women were very excited to see all this grass growing next to their fields, reducing the drudgery involved in collecting and carrying the grass from distant forests. This made women very interested in afforestation.

The increased involvement of women brought forth many differences with men in terms of their attitudes towards afforestation. Firstly, women were much more interested in afforestation than men, presumably because women have to undertake the arduous labour of collecting fuel and fodder from the

receding forests, and also because as they do not migrate away from the villages like their men, women's consciousness is still rooted in their immediate environment and its health. Despite their heavy work burden, women have come forward to put in much more work than men in planting and taking care of trees by manuring them and if necessary giving them water.

Secondly, the initial camps brought out the differences between men and women over the choice of tree species to be planted. While men were more interested in species that would help them meet cash needs women wanted trees for household needs like fuel, fodder and fruit. The species to be planted are discussed at the camps and the wishes of the women are given priority. The species that have since been planted include walnut, soapnut, Himalayan hazel, green oak, mulberry, orange, lemon and several local fodder species.

Following this experience, the DGSM approached the Government of Uttar Pradesh to undertake wall-building activities under the National Rural Employment Programme, with the DGSM promoting plantation activities on a voluntary basis by the villagers. But the state government did not respond to this suggestion. Having aroused the expectations of the people, the DGSM tried to support wall-building work from its own meagre financial resources.

In 1982, the DGSM received a grant from the Planning Commission (later transferred to the Department of Environment) to undertake the Garurganga watershed development project. Under this project, DGSM now has funds to assist 27 villages to take up afforestation work along various tributaries of the Alakananda river situated between the towns of Chamoli and Joshimath. The project covers an area of 100 km^2 with villages located at an altitude ranging from 3,500 to 7,500 feet. Organising eco-development camps and wall construction work have remained important parts of the afforestation work, but promotion of wood-saving fuel technologies like efficient stoves and biogas plants has also steadily been taken up. By 1985, almost 16 km of stone walls had been built in these high mountains.

DGSM operates normally by giving the contract for making the walls to the village Mahila Mangal Dal (women's organisation), or in come cases to the village Dalyon ka Dagadya (youth group). These village organisations take on the entire supervision of the work. People are paid statutory minimum wages for their labour. Fencing is one of the major expenses of any tree plantation programme. Because people are involved in the planning for the wall and understand that it is being built for their needs, they also cut on costs. In Dwing village, a 740 metre long, 5 foot high stone wall cost only Rs.3,000 - it would have cost the Forest Department at least five times as much. While experience has consistently shown that women are more interested in tree plantation work, men do come forward to build walls because of the cash incentive. However, in a few villages like Hyuna, Tirosi and Bandwara, women outnumber men even in wall building, and in all the villages women do participate in building the walls sometimes in equal numbers as men.

Saplings are supplied mostly from DGSM's own nurseries free of charge to the Mahila Mangal Dals. Up to 1982, before the start of the Garurganga watershed development project, 100,000 trees were planted. By 1985, more than 250,000 trees had been planted by these village organisations.

The Mahila Mangal Dals look after the plantations. They regularly water, weed and give manure to the plants. Once or twice every month - mostly on the eleventh day of the Hindu month, which is considered auspicious for tending and watering plants - the women gather to work on the plantations.

Land for plantation

The patches of land taken up for plantation work are chosen by the Mahila Mangal Dals. The land chosen is normally community land, that is, land under the control of the panchayats. Occasionally, even civil land under the Revenue Department, forest land under the Forest Department and, in one case, private land has been chosen.

But unlike in other parts of the country where permission is first sought by the agency to plant trees on government lands - which can take many years - the women in Chamoli, backed by DGSM, take up afforestation and management of the land with total disregard for state authority and regulation.

These "common lands", of which there are vast plots around the villages, were traditionally managed by local communities, and are essential to meeting the biomass needs of the village.

In the case of Dwing village, the land used for afforestation is under the control of the Sericulture Department of the state government. Civil land, under the charge of the district magistrate, had been given to this Department and then closed to the villagers, exacerbating their shortage of fuel and fodder. The Sericulture Department then used a mere tenth of the land, making the villagers extremely angry. The Mahila Mangal Dal, supported by DGSM has now planted between 4,000 and 5,000 trees in the area.

If the land chosen is by any chance private land, a contract is drawn up which specifies that the land and the accruing benefits are to be used by the entire community. In Langi village, the land chosen by the Dal organisation actually benefited 19 families out of the 21 in the village. The work was started only when the village agreed that all families would have an equal share in the produce from the land.

Community control over distribution

In each village, the Mahila Mangal Dals lay down new community control systems for the use of the biomass from the planted areas. These systems are not only equitable and sustainable but more importantly take into account the most pressing needs of the villagers.

Equity and control are basic preconditions in the work of the Chipko women. Without the equal distribution of benefits, community afforestation could have never been a success. Women have evolved simple ways of sharing the produce from the common lands. While trees take many years to bear fruit, grasses grow quickly and provide valuable fodder. To share this fodder equally, on only the particular days decided by the Dal, does one woman from each houshold go to the protected area to collect grass. As the trees are still small, equitable distribution of their produce has yet to be worked out. But in this way, women have already started asserting their right to control the piece of commons that they have jointly enriched and cared for, often an illegal assertion in the current order of administration.

In some cases, this assertion by the women's groups has led to conflicts with panchayat leaders over trees planted on panchayat lands. In Bached village there was a clash between the Mahila Mangal Dal and the head of the panchayat over the rights to the grass growing on the panchayat land protected by the Dal. The clash resulted in a police case and the women took the matter to the district authorities and forced the panchayat to withdraw the police case. The panchayat thus had to informally accept the Dal's rights over the afforested panchayat land as far as distribution of produce is concerned.

Results

The afforestation work taken up by the Chipko Movement has helped the local communities in many ways. Fuel and fodder shortages have greatly eased and will ease further as the plantations grow and more land is brought under protection.

An interesting aspect of the Chipko plantations is their high survival rates. In many places, survival rates are as high as 90 per cent. A survey carried out by the Indian Institute of Science in 1983 compared survival rates in plantations supported by DGSM and those undertaken by the Forest Department in the same area. The survey found that while the survival of Forest Department plantations was a low 14 to 21 per cent, survival in the Chipko plantations ranged from 68 to 88 per cent. This was in 1985 and in later years, with greater experience, the Chipko success rates have been even higher. Because of the high grazing intensity in the area, walls have been essential to protect the seedlings. "But the walls work only if they are people's walls", insists Bhatt. The Forest Department also builds walls to protect its plantations, but these walls are regularly breached by the people, because they have no interest in the biomass growing behind the wall. Walls have been successful only when built to protect the interests of the people, not to keep the people away from their rights.

But the biggest effect of this people's movement for afforestation is that it has given the women a voice, a voice which is today weaving a social transformation in the fabric of Garhwal society. Getting together to plant trees is just the beginning; now the women's organisations are getting together to demand drinking water and other basic necessities. In addition, the groups' militancy over the control of forests is now growing, whether these be government forests or panchayat forests.

Mahila Mangal Dals are taking control of the existing forest lands near their village, demanding that the local people be given first right of use to the forests in their vicinity. They want forests to be managed not as short-term revenue earners, but on a sustainable basis for meeting basic village needs and for village-based industrial development. In 1982, in Khalla Mandal, near the town of Gopeshwar, the Van Nigam was given the contract to cut 333 trees for firewood supply for the towns of Gopeshwar and Chamoli. Only 16 were cut when the local women stopped further felling.

In Bached village, the Forest Department marked the forest near their village for felling, but the women's group has successfully stalled any felling for the past four years. Kalavati Devi, chairperson of the Dal, told the district forest officer, "You will take away the trees, all 1,600 of them in a matter of days. These trees will support us for at least one or two generations. What will we do? Where will we go for fuel and fodder?" To which the forester responded that the forest was his and he would use force if the women stopped the work. Kalavati Devi argued, "If the forest is yours, then the country is ours. And if you threaten us with police rule, we will rule the village and use force to stop your work." Since then the forest officials have not been able to enter the Bached forest.

In Gopeshwar town itself, the Mahila Mangal Dal has a tough time protecting its forests. These forests, literally the only remaining green space for miles around, perch precariously near the burgeoning town. After the formation of Gopeshwar as a township, local agricultural land was taken over by the Government to develop the district headquarters. With deforestation, the problem of fodder for cattle has become acute. Milk must be sold to buy essential consumer items, lowering the nutritional intake of the families. The forest is now protected by the women and any local person

caught entering the forest is fined by the Mahila Mangal Dal. Every day two women take time off from their busy schedules to patrol this forest. The other vital reason these women protect this grove is that it is the only space where they can go for their ablutions without any inhibitions.

In Bached village in 1987, the women took over the formal "Van Panchayat" - the village body which controls the village forest land. In village elections, women alleged that the former sarpanch (village head) had been illegally cutting the forests, and demanded fresh elections. The district authorities conceded fresh elections and five of the seven positions have gone to women - a totally unprecedented development.

The Chipko strategy for afforestation can be summed up in the following words of Chandi Prasad Bhatt: "Before we begin to green the land, we must green the people. Those who do not have a voice must begin to shout."

Notes

[1] Government of Uttar Pradesh: Forest statistics (Uttar Pradesh, 1981), p. 22.

[2] Census of India: Provisional population totals: Workers and non-workers (Registrar General and Census Commissioner for India, 1981).

[3] Madhura Swaminathan: A study of energy use patterns in two villages of Garhwal Himalayas (mimeographed).

[4] J.S. Singh, Uma Pandey and A.K. Tiwari: "Man and forest: A Central Himalayan case study", in Ambio (Stockholm), Vol. XIII, No. 2, 1984.

[5] Anil Agarwal, Revi Chopra, Kalpena Sharma (eds.): The state of India's environment, 1982 (New Delhi, Centre for Science and Environment, 1982), pp. 42-43.

[6] Ramchandra Guha: "Forestry in British and post-British India", in Economic and Political Weekly (Bombay), 29 Oct. 1983, pp. 1882-1896.

CHAPTER VI

CASE STUDY: CO-OPERATIVE FORESTRY IN A SALINE AREA OF GUJARAT

The Cambay taluka of Kaira district in Gujarat is an area locally known as the "Bhal", meaning "forehead", because it is a vast stretch of barren land, like the wide, hairless forehead of the human body. This area, situated along the western coast of India, has been affected by sea intrusion and consequent salinisation. The vegetation is extremely sparse and the people are very poor.

In the early seventies an Ahmedabad-based organisation, the St. Xavier's Behavioural Science Centre, started working in some ten villages of the region. The Centre started with non-formal education to change the system of values which reduces the poor to abject slavery, but found very soon that unless the economic dependence of the poor were broken, their value system could not change either. The Centre then started work on evolving an alternate economic model, taking into consideration the harsh ecological conditions and the poor resource base of the people. They were financially assisted in this work with a grant from a German church organisation.

In the villages, the Centre found a rigid caste structure, dominated by upper-caste Rajputs. The Rajputs wielded economic and political power in the village. The scheduled castes (lower castes) were bonded labourers and mainly cultivated the fields of the Rajputs. Within the scheduled castes, the Vankars were former weavers who had become landless labourers with the coming of textile mills. After Independence, some Vankars acquired land for agriculture. But the land in most cases was poor, unirrigated and saline, and the Vankars were forced to continue to work under the Rajputs. Where cultivation was attempted, it remained marginal and in fact indebtedness increased with increased investment into the poor land. A survey carried out by the Xavier's Centre in eight villages showed that while the average annual income per family member was around Rs.700, their expenditures reached Rs.900 per family member. This resulted in borrowing of money at 60 to 100 per cent interest rates from the Rajputs.[1] Indebtedness was thus a major problem in the area.

The Centre decided to work in these villages, but clearly working with the entire village community was not possible, since the Rajputs were pitted against the lower castes. The aim had to be to empower the scheduled castes, economically and socially to fight the exploitation of the Rajputs. The Centre also came to realise that in these villages there were no class identities but only caste identities. The Centre therefore started work with only one scheduled caste community, the Vankars, instead of with all the poor together so as to be able to work with one homogeneous group.

Search for alternative economic options

To reduce the economic exploitation of the Vankars, the Centre explored an alternate economic option. The first possibility was a loan scheme to purchase buffaloes. Detailed studies found that lack of fodder in the region made the scheme economically unviable. They then made an attempt to improve agricultural technology, but the resultant increase in productivity on these marginal lands was very poor, while the investments of time and money were high, and the new technology only made the farmers more vulnerable to natural calamities.

The Centre then tried a third option - to cultivate the idle community lands which were highly degraded and saline. It was hoped that this strategy would, firstly, improve the economic status of the Vankars and therefore reduce their dependence on the Rajputs, and secondly, would forge unity among the group through the creation of a co-operative venture.

The Centre imposed two conditions before starting work. It insisted that the Centre would support cultivation only if common land was offered by the entire Vankar community, and that the initiative to give land also came from the entire Vankar community. These steps were taken to create the feeling that the project belonged to the Vankar community from the very inception and not to the Xavier's Centre.

The Vankar community in these villages had some common lands which had earlier been with the Revenue Department but had been given on lease to the community. The lease was either for a very long term like 99 years or was an annual lease given to a co-operative of scheduled castes under the Government's land reform programme. In most cases, these lands were too degraded to be cultivated and were lying unused. In 1980, work started in Vadgam village on 312 ha of salinised water-logged community wasteland through a co-operative of all Vankar families in the village. By 1985, the Centre was working with seven village co-operatives on 4,000 ha of wasteland.

The challenge here was to find a viable economic crop for these lands. The first choice was agricultural crops, but because of poor land conditions, this alternative was discarded. The co-operative then decided to plant Prosopis juliflora, a hardy, salt-tolerant plant, which is found extensively in the region. For the villagers, the idea at first seemed ridiculous. Prosopis is considered a weed and grows in abundance. It is in fact the only tree found in large numbers in the area and is of no economic value other than for supply of domestic cooking fuel. To plant this tree on their common land made little sense to the Vankars initially.

But Xavier's Centre found that Prosopis has an extremely high calorific value and is good for firewood and charcoal production. The land was treated with labour-intensive techniques like trenches to reduce salinisation, and the Vankars were paid the statutory minimum wages for this work. In 1985-86 the co-operative took up afforestation under the National Rural Employment Programme, which provided money for intensive earthworks and planting of trees.

The silvicultural techniques for growing Prosopis in such degraded lands were not well known. Initially, the Centre suggested the planting of 750 trees per hectare, but later this was increased to 2,500 trees in each hectare. Prosopis trees can be cut for firewood after six years coppiced and subsequently cut again after three to four years. The expected life of the tree is 40 years. In Vadgam, where the co-operative has already harvested two crops, the yield per tree has ranged from 26-50 kg. In 1986-87, about 8,000 trees were cut. Wood production was 208 tonnes, which can fetch Rs.52,000 after sale as firewood or Rs.84,000 when turned into charcoal.

Obstacles and conflicts

The co-operative after harvesting the wood ran into problems with the Forest Department. Under the regulations of the Forest Act, the Forest Department has rules governing the transport of wood which require that a transit pass is needed to transport any forest produce like firewood or charcoal for a distance of more than 5 km. This pass is valid for only during the number of hours which a truck or other transportation takes to reach its

destination from the loading point. Moreover, the forest officer of the area has to be present at the time of loading the produce on the truck.

This has become a serious problem. The co-operative has found time after time that after a date has been fixed with the forest officials for the transport of wood and the truck has been hired at considerable cost, the forester does not turn up to inspect the truck and issue the pass. Not only does the co-operative end up losing valuable time and investment but also their potential buyers, who as a result of these delays find an alternative source. The reasons for the problems are that in some cases foresters are closely aligned with the upper castes (who are opposed in the project), or in other cases, the foresters demand bribes from the co-operative.

The main benefit of the co-operative so far has been the off-season employment provided to the Vankars at statutory minimum wages. This has meant that the landless and marginal farming Vankars who worked for the upper castes at much lower wages now have alternate employment. This in turn meant that the economic control of the Rajputs has started to decline as the Vankars have stopped going to Rajput farms for employment at low wages.

The project has coincided with the coming of irrigation to the area through the Mahi canal and the increase of land area under paddy, a labour-intensive crop. This event has increased the Rajputs' demand for labour at the same time as their traditional labourers, the Vankars, are finding alternative sources of employment.

The Rajputs have therefore started instigating trouble. In many villages, Vankars who formed a co-operative have been assaulted and harassed. Often, the Vankars fought back by filing cases with the police, disrupting the traditional code of conduct.

Tensions in the region finally erupted into violence in the village of Golana. The village has about 440 ha of wasteland which has been planted by a Vankar co-operative. Rajputs are roughly 20 per cent of the village population but own 60 per cent of the cultivable land. The upper caste had in the past tried to break up the group by creating factions within the co-operative. When this strategy failed, the Rajputs started intimidating the Vankars with physical assaults and by harassing the women. The Vankars responded by filing police cases. In 1985, a plot for housing was allotted to the Vankars by the district authorities. This site was chosen by the Vankars, who had earlier been given a site on swampy land. The new site was used by the Rajputs for threshing their grain, and this allotment was against their explicit wishes. When the Vankars took possession of the land, the Rajputs retaliated by brutally murdering the leaders of the co-operative. On the night of 25 January 1986, the village of Golana witnessed murder and looting burning of houses. The Rajputs killed four young men and injured and looted many others.

A year after the massacre, the co-operative is still alive. The Vankars in Golana are angry and have strengthened their resolve to find alternate employment from their own co-operative land. They are not prepared to go back to work in the fields of the Rajputs.

This experience in the Bhal area shows that when afforestation improves the status of the poor, it can lead to conflicts with those who currently benefit from their poverty. When the Rajputs were threatened by the changing economic status of the Vankars in Golana, they mercilessly lashed out at the Vankars. Given the highly stratified communities in many Indian villages, it will be difficult to help the poor by working with the entire community. The

assets created will have to be controlled not by the entire village but by the specific (poor) target group. This may lead inevitable to violent conflicts.

Note

[1] St. Xavier's Non-formal Education Society: Annual report - 1978-79 (Ahmedabad, Behavioural Science Centre, 1979), p. 9.

CHAPTER VII

CONCLUSIONS

Forests are not just "natural entities", they are also "social entities". In a country like India, forests are not only the habitat of 40 million tribal people, they also provide the majority of the rural population with the wherewithal for survival through supplies of fuel, fodder, building materials, herbs artisanal raw materials and water. For these reasons, afforestation calls for more than just technical responses like increasing the availability of saplings, digging of pits, planting of trees, and then measuring success by counting the number of trees planted. The equally important social questions are who plants the trees, on what lands are the trees planted, who benefits, and what trees are planted for what purpose?

Given the importance of trees and grasses in India's biomass-based subsistence economy, within which the majority of people survive, it is clear that the biomass that is regenerated should be of a character that supports this subsistence economy. Households in maximum need of support are those who do not have access to or have only limited access to basic biomass-producing factors like land and cattle. But since cattle need fodder to survive, and fodder grows on land, access to cattle is also dependent on either income to purchase fodder or direct access to land. Thus, it is the landless and land-poor who suffer most from shortages of biomass like fuel and fodder, except in circumstances where sufficient biomass is available from the common lands.

Land in India can be divided into three broad categories: private; community-controlled and managed; and state-owned and managed. The community-controlled lands, namely the panchayat lands, are common lands in the true sense of the phrase, but state-owned lands such as those controlled by the revenue departments and the forest departments of the state governments are common lands by default. Thus, all non-private lands are used by the people in one way or another to meet their biomass needs and are in that sense common lands. Unfortunately, all these common lands - the panchayat lands, revenue lands (which are extensively used for grazing animals), and government forest lands - are lying in an extremely degraded state.

The National Remote Sensing Agency has shown through satellite pictures that nearly half the area controlled by forest departments (and often called forest lands) does not have a tree cover that can be called a forest. It has been variously estimated that between one-third and one-half of India is lying as wasteland, with biomass production less than a fifth of its potential. Though this includes a large fraction of private agricultural lands, a large part are the common lands of the country.

This degradation of the land constitutes the basis of the biomass poverty of the poor. The degradation of common lands affects the landless and land-poor even more and thwarts attempts to help them through development programmes like animal husbandry schemes, for instance. If afforestation programmes are to benefit landless and land-poor households on a priority basis, the biggest problem they will face is access to land.

In the case studies we have studied, different approaches have been taken to deal with this problem;

(a) the West Bengal farm forestry programme is promoting farm forestry on lands that landless households have received under the Government's land reform programme;

(b) the Maharashtra village woodlot programme has planted trees on panchayat lands with the hope that landless and land-poor households will be allocated the produce on a priority basis by the panchayat;

(c) the Sukhomajri project has protected government forest land neighbouring the village;

(d) the Chipko Movement has taken up plantations on a variety of government and community lands, but largely community lands; and

(e) the St. Xavier's Behavioural Science Centre has tried to promote forestry on land provided by the Government to a poor scheduled caste community under an earlier land reform programme;

Table 8 analyses each of these projects from the point of view of benefits to landless and marginal farmers, the involvement of women and conflicts.

Table 8. Analysis of case study projects: Benefits to landless and marginal farmers, involvement of women, and conflicts

Project	Benefits to landless and marginal farmers	Involvement of women	Conflicts
West Bengal farm forestry	Only those who have benefited from government land distribution programme	None	Not once the landless have gained control of the land given by the Government
Maharashtra village woodlots	In principle as members of the community but not in reality	None	Panchayat dominated by groups who are not interested in the needs of the poor. Poor feel their grazing lands being taken away
Sukhomajri watershed development	As members of the community	Limited	1. Initially landed vs. landless within the village 2. Forest department vs. village community over benefits from protected lands
Chipko afforestation	As members of the community	Substantial	Panchayat leaders vs. the planters (in this case Mahila Dals women's organisation)
Bhal afforestation	As a specific target group	Limited	Violence between powerful upper castes and lower castes benefiting from the project

In West Bengal, many landless households have benefited from the Government's land reform programme, but in the four districts of southern Bengal, namely Purulia, Bankura, Midnapore and Birbhum, which have extensive tracts of laterised soils, the land that the poor have received is not cultivable. Many such lands are held by farmers, and given the high prices of timber in the wood-starved urban markets, there is an obvious confluence of fortuitous circumstances for promoting tree farming on privately held lands. Substantial proportion of the beneficiaries are very poor households who have benefited from the land reform programmes. In some districts, a tree by the name of Acacia auriculiformis has been planted in large numbers, whose leaves are used as fuel by the local population. The fuel crisis is so acute that many households sweep the forest floor to collect leaves as fuel. Therefore, poor households are happy if they can get an alternate supply of leaves while keeping the wood for sale. To prevent the wood from being stolen by neighbouring villagers, the owners have even developed innovative ways of guarding their plantations like collecting leaves from the plantation on a particular day and sharing their leaves with everyone. Leaves, to some extent, meet the energy needs of the fuel-hungry households, but collecting leaves from the ground will inevitably in the long run further deteriorate the soil.

Such plantations have not reduced the grazing pressure on the forests because, the choice of species being determined by the demands of the urban market, the trees do not produce much fodder. The condition of the land has reached such a degraded stage that even protection of the afforested tracts has not increased grass yield substantially. Therefore, farm forestry in West Bengal cannot claim to have improved the land use situation from an ecological standpoint.

The approach of linking a land reform programme with afforestation is workable only when the land being distributed is not suitable for cultivation. If the land is good for cultivation, then it ideally should be brought under food crops rather than tree crops. The high incomes being generated from tree farming in West Bengal, because of high wood prices, may even lead to conversion of good agricultural lands to tree plantations. In Nepura, a school teacher who had made a large sum of money by planting eucalyptus on a barren piece of land (and who through his example induced 1,500 other families to do the same) has now purchased with his new-found wealth good land on which rice was grown earlier - and a tubewell, and intends to undertake short-rotation, irrigated tree farming on his new land. The West Bengal farm forestry project, though benefiting many poor households, will have to guard against promoting inappropriate land uses, a trend that has not been easy to control in other states. Private forestry will in all likelihood be cash-oriented tree farming and not ecological forestry, and the choice of tree species will be to maximise profits rather than to meet multi-purpose, household biomass needs. The approach that is being widely suggested of privatising the common through tree pattas (a lease on the trees rather than a lease on the land) will inevitably lead to forestry governed by market demand and not by basic survival needs or ecological prerequisites. In any case, further reduction of the area under common lands will adversely affect the remaining poor and lead to greater pressure on the remaining common lands, leading to an even more rapid degradation of these lands.

The best approach would therefore be to protect and enrich the common lands while still retaining them as common lands, so that benefits can be shared by the community, with provisions build in to ensure that the landless and land-poor benefit on a priority basis. The remaining four case studies dealt with here document attempts to enrich common lands while preserving them as commons. They cover two different situations:

(a) the Maharashtra village woodlot scheme and the Xavier's afforestation scheme on saline lands in the Bhal region of Gujarat have been undertaken in villages with high social and economic stratification; and

(b) the Chipko plantations and the Sukhomajri watershed protection have been undertaken in villages with relatively less social and economic stratification, where in a manner of speaking everyone shares poverty.

In the first set of projects, there is considerable mistrust and division within the community, leading even to physical violence, while in the second set of projects it has been relatively easier to bring about equity in sharing the increased output of biomass from the protected areas.

The experience in Maharashtra clearly shows that if the poor have no voice in the community, they will not benefit from afforestation. Trees have been planted on village community lands in the villages of Maharashtra with the intention of meeting the needs of the poor. But the panchayats, which were expected to manage the plantations, are so riddled with corruption and power politics that the interests of the poor in the village have nowhere been protected. In fact, with the introduction of block plantations on village grazing lands, access by the poor to these common lands has actually been denied; panchayat leaders, interested only in financial benefits from these lands, are now auctioning the produce of these "commons". The poor do not even get the grass, which was an earlier benefit. A real danger is that when productivity of the common lands is increased without the involvement and empowerment of the poor, benefits are likely to be appropriated by the more powerful.

But the case from Gujarat shows clearly that if afforestation is done by directly focusing on the poor (not simply as members of the community), then in highly stratified societies, this could lead to serious conflicts and physical violence. Entrenched and powerful interests will oppose schemes which bring benefits to the poor and provide them with economic alternatives. In the villages of Bhal, where afforestation has been done by co-operatives of a scheduled caste, it has led to increasing violence by the upper caste, culminating in a bloody massacre in the village of Golana.

The case studies from Sukhomajri and the high Himalayas show that the protection and enrichment of the commons with the involvement of entire communities work only when the following three conditions are observed:

1. Control

Common lands must be brought under the control of the village community and government agencies divested of their control over these lands.

2. Unity

The entire community must be involved in the protection of the commons under its control. If only a section of the community is involved in the protection of a part of the commons, then at least that section of the community must be homogeneous and it must gain clear control over that part of the commons. In other words, whichever group controls whatever portion of the commons, that group must control the land completely and must protect it jointly. If only a few members of a group are left to protect a common resource against the wishes of the rest, they will fail.

3. Equity

If all members of a group are expected to protect a common resource, they will do so only if all members benefit from the commons equally.

In Sukhomajri village, the water from a common forest watershed, a common resource, is shared equally among the villagers. This fact has linked the interests of the people with the protection of the watershed. Grazing has completely stopped and people have sold their goats and started stall feeding their buffaloes. As a result of this closure and protection, grass production has increased tremendously and is leading to economic prosperity in the village. In the afforestation works undertaken by the women's organisations in the Chipko Movement, again the benefits of protection from the common lands are shared equitably. Women have evolved a simple procedure for distribution of the resources by allocating specific days when protected common lands are opened to villagers for collection of grass.

In both cases, the groups protecting and caring for the common lands have had to assert their rights over the use and management of the lands. In the case of Chipko, the women have had to deal with the village panchayat leaders who legally control the commons.

In Sukhomajri, the villagers have demanded that the Forest Department, which legally owns the watershed, give the village first rights in getting the benefits of their protection work. After years of insistence, the community has been given the first right to cut grass (after payment of a royalty). Today, a large portion of forest lands are lying barren. If village communities like Sukhomajri are not given such a vested interest in the protection of their neighbouring forest lands, it will be difficult to regenerate these barren lands.

A note of caution must be added though to the Chipko and Sukhomajri successes. However outstanding the plantations of the Mahila Mangal Dals in the Chipko Movement and the protection of the Sukhomajri watershed, coupled with equitable distribution of the increased biomass, it must nevertheless be pointed out that these projects are located in areas of high rainfall with soils still in good condition and hence high biomass productivity. In addition, both these areas possess a low population density with a high ratio of common lands to private lands. Therefore, protection and care of commons in both cases has led to rapid and substantial increases of biomass, economically benefiting the protecting group equally rapidly and substantially.

In such conditions, it is presumably easier to bring about unity and equity amongst the members of the group protecting and sharing the benefits of a piece of common land. It would be instructive to study the social dynamics in similar projects situated in areas with low rainfall and poor biomass productivity. Unfortunately, the Chipko and Sukhomajri projects are so unique that we have not been able to find similar projects elsewhere. In areas with low biological productivity, there may be no other option but to take the approach of the Gujarat project whereby the poor alone get control of the commons and of the increased benefits from them. The resentment and violence that this apporoach will generate will in that case simply have to be dealt with.

In all the cases studied, except that of Chipko, we found the role of women was negligible. Women have played a crucial role in the Chipko plantations from determining the choice of species to the management of the plantations, and women have given the project a clear bias towards household subsistence needs rather than market demand. Unfortunately, most government bureaucracies find it impossible to approach and involve women in development

programmes. Therefore, if women are to be involved in afforestation programmes and are to bring their special perspectives to bear on afforestation work, institutional innovations in forestry extension are desperately needed. In most government-sponsored projects we have found very poor communication between extension agents and all the powerless sections of the country. In Maharashtra village, the poor even expressed surprise when told that the village woodlot was actually a panchayat plantation. The state of communications with women is even more abysmal. Neither government extension nor conventional village organisations are yet capable of dealing with the male-female tension that may arise by bringing women into community affairs.

Both the Sukhomajri and Chipko experiences show that the afforestation of common lands by village communities may demand the creation of new forms of community organisations like the Mahila Mangal Dal or the Hill Resource Management Society, which are more democratic and participatory in nature. The elected village councils have in most cases failed to bring about unity within the village community and to represent the interests of the poor by ensuring equity in the distribution of benefits from development programmes.

The choice of these particular case studies should not leave the impression either that most afforestation programmes in India are trying to take into account the needs of the landless and the land-poor. On the contrary, all the projects chosen for the study are exceptional in that they make an attempt to do so, and were selected for study precisely for that reason. Most afforestation projects in India in fact completely fail to take the needs of the poor into account.

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