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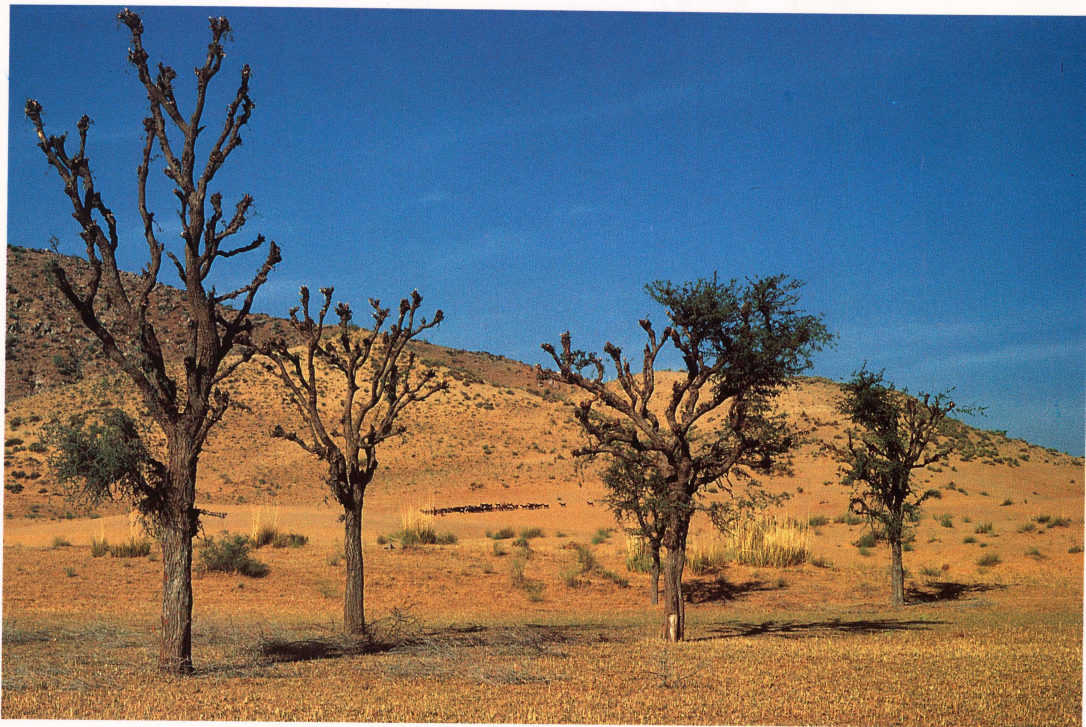
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TROPICAL
FORESTRY
PAPERS

24

Common Property Resource Management in India



J. E. M. Arnold and W. C. Stewart

OXFORD FORESTRY INSTITUTE
DEPARTMENT OF PLANT SCIENCES
UNIVERSITY OF OXFORD
1991

Cover illustration (Photo: C. E. Hughes)

Prosopis cineria on common land in Rajasthan, India,
pruned to provide dry-season livestock fodder.

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No. 24

Common Property Resource Management in India

by

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ISBN 0 85074 119 X
ISSN 0141-9668

Printed and bound in Great Britain by Burgess & Son (Abingdon) Ltd, Abingdon, Oxfordshire

Acknowledgements

This publication is based on a review study undertaken for the World Bank, whose permission to publish it is gratefully acknowledged, and funded by the Overseas Development Administration. It draws on a large body of published and unpublished work on the subject in India, and on discussions with many of the principal researchers. The authors wish to express their appreciation to all those who contributed advice, information and comment during its preparation—in particular Ramachandra Guha, N.S. Jodha, M.V. Nadkarni and N.C. Saxena. Tables 3 and 4, and Figure 1, are reproduced, with the agreement of the author, from a paper first presented by N.S. Jodha at a meeting of the Society for the Promotion of Wastelands Development. Thanks are also due to J.G. Campbell and A. Molnar for reviewing the text, and for their constructive suggestions for its improvement.

Summary

This study reviews the state-of-knowledge regarding common property resource (CPR) management in India, based on published and unpublished sources and discussions with researchers in this field in India.

CPR usage occurs on lands under a variety of customary and formal tenure arrangements. These lands include panchayat and revenue lands, reserved and unreserved forest lands, and private agricultural land under seasonal fallow. There may be multiple use, for different products or by different groups, or at different times of the year.

During the colonial and post independence periods, the uncultivated lands of India which have been used as CPRs have been progressively reduced, as they have been brought under government control or have been privatized. In the last forty years many traditional forms of CPR management have weakened or collapsed owing to increasing population pressure, greater commercialization, certain public policies, technological change and environmental pressure.

The importance of the remaining CPRs in terms of sustainability is basically twofold. First, they fill crucial gaps in the resource and income flows from other resources; providing complementary inputs into agricultural systems often critical to their continued functioning. Second, they are often a major source of support for the poor, who are particularly heavily dependent on CPRs, generally lack access to the resources necessary to develop privatized common land, and benefit considerably from the employment created by CPR management activities.

The strong thrust towards bringing use of common resources under private or government control has often been based on a thesis which confuses degradation due to unregulated use under an open access situation for breakdown in CPR management arrangements. This misunderstanding has been compounded by a tendency to overlook reasons why the alternatives of private or state control may themselves not be sustainable or efficient, and the bias that can exist in property legislation in favour of private property.

The pressures on remaining CPRs will undoubtedly further erode many existing CPR management practices and institutions. Nevertheless, examination of surviving indigenous regimes, and of promising new ones, has identified a number of features which appear to define conditions for viable and sustainable CPR management in appropriate circumstances. These centre round control and management by the user group, securing the rights of the latter to use of the resource, and defence of those rights against intrusion, and investment in outputs that users value and can manage. It is notable that some recent interventions which have been less successful in inducing sustainable communal management, such as most Social Forestry woodlot programmes, have not been consistent with these conditions.

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1. Introduction

Nearly everywhere common property resources have been steadily reduced in extent and importance in modern times. Encroachment, privatization and government appropriation have been the main processes taking resources out of communal control and use. Increasing pressures on what is left have generally led to its progressive degradation, encouraging further expropriation. This sequence of events is now so heavily entrenched in policy and practice in many parts of the world as to make continued privatization or nationalization seem either inevitable or desirable, or both.

This study reviews the state-of-knowledge regarding common property resources (CPRs), and the management of CPRs, in India, with particular reference to forest resources and forest products. It is based on an extensive review of published and unpublished sources, and on discussions with researchers in this field. Most of the work of the review was carried out in India.

At an early stage in the study it became evident that much of the effort would have to be devoted to assembling and collating information that had not been brought together previously, and in establishing a framework for doing so that adequately reflected the range of CPR use and management systems present in the country. It was also clear that this needed to be done separately for three major agroecological regions—mountain and hill areas, semi-arid and arid regions, and the belt of forests across central India

which are primarily inhabited by tribal people. Finally, it was apparent that, apart from programmes such as Social Forestry which extend over much of the country, most of the CPR management initiatives of interest were best evaluated on a case study basis.

In the first part of the report we establish definitions of common property and CPR management, and examine different approaches to analysing CPR management issues, and their relevance to the situation in India. This is followed by a section which outlines the extent and status of common land in the country, and the main changes that have occurred in the past. Section 4 reviews, separately for each agroecological region, the available information on usage of and dependence on common lands and the resources derived from these lands. Section 5 examines examples of surviving indigenous CPR management systems, and a number of new location-specific systems involving forest land which have been making encouraging progress, and Section 6 analyses the attempts to influence CPR usage and management on a large scale through Social Forestry programmes. The final section discusses lessons that appear to emerge about the contemporary role of CPRs, and about the requisites for viable CPR management. Much of the basic information that was assembled in the course of the study is reproduced in matrix form in appendices, together with more detailed information on a number of case studies of joint management between villagers and Forest Departments.

2. Common resources and common property resource management

2.1 Defining common property resource management

A CPR is subject to individual use, but not to individual possession. Furthermore it is used by a number of users, each of whom has independent rights of use. These two characteristics distinguish it from a private good, which is subject to exclusive use and possession by individuals. Use of a CPR by an individual subtracts from what is available to other users. This distinguishes it from a "public" good, consumption of which is independent of the number of users—e.g. the light provided by a street lamp (Blaikie and Brookfield 1987).

A common resource can be said to be communally managed if its users constitute a group that operates a set of institutional arrangements regulating its use, and have the right to exclude others who are not members of that group. It is important to maintain a clear understanding of this distinction between the common resource and common property resource management. Not all commons are managed in any meaningful sense of that term by those who use them. Much usage is of an "open access" nature, characterized by unrestricted entry and unregulated use (Ostrom 1986). Much of what has been written about common property has confused open access situations with common property management arrangements. Verdicts of breakdown in CPR management have all too often been mistakenly passed on situations in which the deterioration actually came about owing to unregulated use under an open access regime.

This misunderstanding has contributed to the strong thrust in both research and practice towards bringing use of common resources under either private or government control. Various arguments have been advanced to establish a case that conditions no longer permit effective user group control; or more fundamentally that the changing environment within which individuals must operate induces behaviour patterns inimical to collective cooperation. An extensive literature in support of these hypotheses has built up around Hardin's concept of the "tragedy of the commons", whereby each herdsman using a hypothetical village common "is locked into a system that compels him to increase his herd without limit", becoming a "free rider" at the expense of his fellow users (Hardin 1968).

However, in recent years this has been increasingly challenged. It has been pointed out that it fails to take into account the factors which encourage collective action, even under situations of increasing stress on the common resource and its users (e.g. Runge 1986). A growing research literature has reinforced this challenge to the earlier conventional wisdom (eg. NAS 1986, McCay and Anderson 1987, Ostrom *et al.* 1988, Berkes 1989).

The earlier arguments in favour of expropriation

also tended to overlook reasons why the alternatives to communal management may themselves not be sustainable. Because exclusion from a CPR is difficult, it may not be feasible to privatize it. Private use can also lead to overuse and degradation. Equally, the state may not be able to control, manage or prevent degradation to a resource that it has "privatized" (Berkes *et al.* 1989). Furthermore, privatization tends to shift control to others than CPR users, so that it does not improve the efficiency with which the needs of the latter are met. Privatization, by transferring control of the resource to a limited number of individuals who thereby acquire the social and legal sanction to exclude others, in fact is likely to exacerbate the problems of the excess of population without access to private property (Bromley and Cernea 1989).

The thrust towards expropriation also tends to overlook the fact that breakdown may reflect a neglect of the institutional underpinnings of CPR management. Common property may not have the same degree of support in law, or elicit the same response when threatened, as private property (Bromley and Cernea 1989). Breakdown in common property systems may therefore reflect deficiencies in policy or policy implementation rather than in its appropriateness as a property regime.

2.2 A framework for analysis

The characteristics of CPR management that were outlined above imply that a degree of co-ordination between users is necessary to create rules of use and exclusion and to enforce them. This is achieved by institutions which perform the function of reducing the uncertainty of users by defining and stabilizing their expectations. Breakdown of CPR management is usually due to institutional breakdown. Therefore study of common property management usually focuses upon how users organize themselves in its use, and upon the sustainability of such organizational arrangements.

A number of analytical models have recently been formulated to provide a framework within which to organize research into CPR management regimes (Oakerson 1986, Ostrom 1986, Gardner *et al.* 1989). From these a number of factors emerge which are generally considered to be important in understanding CPR management. These can be summarized as follows:

The resource

- the size and boundary conditions of the resource;
- the ease with which it can be used by several or many users (subtractability), the ease with which it can be managed to exclude others than members of

the user group (excludability), and its appropriateness for management communally rather than by individuals (indivisibility);

- the role of technology in its management and use, and the cost of alternative technologies;
- the availability, structure and stability of markets for its outputs;

Decision-making arrangements

- collective and constitutional choice mechanisms: procedures to set and change operational rules;
- operational rules: who has access, what actions must or may be taken or not taken, what information must be exchanged, limits on user behaviour, ways and means for obtaining compliance, jurisdictional boundaries;
- role of external legislation and regulations, and of enforcement and support bodies;

Structure of the operational action situation

- number of users, and type of different legal positions they have;
- dependence of users on the resource;
- patterns of reciprocity and non-reciprocity;
- degree of homogeneity in terms of assets, information, skills, cultures, values and payoffs;
- efficiency and equity outcomes.

Such a framework provides a useful starting point for analysis of CPR management regimes. However, what is often referred to as “the commons problem” is in practice not a single well defined problem. Rather, it consists of a family of closely related but nonetheless analytically separate problems; and the analytical problems vary markedly from one CPR environment to another (Gardner *et al.* 1989).

2.3 Common property resource management in India

In applying these concepts and approaches to the situation in India, a number of issues arise. First, there is the range and diversity of CPR situations in the country – which are summarized in Table 1. CPR usage occurs on lands under a variety of customary and formal tenure arrangements. These lands include panchayat, revenue and reserved and unreserved forest lands. Actual use of these lands can deviate from what is prescribed under the formal tenure categories. Many of the panchayat⁽¹⁾, revenue and forest lands have been illegally encroached by individuals for agricultural or grazing use. There may be multiple use, for different products or by different groups, at different times of the year. Common usage of resources also extends to private agricultural land under seasonal fallow (Wade 1988).

Secondly, much common resource usage, which earlier exhibited many of the characteristics of CPR management, by now has more in common with open access—usually within a framework of rules and regulations imposed externally by the state. In addition, use of much common land and resources is being effectively privatized through allocation of rights of use to individuals (e.g. forest industries, logging contractors or persons granted the right to grow trees on common land). Related to this is the dominant position of government in common resource management; which has prompted the comment that “in many parts of India the various institutions of state (notably the Department of Forests) have so curtailed the access of local people to certain CPRs that it is a moot point whether they can still be called CPRs at all... the decision-making rules no longer operate in the village but in the pages of official forest manuals, and through the whim of local officials.” (Blaikie and Brookfield 1987).

Table 1. Common property resources in India.

Common property resource management and use regimes					
Communal use on private property.	Private usufructuary rights on state property.	Communal management on state property.	Joint management of state property; village as partner in access, control and produce.	State property; constrained individual rights.	Open access on state property with few controls on access.
Examples of types of physical resources under different regimes					
Offseason fallow.	Shamilat.	Sacred groves.	Van Panchayats.	Reserved and	Wastelands.
Irrigated fringes.	Sopinabettas.	Aurans.	Village Protection	protected	Revenue land.
Encroached areas.	Benas.	Communal forests.	Committees.	forests.	Poromboke.
Allocated but uncultivable land.	Ghasnis.	Communal grazing.	Hill Resource	Social forestry	
	Tree pattas.	Village ponds and rivulets.	Management Societies.	woodlots.	
		Threshing and dumping grounds.			

⁽¹⁾ See the Glossary for definitions of Indian terms used in the study.

Thirdly, many recent interventions, notably those under the Social Forestry programmes (see Section 6), have shifted the focus from appropriation to provision – i.e. from the flow of outputs from an existing resource (e.g. common grazing land) to creation and maintenance of a new and different resource (e.g. a woodlot). These are likely to present two quite different sets of problems (Gardner *et al.* 1989). Analysis of the effectiveness of the CPR management regime associated with the first may therefore be of only limited relevance to the second. Similarly, as most research about CPR management in India has been about situations under stress and in decline it may provide only limited information about conditions favouring successful introduction of new and contemporary forms of common property management.

Thus, if interpreted in terms of accepted definitions of CPR management, the extent of true CPRs in India is probably quite limited. However, the present study has been designed to examine the broader spectrum of common resource usage which incorporates some measure of collective action or user group control. What follows, therefore, examines a set of situations some of which are only tenuously linked to the definitions of CPR management summarized above.

In this situation the conceptual “models” have also to be interpreted broadly. Much of what follows is concerned more with *de facto* rather than formal CPR management regimes. In the analysis we have drawn on a framework developed by Jodha (1989) in the course of his extensive survey of CPRs in the dry regions of India. On the basis of this, the analysis focuses on three broad categories of institutional factors:

Security

Security of tenure rights to a specific group of users.

Demarcation and defense of the boundary of the resource.

Protection against privatization of the basic physical resource.

Legitimacy of the organization responsible for designing and implementing rules.

Identification of the specific rights of users or members.

Development of rules for outsiders.

Use regulation rules

Quotas, user based fees, royalties, quantity based fees, for different products.

Punishment of infractions.

Division of commercial or long term benefits.

Rules regarding interaction between different formal or informal user groups.

Specific equity rules.

Ability to design and alter use rules.

Development

Control over decisions on new technologies and investments.

Reinvestment of value of harvested and sold products.

Labour inputs for maintenance or new construction.

Concern for long term sustainability.

In addition to the institutional dimension, three other aspects of the CPR situation in each region and example are addressed: the legal framework of rights and privileges, land use patterns and the role of CPRs, and the economic contribution of the latter.

3. The status of uncultivated lands in India

3.1 Law and tenure relating to uncultivated lands

The breakdown by category of India's approximately 329 million ha of land is shown in Table 2. The proprietorship of uncultivated lands in India at the time of British occupation varied in accordance with the historical and political conditions prevailing in each province. Despite its complexity, it broadly approximated to two types.

The villages in western and southern India contained a number of individual cultivators, while the Rajahs claimed all areas which were not cultivated (Ribbentrop 1900: pp 86-122). The cultivators apparently answered to a local village headman, who was in charge of the uncultivated land of the village. Anyone wanting to extend cultivation could apply to the headman, and obtain land without difficulty.

In the other type of village, one family claimed to be owner or landlord of the entire area. The uncultivated portion of the village was the common property of this group, which over time came to consist of several families. This proprietary body would locate tenants to cultivate its land, and tenants of longer standing could graze their cattle on the shamlat (the term used in north-west India for commons) of the landlord, as long as they did not cultivate it.

The two systems of land settlement evolved by the British, ryotwari and zamindari, were based on the above understanding on their part about village proprietorship in India. Uncultivated lands became government property in western and southern India, but were generally settled as part of the zamindar's estate in eastern and northern India.

In ryotwari states all wasteland, except that allowed

for village use as grazing land, remained government property. There were some local variations, though, to take care of existing land use practices. For instance, in the Western Ghats, certain patches of wood and grass-bearing land were attached to each cultivated landholding, and were allowed to form part of the holding under a stipulation that this could not be cultivated or separately alienated.

It is of note that grazing was considered of secondary importance in settling the area of village commons in the 19th century (Baden-Powell 1894). Plough cattle were the chief, if not the only, cattle which were kept in those days, and these were stall fed. The uncultivated commons inside the village were retained in the ryotwari provinces, and in Central Province, not so much for pasture, but for land which in future could be brought under the plough.

When forest reservation began, the village uncultivated land was not touched, but the unoccupied and "ownerless" land outside the village was declared as government land, and then reserved as per the provisions of the Forest Act. Where people had legal or customary usufructuary rights, forests were classified as protected forests. At the turn of the century the areas under reserved and protected forests were 20 million ha and 2.4 million ha respectively (Stebbing 1926). In addition to these two categories, there were private forests (distinct from private groves), i.e. lands shown as having trees in the revenue records, but settled with individuals like zamindars.

As pressure to bring more area under government control increased, lands under shifting cultivation, or woodlands which were always considered part of the landholding, like betta lands in Coorg used for supporting arecanut plantations, were also declared as forest lands. But a prescriptive and existing right to

Table 2. Estimated land resources in India (Chambers *et al.* 1989).

Category	Sub-category	Area (million ha)
Lands considered fit for vegetation	Cultivated land	142
	Forest land	67
	Fallows/culturable wastes/pastures/groves	55
	Total area of culturable lands	264
Lands considered unfit for vegetation	Uncultivable wastelands (permanent snow, ice, rock outcrops, desert, etc.)	20
	Urban and other non-agricultural lands (towns, roads, rivers, etc.)	20
	Area for which no records are available	25
	Total area of unculturable lands	65
Total land area		329

the use of uncultivated lands was recognized in law even after declaration of these lands as forest lands. Even today, almost half of forest land in Orissa is under shifting cultivation practices.

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

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

3.2 Trends in land allocation and use

In the 19th century up to two-thirds of the land in India were under community control (C. Singh 1986). Privatization and government appropriation have been the two main processes which have reduced this proportion. Although there was much regional and local variation, even at Independence large areas remained under community control, especially in tribal belts. However, since Independence, survey and settlement operations have diminished these areas. Land settlements carried out in the last 40 years have recognized communal tenure only in the northeast Indian states.

In parts of Bihar there is a dispute between the Revenue and the Forest Departments regarding the exact status of tribal forests, called khuntkatti forests; the former regards them as communal land whereas the latter considers them now to be forest property. In other tribal areas communal ownership, control and management may exist in practice but has not been recognized by the formal legal system (Roy Burman 1987). There is no provision under the Indian Forest Act for recognition of community rights; only rights of individuals are recognized.

During the last two decades much of that part of common land that is cultivable without substantial investment to improve its productivity has been allotted to the rural poor. About 200,000 ha of cultivable wasteland were distributed to the poor during the 3rd and 4th Plans under a centrally sponsored scheme (GOI 1988). Other land allotted includes 1.78 million ha made available when land holding ceilings were introduced (GOI 1985:133),

and perhaps an equal amount of government wasteland. In addition, 1.87 million ha of bhoodan land was taken over by the state governments, of which 0.9 million ha has been distributed, mostly in Bihar, Orissa, U.P. and M.P. (GOI 1986: 126). The total allotment of degraded lands has thus been in the order of 5 to 6 million ha.

Wherever agriculture was possible, land that had not been allotted has usually been either encroached upon, or has had earlier encroachments regularized. Accurate estimates of the areas involved are very difficult because of the illegal nature of much of the use, and because revenue records have not been updated. In the 30 years to 1980, land categorized as cultivable waste declined from 16% of the area for which records existed to 9%, while the cultivated area grew from 42% to 46% of the total and the area classified as forest rose from 15% to 22% (Farmer 1974, ISAU 1957). Much of the common land that remains is of low productivity and is likely to remain uncultivated.

3.3 Appropriation and access

The boundaries between different land under different tenure regimes are often not clearly demarcated, especially for lands far from the village centre. Access can be controlled by the legal owner in almost all cases, but the large boundaries and low resource value per area make it impractical to guard in most cases. The settlement process of the British as well as later revisions after Independence often missed the local distinctions in land classification so that many well-defined local resources such as pastures, ponds, and forests, were simply classified as state revenue land. Although CPRs are usually a minor portion of the total village resources and have been privatized in many areas, the remaining village CPRs can be a source of considerable conflict often requiring settlement in the legal system.

Both forest and revenue lands have historically been common property resources. Sequences of exclusion and appropriation have varied. Often these lands have been open access lands, where all can use a resource freely, whereas in some places these can be used only by a community or group.

The state has complete and exclusive rights to trees in Reserve Forests (40 million ha in 1986-87), and private owners of land theoretically have complete and exclusive rights to trees on their land (though in practice government regulations restrict what they can do). In between there are many overlaps and combinations of state, community and individual rights.

In Protected Forests (22 million ha) people have rights of collection of fuelwood and other subsistence items. The colonial forest policy provided that declaration of an area as forest should not abridge or affect any existing rights or practices of individuals and communities. These rights, of collecting firewood, timber and other products, are fairly extensive, well documented in Forest Settlement Reports, and have not been curtailed by the successive state governments.

However, there is much evidence to show that people's access to forests, and their ability to exercise their rights in practice have deteriorated widely, for a variety of causes. Deforestation means that for many the forest is now further away, increasing the burden of collection. In addition, large areas of forest have been cleared to make way for plantations of industrial tree species; and long-term agreements with industry to provide supplies of wood have been superimposed on local rights in other areas. Uncertainty on the part of local people as to their rights, and difficulties encountered by Forest Departments in exercising control, often result in excessive use, so that many areas used to meet local needs are degraded. Nationalization of minor forest products, though undertaken with the intention of safeguarding the interests of the producers, has in practice adversely affected their interests by disrupting the trade in these products in ways which have reduced the income of the gatherers.

The Forest Conservation Act of 1980 in effect transferred much of the control over forest lands from the states to the centre, by requiring the approval of central government for dereservation of forests or the use of any forest land for any non-forest purpose. However, the manner in which forests and forest lands were managed remained the responsibility of states, under the terms of the Indian Forest Act.

Under the Indian Forest Act, state governments may assign to any village community the rights of government to or over forest land as a village forest. However, a December 1988 amendment to the Forest Conservation Act extended the requirement for central government approval to any state government action which assigned any forest land to any private person or organization not owned, managed or controlled by government. This has cast doubt on the validity of the large numbers of village forest agreements, and of the variety of other leasing and benefit sharing arrangements that exist between state governments and local communities and people.

The amended Forest Conservation Act also places the same restriction of prior approval on the planting on forest lands of non-forest crops. As this term has been defined to include horticultural crops, oil-bearing plants, palms and medicinal herbs, concern has been expressed that growing certain tree and medicinal plant species, the produce from which figures prominently among that covered by usufructuary rights, may be discouraged.

Many of what are known as "unclassed forests" (13

million ha) are village or community forests with various forms of group access. On privately owned land, there are quite often state restrictions on felling trees of certain species. On all tenures of lands, extra-legal appropriation is widespread.

Revenue lands comprise two categories: government wastes which are owned by the government but used by the community; and grazing lands which are vested in village bodies. There is little *de facto* distinction between the two categories, as both are used for grazing, and are generally considered degraded. They are also referred to as common or community lands. It has been estimated that on average there are about 20 ha of such lands per village, but there is much regional variation as well as variation between neighbouring villages (Chambers *et al.* 1989).

Tenurial rights governing the use of land may be affected at one or more of five different levels:

- 1) customary or traditional rights at the social custom level (e.g. village grazing rights);
- 2) administrative orders regarding use of lands (e.g. Forest Department rules concerning collection of headload fees);
- 3) court rulings regarding existing legislation;
- 4) state and national legislative statutes regarding rights over lands; and
- 5) constitutional law regarding citizens' rights in land (C. Singh 1986).

Conflicts over use rights occur because there is a discrepancy in the rights at two or more different levels.

In practice, the rights and practices which determine who has access to and can appropriate and use revenue lands are generally a matter of convention. The village panchayat may legally be in charge of these lands in the northern states, but as the panchayat consists of several villages, each having its own common lands, the authority of the panchayat over day-to-day control may be quite weak, and the elite of the village may exclude other villagers of the same panchayat from using the commons. At the same time it should be remembered that, contrary to what is often asserted, the tradition of actual control over village commons by the villagers is not strong—these lands were either controlled by the government, or by the zamindar. It was generally only in remote areas, where the presence of the state or landlord was not felt, that traditions of communal control and management sometimes emerged.

4. CPRs, land use and the agricultural system

The characteristics and role of CPRs are determined in large part by the surrounding ecological and agricultural systems. These affect not only the nature and extent of the common resources, and complementarities between CPRs and private property resources, but also the broader framework of institutional, social and economic factors which influence the extent to which resources are managed communally.

4.1 Semi-arid and arid regions⁽¹⁾

Common property resources in semi-arid and arid regions of India have been more fully integrated into the legal and revenue collection systems of various governments than is the case in other regions. Revenue collection was common traditionally even for remote villages, and taxes were placed on the products or the households which used relatively large areas of CPRs. In north and west India, a clearly defined set of local institutional arrangements were developed for CPRs, and despite large scale privatization and encroachment many individual CPRs have survived. This is much less true for south India where the state governments presently have legal jurisdiction over much of what can be considered CPRs, and extensive privatization and degradation of the remaining areas have radically altered the actual value and use of these rights.

The matrix in Appendix A1 summarizes the array of possible rights and privileges of different claimants on land with different tenure status. In contrast to the hill and forest regions, use of forest lands for CPRs is rare, and the status of CPR lands is less ambiguous. In general, states in the northwest and west of India have more detailed legal categories and rights for local or state controlled CPRs than states in the south. Land use is influenced by the highly variable qualities of the resource base. Standardized prescriptions for improved land management such as those implemented with success in irrigated tracts or homogeneous forest areas have generally failed. The major factors in overall land use patterns appear to be the level and variability of rainfall, patterns of private land and asset (especially livestock) ownership, population density and migration patterns, market forces, and technological changes.

Common property resources in dry regions are considerably smaller in area than those in wet mountainous areas. Traditionally their main role has been to complement the highly variable level of private agricultural production. Historically, uncultivated land was held as a pool for future expansion of cultivation, with sub-marginal lands within villages often reserved as village commons in order to prevent their use for arable farming, and to use them less intensively for fodder or trees. With increases in pressures on the available arable land, a large percentage of the

draught animals that are needed for dryland agriculture have been maintained on non-arable CPRs.

Vegetation on CPRs helps farmers guard against the risk of unstable rainfall, forming a major source of fodder, food and saleable products in the long period when there is little or no crop production or stored supplies from the last harvest. This role is especially important during extended periods of drought. During poor rain years, more fuel, fencing, and thatching material is also collected from the CPRs. The greater stability in biomass production they exhibit is a major advantage of maintaining CPRs and represents a slack resource in relatively good rain years.

Substantial regional differences have been noted. In arid regions, primarily western Rajasthan and western Gujarat, which have large areas of sub-marginal land which cannot support agriculture, grass resources are often greater than are in demand locally, as livestock numbers are restricted by limited availability of drinking water and off-season fodder, and the land provides a surplus for sale. A significant percentage of villages in the semi-arid region depend primarily on rainfed agricultural crops and are less dependent on CPRs. In regions with expanding irrigation, such as northwest India, Tamil Nadu and Gujarat, the impact of the decline of traditional CPRs has been offset in part by new productive CPRs such as grassy field boundaries, weeds in irrigation channels, and increased crop residues.

Jodha, who has carried out by far the most comprehensive study of CPRs in dryland regions, has summarized his findings on the importance of CPRs, especially for the poor, in Table 3.

Table 3 suggests the following inferences. The rural poor receive the bulk of their fuel supplies and fodder from CPRs. CPR product collection is an important source of employment and income, especially during the periods when other opportunities are non-existent. Furthermore, CPR income, despite the likelihood of its significant underestimation, accounts for 14 to 23% of household income from all other sources in the study villages. More importantly, the inclusion of CPR income in total household incomes from other sources reduces the extent of rural income inequalities as indicated by lower values of the Gini coefficient. (Jodha 1989).

Privatization and encroachment have massively reduced the area of CPR land, and have concentrated it in low productivity sites least suited to cultivation. This, together with more intensive use resulting from the reduction in area, has led to widespread degradation -- and a reduction in the number of bullocks in many areas and a switch to tractors (which can in turn facilitate encroachment of large areas of CPR land, and encourage the removal of trees and shrubs, to the detriment of CPR supplies of fodder which the latter provide).

⁽¹⁾ For the principal references, see Ahuja and Rathore 1987; Bhagavan and Giriappa 1987; Blaikie *et al* 1985 and 1986; Brara 1987; Damodoran 1987; A. Gupta 1985; R. Gupta 1988; Iyenagar 1988; Jodha 1985, 1986, 1987, 1988 and 1989; Kaul 1987; Shankarnarayan and Kalla 1985; Shah 1989; Walker and Ryan in press; Wade 1987 and 1988.

Table 3. Extent of people's dependence on CPRs in dry regions of India¹ (Jodha 1990).

States (with number of districts and villages)	Household categories ²	CPRs Contribution to household supplies, etc				
		Fuel supplies ³ (%)	Animal grazing ⁴ (%)	Employment per household ⁵ (days)	Annual income per household ⁶ (Rs)	CPR income as proportion ⁷ (%)
Andhra Pradesh (1, 2)	Poor	84	—	139	534	17
	Others	13	—	35	62	1
Gujarat (2, 4)	Poor	66	92	196	774	18
	Others	8	14	80	185	1
Karnataka (1, 2)	Poor	—	83	185	649	20
	Others	—	29	34	170	3
Madhya Pradesh (2, 4)	Poor	74	79	183	733	22
	Others	32	34	52	386	2
Maharashtra (3, 6)	Poor	75	69	128	557	14
	Others	12	27	43	177	1
Rajasthan (2, 4)	Poor	71	84	165	770	23
	Others	23	38	61	413	2
Tamil Nadu (1, 2)	Poor	—	—	137	738	22
	Others	—	—	31	164	2

¹ Based on village/household data from study villages reported by Jodha (1986).

² Number of sample households from each village varied from 20 to 36 in different districts. "Poor" are defined to include agricultural labourers and small farm (<2 ha dryland equivalent) households. "Others" include large farm households only.

³ Fuel gathered from CPRs as proportion of total fuel used during three seasons covering the whole year.

⁴ Animal unit grazing days on CPRs as proportion of total animal unit grazing days.

⁵ Total employment through CPR product collection.

⁶ Income mainly through CPR product collection. The estimation procedure underestimated the actual income derived from CPRs (see Jodha 1986).

⁷ CPR income as per cent of income from all other sources.

Richer farmers have been able to hold on to sub marginal lands but keep most of it under private fallow. There is also an increasing tendency to privatize the crop by-products which provide seasonal CPRs, as the demand for fodder increases while the CPR lands shrink. In areas with high pressures on CPRs, levels of economic benefits other than for fodder and fuel have been reported which are significantly lower than those found by Jodha (Iyengar 1988, Blaikie *et al.* 1986).

The poverty of those utilizing CPR land is also an impediment to application of improvement programmes. Watershed based approaches which have proved acceptable to farmers who have benefited from well organized and subsidized agricultural inputs and land improvements, have been considerably less successful in upstream areas under a variety of CPR management regimes. Much of the land has been encroached by poor farmers without the security of tenure and alternate income sources necessary if they were to undertake the recommended land use packages based on perennial trees and grasses.

4.2 Hill regions⁽¹⁾

Although the different hill regions vary considerably in terms of vegetation they have broadly similar patterns of village-forest interactions. For most villages in the Himalayas and the Shivaliks there is heavy dependence on CPRs from forest lands. Over the last century Forest Department control over forest land and products from those lands has expanded considerably, to include nearly all steep uncultivable lands. If all forest land not under intensive management is included, CPRs comprise 60 to 80% of wet forest regions in the Himalayas, Shivaliks and parts of the Western Ghats.

CPRs in the mid to high Himalayas are a main source of the high inputs of green manure required to sustain upland agricultural production, and of grazing and collected animal fodder to sustain the livestock which play a major role in the agricultural economy. They are also the source of the considerable amounts of wood needed for cooking, heating and house construction.

⁽¹⁾ See Ballabh and Singh 1988; Boorman 1980; Chopra, Kadekodi and Murthy 1990; Czech 1986; Gadgil 1987; Guhu 1983 and 1985; Melkania 1988; Mishra and Sarin 1987; Majumder-Bisht 1987; Moench 1988; Nadkarni *et al.* 1989; Palit and Raha 1988; Prasad *et al.* 1985; Saxena 1987; Stewart 1988a, 1988b and 1988c; Tucker 1986; Vidyarthi 1987.

The amount of forest land required to support farm livestock can be very large. Little information exists on how individual households manage fodder throughout the year, especially when they move the composition of their livestock towards higher value animals, or on attempts by local organizations to enforce more intensive management of fodder resources through seeding, rotational grazing, deferred grazing, top feeding and stall feeding.

Village level studies demonstrate that open grazing provides only a fraction of the total fodder supplies for many villages, but is often the resource of last resort if other fodder is not available. The information reviewed suggests the existence of significantly more sophisticated strategies of fodder provisioning of hill animals than the common notion of continual free grazing. In particular, there can be pronounced alterations to livestock composition and free grazing patterns when significant new sources of fodder are available all year round. This shift is due in large part to increased milk marketing, stall feeding of higher quality animals, access to outside off-season fodder and concentrates, and more crop by-products from irrigated land.

Nevertheless, in many areas the pressure of local animal herds, in combination with nomadic herds, firewood cutting and logging, has led to a significant drop in the productivity of the land as well as to increased erosion problems. Investments in physical soil conservation structures in erodible watersheds are common, but there is little change in the land use of the watershed except to try to reduce pressure through policing.

Two institutional problems relating to the distribution of benefits from forest products are evident. One is the close relationship between long term rights to trees and full privatization. Another is the difficulties involved in developing equitable arrangements for distributing uncertain future profits. Consequently, although the economic value of many hill area CPRs would be higher if they had larger populations of trees and bushes, most successful management arrangements centre around the distribution of annual grasses and fallen wood.

In the Western Ghats, the level of rainfall is considerably higher than in the other hill areas and supports different forest and agricultural systems. Various CPR situations are found in different states. These include an important form of private usufruct rights on state property—the betta (or sopinabetta) forests in Karnataka. These are owned by the Government, and controlled by the Forest Department, but are managed by arecanut orchard owners, who use them to provide the large quantities of green manure and new soil required to maintain orchard productivity. “Minor” forests in the same areas are used by local residents, and outside firewood cutters and herders, to provide fuel, grazing, etc.

Recent research (Prasad *et al.* 1985, Gadgil *et al.* 1985, Gadgil and Guha 1989, Nadkarni *et al.* 1989) has shown that both the betta and minor forests are being heavily mined, with open grazing constituting

one of the main drains on the latter. Arecanut orchards can be a profitable and sustainable land use if the management of green manure production is improved. Unlimited access to the forests, and inequitable distribution associated with hereditary rights to betta forests, have been identified as the major constraints to institutional and operational improvements.

4.3 Forest region⁽¹⁾

Traditionally, CPR management covered the greater part of land in the forest region; which is defined for the purposes of this study as the forested tribal belt of central India stretching from West Bengal to Gujarat. The issues surrounding CPRs in this zone are the most difficult to summarize because of the great diversity of forest communities and situations, and the rapid changes in land and resource use that have occurred.

The codification of traditional resource use patterns into law often left serious anachronisms in their legal status and rights. Together with significant encroachment, the difficulty in defining common rights in many forest areas has led to most of the land becoming legally state or private land, irrespective of its actual management and use. Many areas ended up being officially classified as forest or revenue lands with very limited private or village rights. The high degree of forest cover also meant that Forest Departments had relatively more powers, often without the checks and balances built into the legislative, administrative and judicial systems common to other parts of India. The matrix reproduced as Appendix A3 summarizes the more common rights and *de facto* use of products by different claimants on different land tenures.

Compared to mountain and dry regions, CPRs are relatively less important as a source of inputs for agriculture. Animal traction is less common than in flatter dry regions and large applications of green manure are not common.

The main importance of CPRs in these areas lies in their role in terms of minor forest produce for sale, food during lean periods, medicinal plants and other products for local use, and sites for shifting cultivation. Many tribal groups still collect over 50% of their food from forest areas, and CPR products usually make up a greater portion of total products consumed than in other regions. Earnings from the collection of minor forest products (MFPs) such as sal leaves, tendu leaves, mahua flowers, sal seeds, lac, medicinal herbs, honey, bamboo and other plants are a major source of income for many households in or adjacent to the forest. This source of income is particularly important for women. However, the share of the market value retained by the original collectors is low.

This region experiences the greatest conflict between state claims to a large portion of the CPRs and the livelihoods of the people, as MFPs also account for major portions of Forest Department revenues in the respective states.

⁽¹⁾ See Anderson and Huber 1988; Chambers, Saxena and Shah 1989; Fernandes *et al.* 1988; Kulkarni 1988; Gadgil and Malhotra 1982; Olsson 1988; Rath *et al.* 1988; Roy Burman 1987; SIDA 1987; C. Singh 1986; K. Singh 1988; von Furer-Haimendorf 1985.

5. Contemporary common property resource management systems

Traditionally the sustainability of CPRs was protected by an array of controls mainly designed and enforced at the local level. Decreasing regulation of common land use, expanded private land ownership, expanded credit and subsidies for animals and more marketing links for CPR related products (mainly milk, meat, wool, fuel, and various other bush and tree products) have had an enormously negative effect on the status of CPRs. However, many have survived, at least in part, and a number of recent initiatives to revive CPR management arrangements, or stimulate new ones, have made some progress. In this section, a number of examples of both are examined; again grouped within the three regions which exhibit markedly different patterns of CPR endowment and use.

5.1 Semi-arid and arid regions

Large scale government interventions in dry rainfed regions have met with considerably less success than those in high rainfall or irrigated regions. Compared to the Himalayan forest regions, there are few examples of effective management and few if any examples of bureaucratically motivated joint management approaches.

Much of the reason is institutional, as external agencies or private entrepreneurs cannot invest the same level of capital or skilled labour in regions where output and returns to investment are low. In addition, the comparatively low value of the resource rarely justifies intensive policing or guarding.

Table 4. People's adaptations to changing situation of CPRs in dry regions of India (Jodha 1990)

Measures adopted by different groups in the face of decline in area, productivity and management systems of CPRs.

Rural rich	Rural poor	Rural community (general)
1. Withdrawal from CPRs as user of products: opportunity cost of labour higher than CPR product value 2. Increased reliance on alternative options: —Own bio-mass supplies; (stall feeding, etc.) —Non-renewable/external resources (e.g. replacing stone fencing for thorn fencing, wooden tyres for carts, iron tools for local, wooden ones) 3. Private squeeze on CPRs as assets: —Grabbing CPR lands —Preventing others using seasonal CPRs (private crop lands during off-season) 4. Approach to CPR management: —Indifference to decline of CPRs —As rural influential party to non-functioning legal and administrative superstructure for community resources	1. Use of CPRs as an important source of sustenance: complementarity of CPR and PPR-based activities 2. Acceptance of inferior options: —Opportunity cost of labour lower than value of products of degraded CPRs 3. Measures reflecting desperation: —Premature harvesting of CPR products —Removal of roots/base of products —Over-crowding and over exploitation of CPRs —Use of hitherto unusable inferior products	1. Acceptance of CPRs as open access resources: over-exploitation without users obligations, regulations 2. Selective approach to specific CPR units: despite general neglect of CPRs, concern for some units 3. Focus on "other" uses of CPRs: item in seeking government subsidy/relief, in running factional quarrels, in populist programmes, etc. 4. Part of non-operating legal and administrative measures 5. Structural changes/focus on alternative sources: —Changes in livestock composition (replacing cattle by sheep/goats, etc.) —Agro-forestry initiative (revival of indigenous agro-forestry, etc.)

Furthermore, in contrast to the situations in the hills, the relative importance of CPRs varies significantly between households. Richer households have more significant private resources and privatization is usually their desired goal for CPRs. The poor on the other hand are much more dependent on CPRs but lack the political or economic power to improve the productivity of the CPRs.

Jodha (1989) presents the most thorough analysis of the institutional characteristics relating to CPR management for dry regions in India. He found that of the communities that in 1950 had exercised controls such as rotational grazing, seasonal restrictions and watchmen, only 10% had such controls in 1980, while use of fines, taxes and fees had ceased altogether. Most CPRs had become an open access type resource and "were characterized by indifference and complete neglect on the part of the villagers" (Jodha 1989).

From his analysis of 176 specific common property resources which exhibited at least one instance of local concern to protect them, Jodha suggests that small size, isolation and maintenance of traditional social sanctions, are village level factors associated with preservation of CPR management. More specifically, greater distance from market centres, smaller and more visible CPRs, less occupational change, less factionalism, less socio-economic differentiation, and less dependence on state patronage were found to be important in this respect. It is notable that most of these factors are difficult to alter, and provide only limited insight into how new interventions or policies could support CPRs in relatively less advantageous conditions.

However, new patterns of local intervention in CPR management could also be discerned in some situations, as follows (Jodha 1990):

- most CPR management events were by-products of other developments such as factional quarrels in the villages or specific conditions of government grants to the villages, or adherence to certain rituals and religious sanctions;
- higher CPR productivity and yield induced better management, particularly where the gains are shared more equally;
- the location, size and proximity to the village played positive roles in management of CPRs;
- genuine concern against degradation and misuse of CPRs also induced local action.

More detailed analyses exist for a number of examples of situations which do fall into the category of sustained concern and action with respect to CPR maintenance. They all go beyond simple area protection and involve substantial development of new institutional structures and rules. They therefore provide a basis for extending analysis of the factors influencing sustainability of CPR management beyond the first order determinants for survival identified by Jodha. Appendix B3 summarizes the results of analyses of four such examples. Two of them have significant external organizational assistance, the other two are entirely local.

The two local examples relate to Village Councils in a number of villages studied in Andhra Pradesh (Wade 1988), and Committees of Mukhias in 22 villages surveyed in Rajasthan (Brara 1987). In the first, the Councils manage the use of stubble available seasonally on private agricultural land. In the second, the Committees manage use of fodder leaves, grazing, thatching grass and small wood from permanent pasture on revenue or forest land. Comparing the two, a number of significant institutional similarities are apparent:

- the council/committee is an unofficial body which has no ties to the panchayat or other official intermediary bodies;
- the committee/council is dominated by the elite and powerful households of the village, but cuts across some caste boundaries;
- intelligent leadership has been important in protecting the benefits of the CPRs from the state;
- there is a high level of awareness and discussion within the village;
- rules are simple but cover most possible infractions;
- numerous checks and balances exist to protect money collected from auctioning CPR products;
- funds for guarding are raised from collective resources, such as the profit from auctions, rather than from households.

The two examples with external support are both in Gujarat. One relates to fodder farms initiated by dairy cooperatives, which manage year round production and use of green fodder produced on village grazing or revenue lands. The other concerns Gram Vikas Mandals set up with the help of the Aga Khan Rural Support Programme to manage seasonal grass and tree products on village pasture, revenue land or degraded forest land. These two cases also display interesting similarities, despite quite different origins:

- the impetus to undertake the projects came from outside, usually with the support of influential leaders;
- the organizational model is considerably less dominated by powerful families than in the two earlier examples;
- investment costs were not borne by villagers but maintenance, operation and reinvestment costs were met out of the net surplus from the project;
- distribution rules for grass favour households with less private resources; but other benefits (such as subsidized credit) are provided in proportion to private resources;
- strict rules are employed to protect against excessive access by individuals through open grazing with large herds of animals;
- rules vary widely, and can be changed frequently provided the changes are first discussed and evaluated for effectiveness.

The cases from Andhra Pradesh and Rajasthan suggest that a valuable resource that is difficult to

privatize can be the basis for relatively complex and successful CPR management. In both cases, the profits are used for collective benefits, such as a village school or domestic water system; there are no private financial benefits. Considerable checks and balances are built into the systems to control "free riders" and to handle the relatively large sums of money collected. The two projects in Gujarat show how price and opportunity cost of labour mechanisms can be used to direct the benefits from considerable external investment to poorer members of the newly created village level institutions.

5.2 Hill regions

Hill villages are generally more homogeneous than those in the plains (Saxena 1987). However, a number of regional factors seem to limit this apparently advantageous basis for forming institutions to manage CPRs. In some areas villages are of relatively recent origin, created by migration from the plains, and lack historical bonds and structures. In other areas, villages have changed character because of substantial out-migration, mainly of male household members to the plains. In many cases, the remaining population lacks sufficient labour to maintain the tending practices necessary for sustainable production.

Overall, the main reason for lack of effective village institutions for CPRs in hill areas is the fact that most of the resources are now legally the responsibility of the Forest Department, which has management goals and practices very different from those of the villagers. While extensive rights and privileges to the forests have been codified, there is usually little reason for individual villages to invest the required energy in creating new institutions if they have little leverage on changing the overall management practices.

The following cases, which are reviewed in more depth in Appendix C, are examples of situations where the Forest Department has reversed the trend of increasing control over forest areas and given specific powers to local institutions. Although each case is unique there are a number of similarities. In all cases the Forest Department had legal control over large tracts of degraded forests but was unable to increase their productivity. Villagers, on the other hand, had great difficulty in securing the forest products they needed for direct consumption and to support their agriculture. In order to resolve these problems, local control was increased under agreements whereby villagers would get a much larger share of future produce if they managed present use to allow for regeneration. In some, but not all, cases external funds and assistance were also provided to assist the regeneration process.

The village, rather than the official, larger, unit of local administration, the panchayat, was chosen as the user group. New rights have sometimes been created when protected and reserved forest land is

involved in the agreements. Whereas the Van Panchayats, which originated in the 1920s, are fully accepted legal organizations, the institutional arrangements in the other, more recent, examples have not yet been fully accepted by the finance and legal departments of the respective state, and national, governments.

The salient features of the institutional arrangements in each are outlined in Appendix B2, and can be summarized as follows:

Van Panchayats, Uttar Pradesh

The Van Panchayats (Appendix C1⁽¹⁾) were introduced in the 1920s by the civil administration which acted as a buffer between the Forest Department and the villagers after a period of intense agitation against a major expansion of British control over forest resources in the Uttar Pradesh hills. A category of Class I forest, of little or no commercial importance, was established to be managed by a village body under a set of government rules. The Forest Department retained control over timber and resin management.

Though many of these village bodies have ceased to function, new Van Panchayats continue to be formed. Individual Van Panchayats have adopted different rules and regulations, within a common framework. The rules have often evolved considerably over time, in response to changes in the demand and supply situation, and to changing involvement of the state.

Opinions on the relative success of Van Panchayats vary widely, but key factors for such success as has been recorded appear to include the following:

- confidence in government mechanisms for adjudicating boundary disputes and larger scale external incursions;
- confidence in the leadership of the Van Panchayat (either free and open elections or widely accepted traditional leadership);
- ability to support a guard system against encroachment and illegal felling;
- internal rules which ensure equitable distribution and compliance, and a rule making mechanism which allows rules to be changed as needed.

The focus in most Van Panchayats has been on production and distribution of annual products such as grasses and leaf fodder; apparently partly due to the degraded state of the original resource, but in part to delays and impediments in releasing the Van Panchayat share of the proceeds from the resin tapping and the sale of timber controlled by the Forest Department.

Hill Resource Management Societies, Haryana

The original impetus to form the Hill Resource Management Societies in Haryana arose from the need for some group to manage new village level irrigation systems and enforce a ban on open grazing

⁽¹⁾ See also Ballabh and Singh 1988, Vidyarthi 1987, Guha 1983 and 1985, Tripathi 1987, Saxena 1987.

in the immediate catchment of the reservoir (Appendix C2, and Stewart 1988b and c, Mishra and Sarin 1987). Under the system, members of the Societies lease the harvesting rights to grass which was previously auctioned to contractors.

The basic tenets of the Hill Resource Management Societies were as follows:

- each household had equal rights to all resources;
- no open grazing of the catchments would be allowed;
- irrigation fees would be collected to cover operating and maintenance costs;
- surplus funds would be reinvested to improve the natural resources or for other agreed upon village infrastructure;
- a few outside members would be in the society to provide technical advice, linkage to government bodies, and assistance in conflict resolution;
- annual elections for the secretary, treasurer and a few other members of the executive committee.

The approach thus involves the use of fees to legitimize user group control over a certain area. This can create problems, both because of the need to raise substantial sums of money from relatively poor villagers to pay the fees, and because of the risk that the grass would be resold to outsiders for the profit of just some members.

Problems have arisen where a society does not represent all members of the village, and the approach has been less successful in large villages with a number of different caste groups than in smaller more homogeneous villages. There have also been problems where members have not had prior experience in harvesting grass and other local products, where the irrigation interventions have started before the Society has been set up, and where there has been either too much or too little involvement by the Forest Department.

Village Development Committees, Himachal Pradesh

Village Development Committees (VDCs) are the principal institutional vehicle in the Indo-German Dhauladhar Project in Himachal Pradesh. This project is concentrated in a single watershed below the Dhauladhar mountains, and is concerned with strengthening local capabilities to manage village forest, grazing and shamlat (communal) lands. The area is one in which landed families have long had established usufructuary rights, and where in the past management was for some time entrusted to forestry cooperatives made up of land holders.

The project is distinguished by its focus on invigorating traditional village organizations as the basis for local management of village resources, and by the magnitude and range of the inputs provided. The project works principally through VDCs, which are unregistered bodies centred on traditional informal leaders. In addition it involves local women's clubs (Mahila Mandals), youth clubs (Yuvak Mandals) and

drama clubs (Natak Mandals), which are registered bodies, in order to enhance communication between the project and villagers (Czech 1986).

The project strategy focuses on enclosure to allow regeneration and replanting, within the framework of a local integrated management plan, and depends on the VDC or other village institution securing a consensus for closure and the elimination of free grazing. The VDC is also responsible for securing agreement on distribution of benefits. All costs—including costs of hiring watchmen—are borne by the project, which has also invested heavily in developing complementary animal husbandry and employment generation opportunities, in response to needs expressed by villagers. Trained and well equipped motivators are provided, at the level of one for each three villages.

The project is at too early a stage to assess its longer term sustainability, or replicability. Queries have been raised concerning the continuing viability of its informal institutions (the VDCs are not able to impose fines or receive government funds), the relationship between VDCs and panchayat authorities, and mechanisms for maintaining needed inputs once the project terminates (Ewers Andersen 1988).

Forest Protection Committees, West Bengal

The Forest Protection Committees of West Bengal (Malhotra and Poffenberger 1989) have little in common ecologically with the three previous cases in the Himalayas (located as they are on the edge of the forest belt across central India), but represent a more recent example of bureaucratic innovation regarding common property resource management. Most of the land was previously a sal dominated mixed forest but had been substantially altered by heavy cutting and more recent plantations.

Nearly 1300 Forest Protection Committees have been organized in response to Forest Department offers to provide preferential rights to certain tracts of degraded forests to specific villages. Originally the villages were chosen by the Forest Department alone but the selection process has gradually given a greater voice to local panchayats. Usually most, if not all, households belong to the village Committee, which selects its own officials.

The user groups take on more of the protection and control of harvesting in return for a substantially greater share of the eventual proceeds from the resource. However, it involves effective closure of large tracts of the forest for a period of years, which can create considerable hardship for those villagers who depended on those areas for fuel and saleable forest products. Little is known at present about how villagers actually distribute access rights internally, and how they respond when restrictions on local fuel and fodder collection significantly change overall availability. Benefits include employment and a share of the revenue from the produce from the regenerated protected forest stands, and from plantations created by the Forest Department. Villagers receive all the income from minor forest products, which can

increase rapidly in protected sal forests, but only 25% of the revenue from pole plantations (because the Forest Department incurs relatively heavy investment in these). Benefits flow directly to specific users and are not redistributed by intermediary organizations.

The approach has been most successful in villages bordering extensive tracts of degraded forest land, where the forest to household ratio is relatively high, and benefits accrue from minor forest products at a relatively early stage. Problems of boundaries between villages have been emerging. It has also proved difficult to develop viable production options for areas without sal forest.

These four examples of joint management of CPRs by village groups and Forest Departments have a number of features in common:

- the amount of state forest land involved is relatively large, often around one hectare per household;
- the state plays a major role in defining and protecting the boundaries of the CPR area against outside use and encroachment;
- most of the rules for use are developed internally and vary widely from village to village;
- harvesting of products is generally controlled by simple rules governing the time of harvest, the tools that can be used, and how many members of one household can be involved;
- fees, if used, are per household and not per quantity harvested;
- the most common use of the collected fees is to pay for a guard;

- in most of the villages all households have similar resource use patterns and all use the CPR products;
- the management body is at the level of the village user group, not the administrative panchayat.

5.3 Forest region

Examples of robust forms of local management, i.e. ones that can survive interaction with government agencies and sources of credit, are few in tribal areas. For a wide variety of reasons most of these community management regimes have collapsed. Most of the surviving regimes are in more remote areas and may not offer many institutional insights regarding how to induce new organizations which must immediately deal with governmental and market pressures.

A number of institutional initiatives warrant mention. One is NGO programmes which use investments in CPRs to catalyze improvements in private agricultural production, and in so doing stimulate local management of the CPRs. The Gram Vikas programme in Orissa which is summarized in the table in Appendix B1 appears to be the most extensive initiative of this kind. A second is forest cooperatives organized independently of the state government which try to increase that part of the value from forest produce which stays within the tribal communities. The Forest Labour Cooperatives of south Gujarat are an example, although they are primarily focused on timber harvesting contracts and not the management of CPRs. Finally, there are new institutions being created in Orissa to manage significant new investments in degraded forest areas.

6. Social Forestry communal woodlots

A number of government programmes have sought to introduce improved land use in areas used as CPRs, usually by encouraging closure and management for grass or trees. Of these, the different initiatives under the general rubric of Social Forestry represent probably the largest government initiative to alter communal use of common lands.

Social Forestry had its formal origins in the National Commission of Agriculture of 1976, which recommended growing trees on lands accessible to village people in order to "lighten the burden on production forestry" (GOI 1976). This was to be achieved by encouraging "farm forestry" – the growing of trees by farmers on their land – and by block plantings on various categories of public land. It has come to encompass a number of different components and approaches, of which only the woodlots to be put under communal management are considered here.

Though there has been considerable variation from state to state, the main features of most Social Forestry communal woodlot activities have been as follows:

- planting, and management during at least the early years, has been undertaken by the Forest Department;
- planting has been on village lands or uncultivated revenue lands transferred to the Forest Department for this purpose. A few states have included degraded Protected Forest land, but none Reserved Forest areas;
- planning was to be in conjunction with the panchayat or some other community level body, which was to take over responsibility for management in due course. Benefits were to be split between the Forest Department and the community.

None of the Social Forestry programmes has been in existence long enough to demonstrate how the complete cycle will evolve in practice, but enough experience has accumulated (including experience from similar earlier programmes) to allow at least tentative conclusions to be drawn.⁽¹⁾

6.1 The resource, technology and demand

In aggregate, the communal woodlot components of state Social Forestry programmes have planted considerable areas. The figures in Table 5 record areas planted under donor supported projects in five states; in each case forming only a part of the total woodlot activity in that state.

This activity has been spread over very large numbers of communities. For example, the 32,076 ha planted in Orissa over four years was distributed among about 3,200 villages (SIDA 1987).

At the local level, although the target areas were usually small relative to the total nominal areas of uncultivated public land, Social Forestry programmes in several states have already encountered shortages of actually available plantable land. The reasons have included encroachment, competition from other government programmes (including competition between the Social Forestry programmes of different departments), competition from grazing and other existing local uses, and poor productivity (additional land could be brought to plantable state, but only at a per hectare cost well in excess of what had been budgeted and made available).

As a result, the area of woodlot available to a community is usually small; often too small to contribute significantly to meeting local needs. Another consequence of shortage of village land has been to divert Social Forestry planting on to areas such as roadsides which are available to Forest Departments but which are less easily brought under communal management and usage, and on to categories of public land for which legal authority for establishment of village woodlots is weak or absent.

The structure of most plantations reflects Forest Department rather than local preferences and priorities. Though the earlier preponderance of eucalypts and other commercial species has usually now been superseded by a range of coppicing, timber, fruit and fodder tree species, and bamboo, these are commonly grown in intimate mixtures, which have been criti-

Table 5. Areas planted as Social Forestry communal woodlots in selected states (*sources: World Bank/USAID/GOI 1988, SIDA 1987 & 1988, ODA 1989*).

State	Period	Area (ha)
Gujarat	1985/86 to 87/88	9,720
Himachal Pradesh	1985/86 to 87/88	24,500
Tamil Nadu	1981/82 to 85/86	112,629
Orissa	1984/85 to 87/88	32,076
Karnataka	1983/84 to 87/88	26,946

⁽¹⁾ This review is based primarily on recent evaluations of the Social Forestry programmes in Gujarat, Himachal Pradesh, Rajasthan and Uttar Pradesh (World Bank/USAID/GOI 1988), Tamil Nadu (SIDA 1988), Orissa (SIDA 1987), Andhra Pradesh (CIDA 1988), Karnataka (ODA 1989), Madhya Pradesh (USAID 1985b) and Maharashtra (USAID 1985a).

cized (Banerjee 1986) as being difficult to manage and inefficient ways of producing fuelwood and fodder (which are likely to be progressively suppressed by the longer rotation species).

Management regimes still predominantly give priority to the final timber crop rather than intermediate products. Close spacing to minimize the need for maintenance has the same effect of reducing grass, prunings, thinnings and other annual or short-term outputs. In short, technology with which the foresters were familiar for large-scale commercial plantations within forest areas has tended to be applied to small-scale village woodlots, where the need was more for fodder and fuelwood than for timber.

The imbalance between the woodlot resource and local CPR needs that has been widely reported in studies of Social Forestry has been accentuated by errors in recognizing what these needs actually are. Priority was given to production of fuelwood over fodder; apparently because the importance of CPRs in fodder supply systems, and of fodder and livestock in agricultural systems, was not fully grasped by Forest Departments. Woodlots have reportedly often reduced fodder supplies to those who earlier used the sites for grazing. Though the protection of the grass cover in woodlot areas, and its enrichment in some places, has often subsequently increased fodder supplies, it requires cutting and stall feeding and so is not necessarily available to the graziers displaced. When woodlots are reopened to grazing the grass cover can quickly deteriorate again.

At the same time, the extent and magnitude of rural fuel shortages was often overestimated; and the role of other gatherable biomass fuels (woody shrubs, agricultural residues, animal dung) underestimated (Blair 1986). Shortages of fuel are often severe, and bear particularly heavily on women. However, village studies have shown that when confronted with shortages of fuelwood, the landless and poor shift to other gatherable fuels rather than to purchased fuelwood (Bhagavan and Giriappa, 1987). Fuelwood which is to be sold, as is the case with most Social Forestry woodlot projects, is therefore unlikely to be accessible to them—even at concessionary prices. Moreover, as they need regular supplies of small quantities, sources which produce only at the infrequent intervals provided by the harvesting of woodlots are likely to be of only limited value to subsistence users.

In general, the woodlot planting has therefore created a resource which is unlikely to make a significant contribution towards meeting local needs of the poor for subsistence supplies of fodder and fuelwood. The main benefit to the poor has usually been from the wage employment created, which has often been on a considerable scale. Local studies have shown that employment in woodlots has generally gone to the poor in the local community, and that women have benefited proportionately (Olsson 1988).

What the Social Forestry woodlot programmes have created is an important resource of poles and timber of considerable potential commercial value. In many, though not all, states the Forest Departments responsible have achieved high standards of estab-

lishment and maintenance, which are producing satisfactory survival and yield results. Though few areas have been established long enough to allow conclusions to be drawn about eventual output, the evidence so far in many programmes is that the woodlots are technically superior to most of the farm forestry planting.

However, the pole and timber products are proving to have greater commercial than subsistence value. The output from older communal plantations that have already been harvested has been largely sold to urban and commercial markets. In Tamil Nadu, a survey in 1985 disclosed that 97% of the wood harvested from communal tank bed plantations was in the form of billet, faggot and brush wood; of which only 6% was used by local people. The rest was sold into urban markets (GOTN 1985).

Intermediate products such as grass and dead wood may be allocated to villagers, or made available to them to gather, but may also be auctioned or sold to contractors. There is widespread evidence that village and panchayat bodies perceive the Social Forestry woodlots primarily as significant sources of communal income, rather than as sources of produce to meet village needs. For this reason there is usually a preference for auctioning the output, rather than selling it at preferential rates or distributing it.

6.2 Management arrangements

Many of these characteristics of Social Forestry reflect the nature of the management arrangements that have emerged. The communal groups charged with the dialogue with Forest Departments over the planning of woodlots, and with their eventual take over, have nearly everywhere been panchayats, or a sub-committee of the panchayat, rather than a village council or user group or a body selected by a village specifically for the purpose of managing the woodlot. Decisions have therefore reflected the politicized functioning of the panchayat system, and the interests of the local elites which frequently control panchayats, rather the interests of those dependent on CPR management.

With panchayats not functioning for periods of several years in many states, even this level of local involvement has often been absent. Mechanisms for direct consultation by the Forest Department with villagers, such as the "microplanning" developed in Karnataka, have generally not been put into practice.

In one of the more ambitious efforts to establish village forestry committees, that in Orissa, although committees were found to be in existence in all villages visited in late 1987, it was reported that they appeared to have been formed in an *ad hoc* manner, without much if any prior consultation among the various interest groups in the village about their composition, and in many cases they were not functioning at all actively. Also, that they "are in danger of becoming the instruments of government authority, and more specifically of the Forest Department" (SIDA 1987). The panchayat leader (sarpanch), who often came from another village, was the chairman

and representatives of the Revenue and Forest Departments were members (with the latter also being the convener). Village forestry committee members were often unclear about the Village Forest Rules and had not seen the Joint Management Plan.

The literature reports an almost universal failure to precede woodlot establishment with public discussion. Repeatedly reports record villagers being unaware that the woodlot had been established for the community; it was a "government woodlot". Often even village and panchayat officials have also appeared to be unaware that a woodlot was to be handed over to them, or of the implications of such a transfer.

Where people were aware, there appears usually to have been lack of belief that the produce would be distributed within the community, particularly where the panchayat or forestry committee leader came from another village. Benefit sharing agreements are frequently neither finalized nor formalized. A government evaluation of the Orissa Social Forestry Project (GOO 1987) indicated that 82% of the villages did not know how the produce from village woodlots would be distributed. Most of the people did not expect any share from the final output. They looked upon such woodlots as another category of reserved forests.

6.3 Lack of communal involvement

Almost everywhere that woodlots have reached the stage at which the panchayat or forestry committee should take them over, reluctance to do so has been encountered. Even in the longer running programmes only a small proportion of the qualifying woodlots have been transferred; and then the transfer of responsibilities has usually been of a limited nature. It has been reported for a number of states in north India that "Out of the thousands created, only a handful of woodlots have been turned over to panchayats, and the majority of them continue to be managed by Forest Departments" (World Bank/USAID/GOI 1988).

A number of reasons for this failure of communal bodies to take on responsibility for management can be discerned:

- Control carries with it financial responsibilities which villages and panchayats have difficulty in meeting—as a minimum hiring watchers to protect the woodlot. Sometimes the budgetary implications are much more burdensome—in Tamil Nadu, for example, the panchayat had to pay a deposit equal to the floor price value of the produce in the woodlot before taking it over (SIDA 1988).
- Woodlot management plans, village forest rules, etc., are often complex, unclear and require skills and experience that panchayats do not possess. Very few communities have had any experience of management of anything remotely resembling a woodlot; and the task of acquiring the necessary skills is complicated by management systems which reflect the technical orientation of the Forest Departments.

- Continued involvement of the Forest Department discourages local bodies from taking over; and encourages them to opt for extending Forest Department management. Handover arrangements commonly empower Forest Departments to exercise a considerable degree of control and involvement, and to retain a share of the revenue. As this is often allied with pressures on Forest Departments to meet very ambitious Social Forestry planting targets, they are frequently reluctant to hand over effective control.
- Lack of local interest in the woodlots because of their smallness relative to local needs, difficulties in ensuring satisfactory distribution of benefits, and uncertainties about their status and access to the benefits.

A further source of weakness undermining communal commitment to Social Forestry activities is their uncertain legal status. The legal situation has been summarized as follows:

"The legal status of the 'community' executing community woodlot schemes is often vague. The people are not in a position to actually negotiate the terms of contract with the Forest Department and are sometimes in conflict with the interests of the local government (panchayat). Where possible, the schemes need to be carried out directly within the legal arrangements of the panchayats; the Panchayat Act needs to be amended for this purpose.

"Appropriate legal models for benefit sharing and usufruct rights have not been worked out with the communities. They have been verbally assured in some places, but there is no legal document to guarantee the benefit sharing. Hence the people are not really involved" (C. Singh in World Bank/USAID/GOI 1988).

Non-forestry laws often conflict with Social Forestry. In Gujarat, village woodlots are not legal on revenue land, but have been established there by the Forest Department because of shortage of communal land (USAID/World Bank 1988). Similarly, in Orissa communal land used for grazing may not be afforested, but some has been planted under Social Forestry (SIDA 1987). States have been slow to amend laws—or to implement them. In Orissa, where many woodlots had been established on forest land, by 1987 none had yet been given legal status as "village forests" under the Indian Forest Act.

The December 1988 amendments to the Forest Conservation Act have created considerable uncertainty over the status of communal woodlots, by preventing the lease of any forest land to any non-government entity without prior permission of the GOI. Revenue and other public land which has been transferred to the Forest Department for afforestation under Social Forestry programmes falls under this Act.

To sum up, Social Forestry programmes have thus created important new resources on land used as

CPRs. In doing so, prior uses have often been altered, and the focus of control has shifted. As one observer has put it: "The village or community woodlot is conceived as common village property at the planning stage, but acquires an alien nature, especially because of the commercial crops grown there. The establishment of a village woodlot by [the] Forest Department has shifted the nature of the CPR away from a common property regime to a private property regime. Grass and fuel may be sold by the panchayat and those who lack purchasing power get nothing. Commercial crops are harvested by [the Forest Department] and [part of] the profit goes to the panchayat with no guarantee that the income will be

spent on the welfare of those who were most dependent on the area as a CPR previously" (Ewers Andersen 1988).

These changes have cast doubts on the possibility of creating viable communal management regimes for the new, predominantly commercial, resources that have been created. One recent evaluation covering Social Forestry projects in a number of states concluded that "[Forest] Departmental management must be considered as the likely alternative for the future, at least in areas of heavy population pressure" (World Bank/USAID/GOI 1988). The implications of such a decision, and of CPR management alternatives, are explored further in the final section of this study.

7. Discussion and conclusions

During the colonial and post independence periods, the uncultivated lands of India which have been used as CPRs have been progressively reduced, as they have been brought under government control or have been privatized. In the last forty years many traditional forms of CPR management have weakened or collapsed due to increasing population pressure, greater commercialization, certain public policies, technological change and environmental pressure.

In most cases the products harvested from the remaining CPRs do not constitute a major share of total village income. This is a major difference from fishing or purely nomadic communities which dominate the case studies in the international CPR literature. Their importance is basically twofold. First, they fill crucial gaps in the resource and income flows from other resources, providing complementary inputs into agricultural systems often critical to their continued functioning. Second, they are often a major source of support for the poorest at the times of greatest vulnerability, usually the period after harvest but before the new rains.

The role and importance of CPRs differs by agroecological region, as follows:

- In the **arid and semi-arid** regions land allocation and encroachment have reduced CPR lands to a small area (on average perhaps 20 ha per village), which is typically heavily degraded and under open access usage. Fodder and fuel are the two most important outputs. The relative importance of CPRs varies significantly between households, with the poor being much more dependent on them and the rich more interested in privatization. Most of the CPR lands which were not privatized earlier exhibit soil, erosion, or fertility problems, and cannot sustain low input annual agriculture.
- In the **hills**, CPRs can comprise 60 to 80% of the area, predominantly in the form of forests under the control of Forest Departments. In contrast to the dry plain regions, CPR areas per household can be substantial (as much as one hectare), and all households have similar patterns of CPR use. Green mulch and fodder are the main outputs. Increased commercialization of CPR products has led to heavy use in many areas. However, in many areas, the forest, though degraded in terms of timber content, is still capable of producing sustained supplies of CPR products.
- In the **forest belt** across central India, common property resource management traditionally covered most of the land. The major use by the indigenous tribal populations is collection of minor forest products as a source of income. Rapid and continued privatization, much of it by outsiders, has seriously weakened traditional institutions.

7.1 Privatization of common property

Not only is much of the land which was once CPR now effectively privatized, in addition private usufruct rights on state property have also *de facto* privatized use of CPRs there. Controlling continued conversion to private use is necessary if any of the other CPR management options are to be effective. The first and most basic issue concerning CPR management is thus to decide whether this is to be attempted.

The strong pressures favouring privatization raise the question of whether further privatization might not be more realistic and rational than one of CPR management. However, there are at least four factors which argue in favour of maintaining CPRs:

- 1) The role that CPRs play in providing flows of products into the agricultural system and the household economy which complement what is available from PPRs—to the point where they are often critical to the sustainability of these systems.
- 2) Their distributional impact: the poor are particularly heavily dependent on CPRs, generally lack access to the resources necessary to develop privatized common land, and benefit considerably from the employment created by CPR management activities.
- 3) The land remaining in common use is often best suited to uses (fodder farms, woodlots, forestry) which benefit from, or require, the economies of scale that are only possible with group rather than individual management.
- 4) Active CPR management can help maintain village level institutions and management skills.

An important factor arguing against total privatization is the finding by Jodha (1986) that the poor in dry regions tend not to be able to retain control of the land allocated to them under privatization programmes. Lack of complementary resources to develop and cultivate the land, or immediate needs for cash for other purposes, compel a large proportion of the poor to sell, mortgage or lease the land. They therefore end up deprived of access to CPRs, and without control over an offsetting private resource.

The problems surrounding many CPR management systems also raise the question of whether there are intermediate alternatives which maintain the land in the public domain but avoid the problems of communal management. One such approach is that of "tree pattas", under which village or other public land is effectively leased to individuals, or sometimes to groups of individuals, for the exclusive purpose of growing trees. The usufruct is therefore privatized but not the land.

Schemes of this nature have been pursued by a number of states, often as part of their Social Forestry programmes, with pattas being allocated generally to

landless members in the community. The experience gained can be summarized as follows:

- A tree patta by itself does not provide a sufficient basis to secure the livelihood of a landless family; the prohibition against the use of the patta land for the growing of agricultural crops (which features in most arrangements) means that the patta holders cannot meet their food needs, and the need to protect the trees reduces their possibilities for employment off-site, while the time cycle associated with trees means only intermittent income.
- The sites available are generally poor and require substantial inputs, which are unlikely to be available to the poor, if they are to be made productive.
- There is seldom, if ever, sufficient cultivable land available for all the landless in the community, so the problems of choice of participants arise, and the supply of and access to CPRs for those who are not selected as patta holders is reduced even further.
- The legal basis for pattas is generally weak or non-existent, so that patta holders lack security of tenure. This insecurity has been made worse by recent amendments to the Conservation Act restricting the assigning of rights to land classified as forest land.

Some of these constraints can be relaxed, e.g. to allow use of land for crops as well as trees, but at the risk of moving further towards permanent land allocation. Some states have declined to initiate patta schemes for this reason. However, even if this aspect of a patta arrangement is acceptable, the limitation will remain that leasing can provide for only a small part of the population which is dependent on CPRs.

The case for maintaining CPRs, and for bringing them under forms of management which continue to allow those dependent on them to have access to them, is thus powerful. A prerequisite for progress in this direction has to be the strengthening of the policy and legal base for doing so. At present all the options that have been examined are undermined to a greater or lesser degree by elements of national or state laws, by conflicts between and within different legislative measures, and by failures to implement legislation. Some of the existing legal weaknesses appear to have been compounded by the 1988 amendments to the Conservation Act, and by the new National Forest Policy.

7.2 Institutional requisites

The joint management examples from hill regions suggest that there are three main institutional requisites for viable communal management of CPRs:

- security of tenure to specific user groups;
- use regulations evolved and enforced locally;
- development and reinvestment.

Security

The assurance of strong tenure rights to a specific user group is necessary in order to differentiate the situation from open access, and needs to be secured before other measures are initiated. Security provided by the state in assuring the major boundaries, and the use of police powers against large-scale timber and fuelwood cutters, needs to be complemented by the inclusion of village level guarding against daily infractions in the use regulations, if protection of the CPR is to be assured.

Use regulation

Use regulations vary considerably, but successful systems are marked by simplicity of individual rules and an ability to change these rules to meet new challenges. Institutions can use increasingly complex use regulations to increase the efficiency and equity of resource use, but generally do better when they start by developing rules for relatively lower value annual products such as grass, and work up to higher valued products and more complex rules. Alternatively they can progressively take over an increasing share of managerial control from an external organization. Pre-designed use regulations have a high failure rate and do not induce institutional learning. The attempts by Social Forestry programmes to try and get panchayats to take over management of complex already established tree plantations clearly failed partly because they did not follow a gradual and sequential approach.

Many villages have one type of rules for certain products and other rules for other products. Decisions about the proportion of collective to private benefits, and the types of collective benefits, appear to be best left to the village. External involvement in this area seems to be most effective if limited to requiring that there be significant and serious discussion about the options within the village and ensuring that large-scale appropriation is not done by the powerful and politically well connected.

The complexity and collective or private character of benefits differs widely among different sites. The following three patterns are examples of increasingly complex distribution rules which require greater amounts of management to operate:

- 1) No privatizable benefits, but significant collective benefits. Protection is also a collective responsibility.
- 2) Distribution by household quota, collection by household labour and household guarding responsibilities.
- 3) Charge a price for the product which is greater than the marginal cost of production but is below the market rate. Use the money collected to pay for protection and management.

Development

Investments that produce a reasonably early flow of new benefits, which are highly valued because of their

role in filling gaps in overall resource availability, will probably induce stronger institutional responses than investments chosen for their higher projected economic benefits in the more distant future. Villages do not invest in CPRs unless tenure rights and use regulation systems, including provisions for discussion and revisions, are certain. Government investments under uncertainty are common but they will rarely provide the projected benefits unless use regulations are developed and enforced locally.

Successful surviving indigenous CPR management systems tend to exhibit similar features. On the other hand, it is notable that recent interventions which have been less successful in stimulating or sustaining communal management, such as most Social Forestry woodlot programmes, have not complied with these conditions.

7.3 Management approaches

Review of existing community management examples suggests that they do better with less rather than more government patronage or involvement. The existence of such systems is more common than appears to be widely believed, and many of them are well versed in dealing with government representatives and programmes. In most cases they require a fairly productive resource to organize around but they can develop much more effective protection and use regulation rules than the government. Robust CPR management regimes are more likely to be found associated with small, independent, homogeneous communities relatively remote from outside pressures. However, regimes can also flourish in much more complex and demanding situations. Matching grants or partially subsidized inputs are effective ways for the government to provide funds to existing CPR management regimes.

Experience also shows that CPR management systems that function are those that reflect the realities of the communities, and provide benefits which meet the interests of the elite and the powerful as well as those who are dependent on CPRs. They are therefore unlikely to provide equal returns to all, or to act as a vehicle primarily for redistribution in favour of the poor. However, given their heavier dependence on CPRs, the particular needs of the poor need to be safeguarded in developing CPR management mechanisms.

The leverage points for changes in CPR management are frequently to be found in related agricultural activities. For example, irrigation and related water resource development has a major influence on the importance of CPRs. Large-scale expansions of capital intensive irrigation in the plains have contributed to the reduction in extent of common land, but have often led to major increases in private agricultural production, and in related employment and new CPR products. Smaller irrigation and water point development in hill areas is often, but not always, a major catalyst for a significant increase in sustainable production. The new systems often draw off the excess pressure from the CPRs and allow them to

achieve higher and more sustainable levels of productivity without significant investments.

Where there remain substantial amounts of government land available for CPR use, as in many parts of the hills, there seem to be good prospects for various forms of joint management on public land. Joint management regimes usually involve significant government investments in terms of funds and securing access rights, and significant village investments in terms of protection and management. The most successful examples are in areas where the technical knowledge already existed (e.g. from private grasslands or trees), and the missing ingredient was an effective agreement between village level institutions and local representatives of the government. The case studies covered in this report suggest that such institutions and working arrangements can mature in a relatively short period.

The limited extent and low productivity of most CPR areas in the dry regions present a different situation. The Social Forestry woodlot programmes have attempted to establish the basis for joint management of such sites by bringing communal land temporarily under the jurisdiction of Forest Departments. However, to continue departmental management, as some have suggested, would effectively extend the process of transfer of control of common land from user to government control, and impede rather than facilitate effective communal management.

There are other impediments to communal management of woodlot CPRs—high valued outputs of little benefit to most CPR users, complex management systems and preset user rules, and control vested in an administrative body (the panchayat) rather than a user group. It has been suggested recently, in a review of Social Forestry programmes in a number of states, that “Panchayat management of community resources is highly problematic in the institutional context of India, where the panchayats have been systematically deprived of decision making authority and financial resources in favour of more political roles. Social forestry is no more capable of single handedly vitalizing these institutions than it is of redistributing rural wealth” (World Bank/USAID/ GOI 1988). However, experiences such as the village forestry committees in Orissa, and the “triangular” agreements between panchayats, users and the Forest Department in West Bengal, suggest that it is possible to develop potentially viable mechanisms within the framework, and under the authority of, the panchayat system.

The key to success in doing so would appear to lie in the institutional requisites identified earlier—e.g. making provision both for higher valued outputs of interest primarily to the panchayat and also outputs of benefit to CPR users; early involvement of the latter through some form of user group provided with appropriate security of access and tenure; and use rules which are developed and applied locally. In addition, as has been noted already, an essential requisite would need to be removal of the policy and legal weaknesses and impediments which at present jeopardize even the most promising CPR management systems.

Appendix A

**Rights, privileges, concessions and *de facto* use of
CPRs**

Appendix A.1 Rights, privileges, concessions and *de facto* use of CPRs in dry regions.

Claimants	Private land	Lineage land	Notified grazing lands	Water bodies, threshing grounds	Village forest	Panchayat land	Revenue, waste or Poromboke land	Protected and reserved forest
Village land owner	All crops, increasing privatization of stubble and fallow	Privatize with lineage approval	Grazing, top feeds if available	Seasonal use, off-season grass	Fuel, tree and bush browse, grazing, dung	Grazing, encroach, soil mining, dung	Grazing, encroach, soil mining	Grazing, fuel, branches, small timber
Other land owner	Some off-season stubble	—	Grazing	Same as above	Same as above	Same as above	Same as above	Same as above
Landless villager	Same as above, crop residues	—	Graze and browse	Same as above	Collect honey, gum, other MFPs, browse	Grazing, fuel	Grazing, fuel	Fuel, grazing, MFPs
Lineage, tribal or clan group	—	Allocation for new families	—	—	—	Encroach	Encroach	MFPs
Hired shepherd for village animals	Some stubble	—	Grazing	Off-season grass	Tree and bush fodder	Grazing	Grazing	Grazing, tree and bush fodder
Traditional village council	Sell stubble to outside shepherds, collect tax	Hold for high quality animals	Defer or rotate grazing, fine offenders	Desilt pond	Auction annual harvest	—	—	—
Official Panchayat	—	Official control	—	—	Approve development as FD woodlot, auction wood	Same as village forest	—	Assume responsibility for eventual woodlot management
Cooperative or Society	—	—	Lease for fodder farms	—	Lease for fodder farms	—	—	Harvest MFPs in tribal areas

Appendix A.1—(continued).

Claimants	Private land	Lineage land	Notified grazing lands	Water bodies, threshing grounds	Village forest	Panchayat land	Revenue, waste or Porromboke land	Protected and reserved forest
NGOs, religious and educational institutions	—	—	—	—	—	Apply for wastelands development grant	—	—
Outside villager	—	Rights if related	—	—	—	Grazing	Grazing	Grazing
Outside shepherd	Purchase stubble rights	—	Pay fee or bribe elite leaders for access	Usually access to water	—	Grazing	Grazing	Grazing
Contractor or industry	—	—	—	—	—	Purchase mining rights	—	Fuelwood harvesting
Local revenue collector	—	Treat as Panchayat land or allow encroachment	—	—	—	Collect ‘fees’ for use	—	—
Magistrate or collector	—	Treat as Panchayat land	Regularize encroachment	—	Same as Panchayat land	Regularize encroachments	Same as Panchayat land	—
Forest Department	Permits and taxes for tree cutting	—	—	Plant woodlot	Plant woodlot, harvest existing growth	Develop and manage woodlots	—	Fence, replant and control access
Soil conservation	—	—	—	Dam and manage drainages	—	Fence and replant	Fence and replant	—

Abbreviations: MFD = minor forest products; FD = Forest Department.

Appendix A.2 Rights, privileges, concessions and *de facto* use of CPRs in Himalayas, Shivaliks and Western Ghats.

Claimants	Private land	Traditional village	Settlement village	Panchayat land	Revenue land	Village forest	Protected and uncl. forest	Reserved forest
Village land owner	All crops during cropping season	Private usufruct to certain households, village shamilat rights	Some as → ← Some as	Grazing, fuel, encroach	Some grazing + fuel	Grazing, fuel, timber	Fuel, grazing, small timbers, tree fodder, animal hut sites	Timber, grazing, fuel as per rights, tree fodder
Other land owner	Off season stubble and tree browse	Village shamilat rights	Same as above	Same as above	Same as above	Same as above	Same as above	Same as above
Landless villager	Same as above	Same as above	Same as above	Same as above	Same as above	Same as allotted in HP	Same as above	Same as above
Lineage, tribal or clan group	—	First rights to lineage shamilat	Enforce and maintain traditional controls	Often same as ←	—	Often nominate representatives for management	—	—
Hired shepherd for village animals	Same as above	Grazing	Grazing	Grazing	Grazing	Grazing	Grazing	Grazing
Traditional Village Council	—	Control access and use	May continue ←	—	—	Often control management	—	—
Official Panchayat	—	—	—	Officially responsible	Suggest names for land allocation	—	—	—
Cooperatives or Societies	—	—	—	—	—	Managed forests in Kangra (HP)	VPCs, HRMS informal agreements	Contractual agreements with FD for products

Appendix A.2—(continued)

Claimants	Private land	Traditional village	Settlement village	Panchayat land	Revenue land	Village forest	Protected and uncl. forest	Reserved forest
NGOs, religious and educational institutions	—	—	—	—	WD funds	Apply for	—	—
Outside villager	—	Grazing if related	—	Grazing	—	Some small uses allowed	Fuel, grazing	Fuel, timber, grazing
Outside shepherd	Pay or trade for grazing or browse	—	—	Grazing	Grazing	Some grazing	Grazing	Grazing
Contractors or industry	Advance purchase of trees	—	—	Can purchase harvest rights	—	—	May illegally refuse village entry	May overcut on FD contract
Local revenue collector	—	—	Fees for encroachment	←Same as	←Same as	—	—	—
Magistrate or Collector	—	Treat as Panchayat land	—	Can reclass as revenue	Full responsibility	Signature needed for VP funds (UP)	Arbitrates encroachment issues	Involved in concession revisions
Forest Department	Controls on harvest and sale of trees	—	←Same as	←Same as	Plant and manage plantations	Control VP revenue uses, make plans	Apply for conversion to reserved forest	Have most rights and can cancel villagers concessions
Soil Conservation	Build water control structures	—	Same as → with village approval	Same as → with panchayat approval	Dam water drainages, revegetate and fence off areas	—	—	—

Abbreviations: HRMS = Hill Resource Management Society; VP = Van Panchayat; VPC = Village Protection Committee; UP = Uttar Pradesh; HP = Himachal Pradesh; WD = Wastelands Development.

Appendix A.3 Rights, privileges, concessions and *de facto* use in CPRs in forest regions.

Claimant	Private land	Tribal land	Notified grazing land	Water bodies, threshing grounds	Village forest	Panchayat land	Revenue, waste or Porromboke	Protected and reserved forest
Village land owner	All crops, often without patta	Collection and some cultivation rights	Grazing	Water for animals, seasonal use, off-season grass	Bamboo, small timber	Encroach, grazing	Encroach, grazing	Nistar in protected and reserved forests, fuel, grazing
—women	—	—right to food and MFPs	—	—	—collect MFPs	—	—	—collect MFPs
—artisans	—	—access to raw materials	—	—	—raw materials	—some raw materials	—	—raw materials
Landless tribal	Fuel	Collective use rights	—	—	Same as above	—	FFRP	Same as above, SSP
Landless villager	Fuel	—	—	Off-season grass	Same as above	—	—	Same as above, shifting cultivation
Lineage, tribal or clan group	—	Decide access and use	—	—	Exercise traditional controls	—	—	—
Hired shepherd for village animals	Grazing at specified times	Some grazing	Grazing	Off-season grass	Grazing, tree and bush fodder	Grazing	Grazing	Grazing
Traditional caste panchayat	—	—	—	Control access	Exercise traditional controls	—	—	—
Official panchayat	—	—	—	—	Official control	Official control	To manage woodlots	—
Cooperative or society	—	—	—	—	—	Orissa woodlots	Orissa woodlots	LAMPS for marketing MFPs

Appendix A.3—(continued)

Claimant	Private land	Tribal land	Notified grazing land	Water bodies threshing grounds	Village forest	Panchayat land	Revenue, waste or Porromboke	Protected and reserved forest
NGOs, religious and educational institutions	—	—	—	—	Temples auction fish in village tanks	—	—	Apply for land
Outside villager	—	—	—	—	—	Grazing	Grazing	Collect MFPs
Outside shepherd	—	—	Some grazing	—	Some grazing	Grazing	Grazing	Grazing
Moneylender or contractors	—	—	—	—	Advance purchase of MFPs	—	—	Advance purchase of MFPs dominates marketing, linked to shifting cultivation
Local revenue collector	—	—	Fees for use	—	—	—	—	Fees for use
Magistrate or collector	—	Treat as Panchayat land	—	—	—	—	Give tree pattas	—
Forest Department	Restrictions on certain trees	—	—	—	Harvest if FD has legal control	—	—	Total control of reserved forest MFP, timber contractors have police powers
Soil conservation	—	—	—	Build dams and ponds	—	—	—	—

Abbreviations: SSP = Social Security Programme (tribal forests); LAMPS = Local Area Multi-Purpose Societies (West Bengal); MFP = Minor forest products; FD = Forest Department; FFRP = Farm forestry for the rural poor.

Appendix B

Characteristics and institutional rules of selected communal management approaches

Appendix B.1 Characteristics and institutional rules of CPR management systems in forest areas (all in Orissa State)

Characteristics and rules	Tribal hamlet committees	Village Woodlots (VWL)	Social Security Plantations (SSP)	Forest Farming for Rural Poor (FFRP)
Original ecological status	Degraded grass/bush land	Degraded grass/bush land	Degraded forest	Bush/grassland
Original land tenure	Revenue land next to tribal hamlet	Revenue or panchayat land	Forest Department	Revenue land
Sponsoring institution	Gram Vikas (GV)	Social Forestry Project of Forest Department	Forest Department	Social Forestry Project of Forest Department
Area per household	0.05–0.15 ha	0.015–0.2 ha	Five 2-year occupancies of 1.5–2.5 ha plots	0.3–0.4 ha
Social structure beneficiaries	Homogeneous tribal hamlet within heterogeneous caste/tribal village	Heterogeneous villages	Unrelated landless tribals	Poorer members of village, landless Schedu castes and tribals
Main products	Cashews, other fruits, bamboo, timber, and fuel	Fuel, timber, fruit, grass, leaves, twigs, bamboo and some MFPs	Grass, twigs, some MFPs to beneficiaries. Trees to FD	Inter-crops in early years, twigs, branches, poles, and fuel
Legal and administrative relation with state	GV got local revenue official to recognize 25-year lease on non-stamp paper	Land still State property. Rules of operation prescribed by govt. with govt. majority on VFC. Regulations, management by Forest Dept.	Land and product rights all with FD. Beneficiaries get planting salary and protection stipend	Awaiting legal document covering rights. Uncertainty of security. Receiving wages to develop
Ability to raise funds	Villagers donate one day per week of plantation wages to village fund	nil	nil	Can sell annual crops in early years
Ability to influence other government activities	GV assists in getting access to other programmes	nil	nil	nil
External organization assistance	Previous GV programmes in health, education, savings, and community leadership. Technical and financial assistance for plantations	VWL and Joint Management Plan essentially made by Project and ratified by Panchayat Sarpanch. Numerous species reflects villagers' requests	FD chooses beneficiaries and sites	nil
External financial assistance	Grant from National Wastelands Dev. Board, SIDA/SF project	SIDA social forestry project for all costs	FD pays wages and supplies material	SIDA SF project provides materials and wages
<i>Institutional rules</i>				
Protection	Live fence, all hamlet members	Project paying for guarding	Guarding stipend	Small guarding stipend and annual crops to protect
Membership, legitimacy and outsiders	All hamlet households are members. Meeting and substantial employment opportunities. Manager on partial salary. Social forestry committee. Caste villagers totally excluded	All villagers are members but Sarpanch is head of VFC and always from largest village, not necessarily village with woodlot. Members from different backgrounds but not chosen by people directly	FD chooses beneficiaries	Project chooses beneficiaries

Appendix B.1—(continued)

Characteristics and rules	Tribal hamlet committees	Village Woodlots (VWL)	Social Security Plantations (SSP)	Forest Farming for Rural Poor (FFRP)
Use regulations	All members can hand cut grass. Twigs and branch collection or cutting requires committee approval. All commercial products now sold to GV	Grass is only present product, with wide variety of <i>de facto</i> use patterns	FD to decide collection of annual grass. Leaves and fallen twigs allowed	Beneficiary chooses annual crops
Payoff	Tribals want per household sharing of produce but present plan is for all commercial output to be sold to GV for processing and profits for hamlet development projects and activities. Fear of caste village or government takeover when substantial benefits come	50–80% net profits to village or Panchayat. Remainder to govt. No harvests yet but most plans suggest clear fell harvest and sale, with profits for village infrastructure chosen by management committee or elite villagers. Little discussion about payoffs and no legal agreements yet. Regulations on distribution rules unclear. Royalties to Forest Department	After 15 years, 20% share of FD harvest to beneficiaries. No legal agreements yet	100% to individual beneficiaries
Development	Long-term orchards. GV funds for 5 years but after all maintenance from profits	Few villages have any plans to replant and no requirement to do so	FD gains benefits from rehabilitation and planting of long-lived trees	Most beneficiaries plan to clear fell and use profits to buy paddy land
Broader agenda	Aim is to produce asset which brings hamlet households together and provides constant revenue source for hamlet activities	—	—	—
Equity rules	Each household required to contribute labour. Limited economic differences. Benefits by household quota, by household or for whole hamlet activities	Required membership of women, SC and ST on Management Committee but do not have specific constituency	Beneficiaries are originally tribal landless	Beneficiaries are originally landless SC and ST
Expected government roles and effectiveness	Respect of agreement for hamlet, not village, control and benefits of plantation	Want legal clarity on usufruct rights and ability to make management decisions. Full inputs provided by government. State had to provide funds for guarding in initial 3 years	FD controls all decisions. Beneficiaries still want legal proof of new usufruct and share rights	Very dependent on govt. inputs

Abbreviations: FD = Forest Department; FFRP = Forest Farming for Rural Poor; GV = Gram Vikas; SC = Scheduled Caste; ST = Scheduled Tribe; SIDA = Swedish International Development Authority; SSP = Social Security Plantations; VFC = Village Forestry Committee; VWL = Village Woodlots.

Appendix B.2 Characteristics and institutional rules of joint forest management approaches.

Characteristics and Rules	Van Panchayats (VP), Uttar Pradesh	Hill Resource Management Societies (HRMS), Haryana	Forest Protection Committees (FPC), West Bengal	Village Development Committees (VDC), Himachal Pradesh
Number	4000	40	1300	53
Original ecological status	Degraded pine and oak	Degraded grass lands and acacias	Degraded sal	Degraded forest and grasslands
Original land tenure	Village forests with curtailed rights	Reserved or protected forest	Protected forests	Forest, Revenue and private land
Area per household (hh)	0.3–3 ha/hh	0.5–2 ha/hh	0.5–1.0 ha/hh	0.6–1.2 ha/hh
Legal and administrative relations with state	Legal units since 1931 or formation	Official or informal societies with contractual arrangements with FD	Informal arrangements with FD	Informal body supported by Indo- German Dhaludhar Project (IGDP). Associated with registered Mahila and Yuvak Mandals. Agreements with FD. Ward panchayat member on VDC executive committee
Ability to raise funds	Per hh tax to pay for guards. Auction certain products with FD concurrence	Collect fees from hh to pay for grass contracts. Charge fees for irrigation	—	Levy of Rs 2–5/hh per month. Fines collected for illicit grazing or cutting
Ability to influence other government development projects	Resin fund supposed to be shared by different levels of local govt. Can reject plantation plans	Preferential leases for grasses. Lobby for more irrigation benefits. Increased ability to get other infrastructure funds	—	IGDP provides finances for village assets if VDC functions well and organizes voluntary labour. Significant IGDP investments for many private and community assets
Government technical assistance	Forest Panchayat Inspectors provide assistance but rarely visit. Forest officers show little interest	FD designs and constructs dams and irrigation systems. FD often implements tree and grass planting in catchment	FD officials provide considerable support and coordinate policing with FPC. Large funding plans under discussion	IGDP, FD and Horticulture Dept. provide significant technical assistance
<i>Institutional rules</i>				
Membership, legitimacy, and outsiders	Membership by hh. Elections and 2–6 meetings/yr required by law. Previous use by other villagers usually respected for low-value products	Membership by residence. Elections in registered Societies. Previous users were contractors and few inter-village disputes over rights	Membership by hh head. Beneficiaries sign up on official list. New rights strongly defended limit outsiders	All hh in village can join. Leadership is based on traditional council of elders with new involvement of women and youth leaders. Panchayat ward representative is also member. IGDP supports legitimacy of VDCs. Panchayat or regional residents have no rights to products
Protection	Villagers pay guards with monthly fee. FD responsible for preventing encroachment and for identification of boundaries between villages	Some rotational guarding	Rotational, unpaid groups of guards. Village rights to specific FD tracts	Some villages financed guards. Villagers watch nearby resources. FD provides protection for larger forest areas

Characteristics and Rules	Van Panchayats (VP), Uttar Pradesh	Hill Resource Management Societies (HRMS), Haryana	Forest Protection Committees (FPC), West Bengal	Village Development Committees (VDC), Himachal Pradesh
Use regulations	Partial or full closure to open grazing. Specific time for grass harvesting. Rules for small wood products. Quotas and fees for timber. Protection of fodder trees. Fines for unauthorized use by villagers and outsiders	Per hh fee for fodder grass in reserved forest. Interested villagers raise funds for bhabbar grass lease. Open grazing in catchment banned. FD allows fuel collection in reserved forest	Fuelwood cutting limited. Outside cutters guarded against. Leaves still collected. Limited fuel production from thinnings	Draw lots to allocate individual leaseholds. Fines for illegal grazing or cutting. Increased products on private lands all accrue to owners
Payoff	Resin and timber revenue supposed to be shared with VP and used for community assets. Annual products are not commercialized and are used by all. (Resin income actually very rarely available)	Cheaper fodder grass lease. Bhabbar wholesaled to paper mills at good profit or used to make rope with high value added (but low effective wage). Increased access to fuel if keep animals out	Can take fuelwood at cheap rate without FD harassment. <i>De facto</i> exclusive rights to annual products. Promised thinnings and 25% of final pole harvest. Employment if FD has jobs	Orchard profits for community assets. Long-term benefits from forest resources not yet fixed and FD expected to develop sustainable management rules in dialogue with VDC
Development	Reinvestment in VP if management plan drawn up and approved (rarely happens). New plantations financed 100% by govt. but poor survival. Natural revegetation with controlled use main method of investment	Bhabbar grass planting by FD in some areas. Natural revegetation with controlled use main method of investment	FD plans to plant treeless areas. Natural revegetation with controlled use main method of investment	Recent significant investments are supposed to be managed in sustainable manner
Broader agendas	Use potentially significant resin revenue for local projects	Related irrigation systems are of major interest. Often request further investment or maintenance	Interested in more employment	Major IGDP goal is to catalyse strong village organization with traditional roots, and ability to interact with govt. agencies and depts.
Equity rules	Use limited by hh labour, time limitations and quotas, so hard for powerful to over exploit	Equal rights to irrigation water but difficult to enforce. Fodder grass use is function of animals owned, but bhabbar, fish, aromatic plants and fuelwood have potential to be managed by smaller user groups with less private resources. Stringent equity rules in model HRMS bye-laws	Beneficiaries listed by name and will get equal cash shares of value of the poles. Promotion of tendu and sal leaves benefits poorer women collectors	Annual benefits distributed equally by household. Large returns from orchards used for community assets. Initial work focused on villages with one predominant social group and limited factionalism by caste
Expected government role and effectiveness	Stop encroachment, boundary demarcation, forest panchayat inspector visits, management plans, revenue, legal status	Irrigation investments, less harassment, fodder leases, bhabbar leases, irrigation technical assistance, stop illegal harvesting, settle internal disputes, legal status	Stop outside firewood cutters, allow village to decide policing systems and annual product-use rules, legal status, new investment	Initial investments, maintenance and protection, run cattle pounds, legal status, access to govt. grants and loans

Abbreviations: FD = Forest Department; hh = household; HRMS = Hill Resource Management Societies; IGDP = Indo-German Dhaludhar Project; VDC = Village Development Committee; FPC = Forest Protection Committee; VP = Van Panchayat.

Appendix B.3 Characteristics and institutional rules of community management approaches in dry regions.

Characteristics and rules	Village Councils, Andhra Pradesh	Committees of Mukhias, Rajasthan	Fodder farms, Gujarat	Gram Vikas Mandals (GVM), Gujarat
Original researcher	Robert Wade	Rita Brara	Tushaar Shah	Aga Kan Rural Support Programme (AKRSP)
Original ecological status	Partially irrigated black clay soils	Catchments of natural ponds	Grasslands and wastelands	Grasslands and degraded forests
Original land tenure	Private off-season agricultural land owned by one major caste	Permanent pasture, revenue or forest land	Village grazing land or revenue land	Village pasture, revenue land or degraded forest land
Social structure of village and organization	Multi-caste village. Dominant caste controls council	Multi-caste village. Representatives of lineages by local power. Poor representation of Scheduled Castes	Multi-caste villages. Patel dominated Cooperatives, external professional management. Poor are major purchasers	Tribal or small caste villages with limited socio-economic differentiation
Main products	Stubble for herders, manure for farmers	Khejri fodder leaves, twigs and branches, grazing and thatching, grass	Green fodder through whole year	Seasonal grass, future tree yield
Legal and administrative relation with state	Private land, Unofficial village bodies	Gram panchayat or revenue land. Unofficial village bodies. Coopt local elected officials	Usually attached to state-supported district milk cooperatives. Land on 7-year renewable lease from Revenue Dept.	Village land use approved by sarpanch. Revenue land lease from Revenue Dept. and Development funds from Central NWDB (negotiated by AKRSP)
Ability to raise funds	Sell grazing franchise of private off-season fields to outside shepherds. Resell liquor license. Sell fish in tank. Collect commissions on grain sales	Auction khejri leaf fodder and thatching grass	Sell green fodder, surplus irrigation water, and fruit	Sell annual grasses among members or outside. Take AKRSP loan against future plantation harvest
Ability to influence other government activities	Organize and bribe to ensure good canal irrigation supply	Use funds to meet govt. matching grant requirement for schemes	Eligible for govt. subsidies and loans. Request irrigation water	AKRSP can organize to get village oriented schemes and grants approved
External organizational assistance	Totally internal	Totally internal	Dairy Cooperative manager appointed except where original village leadership	AKRSP spearhead organization team. Many AK-village meetings.
External technical and financial assistance	None	None	Considerable financial and technical support. External technical manager	Grant, loan for guards, seeds, technical backup and monitoring
<i>Institutional rules</i>				
Protection	Verbal contract with herders and farmers on providing or paying for village appointed guards	Villagers watch for offenders and report them for fines. Inter-village boundaries by mutual agreement	Fenced. Agreements with traditional graziers in some areas to provide them irrigated fodder area in lieu of lost grazing	Village guards paid by loan or rotating responsibility.

Appendix B.3—(continued)

Characteristics and rules	Village Councils, Andhra Pradesh	Committees of Mukhias, Rajasthan	Fodder farms, Gujarat	Gram Vikas Mandals (GVM), Gujarat
Membership, legitimacy and outsiders	Council consists of leaders from powerful families. All landowners have similar interests. Strong rulers against 'free riding'	Committee membership reflects village power. All land owning castes well represented. Poor SC representation. Elected officers coopted. Grazing by outside animals by village permission	Any villager can become Coop member, and can purchase fodder. Fodder sold to outsiders if surplus	Open membership to GVM. Land access limited by GVM and guards
Use regulations	Herders must stay on allotted field for certain time. Rules differ by village.	Cutting whole trees and bushes forbidden. Only villagers bid for leaf fodder. Fallen twigs and branches collected by villagers. Outsiders have no access unless related. Certain areas closed for harvesting and grazing in certain years	Buy green fodder by bundles. Daily sales. No open grazing or yearly leases	Only hand cutting of grass in first few years. Some cut by open season, others by household quota. Some cut and sold for GVM account
Payoff	Individual landowner gets fields manured and stubble removed. All financial benefits go to village council, no private financial benefits	Rights to profit from auction only if live in village. Supports village stud bull, dispensary and domestic water system	Different mix between cheap fodder, dividends and reinvestment	Grass cut and sold or distributed in village first, surplus sold outside. Wages substantial in first year. Forced savings which can be used as collateral for inputs, land development and joint marketing
Development	Manuring increases farm productivity. Organization for irrigation most important function	Presently no reinvestment and few young trees coming up. Leaders would reinvest profits after high priority needs met	Funds for reinvestment set aside. Better farms are diversifying into fruit trees. Maintenance fund also kept	First claim on tree harvest is loans, 2nd is reinvestment, 3rd is profit to members. Use of savings for private land development is most important investment
Broader agenda	Also act together to get better canal irrigation	Develop community assets. Protects independence and links by coopting local elected officials	Diversifying income sources. Dairy Cooperative has broader agenda	AKRSP organizing local bodies to coordinate actions. Get status so GVM can directly get loans and govt. schemes. Development of private agricultural land a major priority
Equity rules	Elite have scattered parcels so agreements with herders cover whole village. Only non-privatizable benefits so no chance of corruption	All major strong lineage groups represented in management decisions. Women and Scheduled Caste have little voice. Profits go into widely desired community assets	Vast majority of purchasers are landless and small farmers without private fodder or agricultural by-products. Most of benefit in cheap fodder rather than dividends	Chosen villages are poorer than average. Any one can join. Original work and later harvesting is labour intensive so done by poorer. Landless get first option on employment and nursery contract

Appendix B.3—(continued).

Characteristics and rules	Village Councils, Andhra Pradesh	Committees of Mukhias, Rajasthan	Fodder farms, Gujarat	Gram Vikas Mandals (GVM), Gujarat
Expected role and effectiveness	Major interaction is with Irrigation Dept.	Matching grants, village schemes and drought relief programmes are sought by Committee	State govt. or district Cooperative provides investment. Irrigation or electricity allocated by Govt. Trade-off between Govt. provision of Manager and excessive domination of structure and control after running	GVM still requires AKRSP to clear schemes and loans supposedly targeted to village organizations. Legitimize sharing arrangement for degraded Forest Dept. land

Abbreviations: AKRSP = Aga Khan Rural Support Programme; GVM = Gram Vikas Mandals; SC = Scheduled Caste; NWBD = National Wastelands Development Board.

Appendix C

Case studies of joint management by villagers and Forest Departments

C.1 Van Panchayats, Uttar Pradesh

The Van (Forest) Panchayats of the Kumaon and Garhwal regions of the Uttar Pradesh hills represent one of the largest and most diverse experiments in common property resource management systems developed in cooperation with the state. They were introduced by the civil administration in the 1920s, after a period of intense agitation against expansion of British control over forest resources in the area (Pant 1922, Guha 1983, Ballabh and Singh 1988). In an attempt to solve the problems, the Kumaon Forest Grievances Committee divided the reserved forests of Kumaon into two categories: Class I, containing forests of little or no commercial importance and Class II, containing forests stocked with chir, sal, deodar, kail and other commercially valuable species. While the management of Class II forests continued to rest with the Forest Department, the Class I forests were put under the control of the civil administration (*Report of the Kumaon Forest Grievances Committee* 1922, in Guha, 1985).

The Class I forests were either civil or soyam forests (essentially open access resources) or Van Panchayats to be managed by a village body under a set of government rules. The concept of the Van Panchayat is that the local community takes over the protection of legally and bureaucratically defined resources, and controls use of and access to all resources except large pine trees. Management of the latter remains in the hands of the Forest Department, but the village receives any profit from sales of timber or resin. The collection of a tax, either at harvest or monthly, reinforces the legitimacy of the local institution and provides the necessary funds at the village level.

Although most Van Panchayats were formed on seriously degraded sites many now have considerable income flows from resin tapping and logging of chir pines. As the Forest Department maintains management responsibility for the pines, village level management is typically oriented towards other products—the annual production of grasses, leaf fodder and small timber. Even though management regimes favouring annual products do not require large trees (since the villagers do not get an immediate benefit from them), many observers have pointed out that the tree cover is often equal to or better than on reserved forests near villages (e.g. Gadgil, Ali and Prasad 1983, Saxena 1987, Guha 1985, Ballabh and Singh 1988). Some of the best examples are traditional community forests which pre-date the introduction of legal Van Panchayats. Civil and soyam forests, on the other hand, are usually seriously overused and have little if any tree cover.

Protection

Encroachments and illegal fellings are two major problems, especially if the first cases go unpunished. Poor definition and protection of boundaries appear to be a major reason for the poor management of certain Van Panchayats, and inability to support a forest guard or develop equitable distribution systems in others (Tripathi 1987, Vidyarthi 1987). While

villagers are usually confident of their ability to control the use of relatively low value annual products the control of privatization is more difficult.

In 1976 the boundaries for Van Panchayats were redefined so that villages which previously shared areas had new areas for their exclusive use. In many cases these new demarcations did not follow the traditional boundaries and left some villages dissatisfied. Unfortunately, the partitioning was not based on relative need or actual use and led to numerous disputes between adjoining villages. The need to go through the government judiciary and revenue authorities for boundary adjudication is time consuming and adds a significant element of uncertainty to village protection and management. Uncertainty about how and when the government will involve itself in the adjudication of rights has also weakened effective local management.

Regulation

The more successful Van Panchayats exhibit a wide range of use regulations for different products (Ballabh and Singh 1988, Majumder-Bisht 1987, Tripathi 1987). Successful use regulation is varied, locally designed and locally enforced. Although there appears to be a strong correlation between a good physical resource and effective use regulations, distribution systems seem to involve increasing levels of management as the resources get scarcer. Tripathi (1987) illustrated a number of cases where the villagers recently imposed strict harvesting restrictions which will yield benefits only after a few decades. All of the better Van Panchayats try to ensure that resources are distributed fairly equally.

Moving control of use regulations up the institutional ladder to political panchayats (Newell 1970), state departments (Ballabh and Singh 1988), and the national government (PEO 1987) is common but has not been shown to be particularly effective, especially when the legal protection issue is not fully resolved. It is the existence of local rules and a forum to change them if they are not effective, rather than the specific character of the rules, which is associated with successful management.

All the successful Van Panchayats have guards (paid in grain or cash) or rotate the responsibility among households. The system of rotating guarding responsibility was reported to be fairly common by Ballabh and Singh (1988). Not all villages studied were able to agree on resource use rules and on arrangements for guarding the resource (Tripathi 1987). Villages which cannot support a guard have great difficulty in preventing theft, open grazing and encroachment.

There are also many examples of traditional Van Panchayats in the Uttar Pradesh hills. Many of these are controlled by religious associations and have strict rules concerning harvesting of forest products (e.g. Guha 1985). Others are associated with villages which manage the area for a significant flow of resources. Compared to many official Van Panchayats the area per household is relatively large, and they

have been able to maintain a richer forest cover while maintaining significant levels of harvest.

Official elections for Van Panchayat positions are more important in villages where the legitimacy of traditional authority has eroded. Where elections have not been held but traditional authority has eroded, domination by a few individuals was reported as a problem in a number of villages (Vidyarthi 1987). Where fair elections were held, the overwhelming majority of the villagers felt the management of the forest was good and the distribution of the forest products was equal (Ballabh and Singh 1988). Overseeing elections is an important but often unfulfilled duty of the state government.

Development

Where annual use is kept to a reasonable level, natural revegetation has led to significant improvements in the productivity of Van Panchayats. In many cases, however, the high demand for forest products has simply been shifted to other forest areas.

The Forest Department maintains control over the scheduling of resin tapping and timber harvesting but much of the revenue officially belongs to the Van Panchayats. Prior to 1976, 100% of the net revenue was supposed to go to the Van Panchayat. In 1976, this was revised so that 20% went to the Zilla Parishad (district level authority), 40% went to the Forest Department for replanting, and only 40% was at the disposal of the Van Panchayats. State departments control most of the funds and the technical decisions over how the funds should be used. Profits are not being reinvested to any great extent and are often tied up in fixed deposit accounts. Both Saxena (1987) and Ballabh and Singh (1988) provide detailed recommendations on administrative changes which would increase local responsibility and reinvestment in Van Panchayats.

Although many of the earlier ones have ceased to exist, Van Panchayats are still being formed in Uttar Pradesh. Though relatively few have been registered in the last few years, half of the 598 Van Panchayats in Baramandal Division of Almora District, for example, have been formed since 1976 (Tripathi 1987).

C.2 Hill Resource Management Societies, Haryana

The Hill Resource Management Societies (HRMSs) in Haryana are an outgrowth of nearly twenty years of work by state government departments, external organizations and poor villages in the Shivalik hills behind Chandigarh, the capital of Haryana and of the neighbouring state of Punjab. In an attempt to slow siltation into a large lake in Chandigarh, the government offered to build small reservoirs in certain hill villages if the latter would stop open grazing in the watershed of the lake. From the original concept of social fencing "whereby villagers decide to protect the hills from grazing through self restraint" (Mishra and Sarin 1987), the process gradually evolved to one of

joint management for grass, irrigation water and watershed protection.

Starting with the original reservoir in the village of Sukhomajri, the Haryana Forest Department has constructed 68 dams in 40 villages across the Shivaliks. Hill Resource Management Societies have been formed and registered under the Societies Act in about 15 of these villages. The basic tenets of the HRMSs are:

- 1) each household had equal rights to all resources;
- 2) no open grazing of the catchments would be allowed;
- 3) irrigation fees would be collected to cover operating and maintenance costs;
- 4) surplus funds would be reinvested to improve the natural resources or for other agreed upon village infrastructure;
- 5) a few outside members would be in the society to provide technical advice, linkage to government bodies, and assistance in conflict resolution;
- 6) annual elections for the secretary, treasurer and a few other members of the executive committee.

Protection

Unlike other Himalayan states, the Forest Department in Haryana actively manages the Shivaliks for revenue and puts significant limits on the amount of produce which local villagers can take. The traditional method employed by the Forest Department for administering and collecting revenue from the grasslands in the Shivaliks was to lease out large blocks of hundreds of hectares. Annual leases in reserved forest areas for grasslands were auctioned to contractors who usually sold the bhabbar grass (*Eulaliopsis binata*) to paper mills and sold fodder grass harvesting rights to neighbouring villagers on a per month or per season basis. In protected forest areas only the bhabbar grass was leased as the villages had rights to the fodder grasses. Since the contractors could not fully enforce a grazing ban, they effectively allowed a mix of open grazing and hand cutting.

While this system reduced the workload of the Forest Department it did not promote long-term resource management as neither the contractor or neighbouring villagers could be assured that they would benefit from reducing the current harvest in order to enhance future regeneration. By giving fodder grass harvesting contracts to villages instead of contractors, the Forest Department was able to reduce expenditures on policing and replanting. To maintain village interest they agreed to a five year lease at a fixed price, set at the average price paid by contractors in the three previous auctions, effectively allowing the village to take all benefits from increased grass production and value. However, the village bears the risk of less than normal production during drought periods.

In 1986 the Forest Department extended this arrangement to bhabbar grass, which has a value at least four times greater than fodder grasses. Bhabbar grass can be sold either to the paper mills or used for home based rope production and is the only grass

auctioned in most of the protected forests near most of the villages in the Shivaliks. Replanting and investment in improved rope making machinery offers the potential for significantly increasing the value of sustainable joint management of the catchments. Currently 35% of the fodder grass and 17% of the bhabbar grass in the 5000 ha Pinjore Range, which includes Sukhomajri and the neighboring villages, is leased directly to village societies.

Regulation

Hand cutting of fodder grass is more labour intensive than open grazing but prevents erosion caused by animals on steep slopes. The ban on open grazing had less impact than it would have had earlier because the increased availability of crop residues from land brought under irrigation as a result of the new reservoirs had brought about a shift towards water buffaloes, which cannot be grazed on steep slopes (Stewart in press). The increased labour costs were far outweighed by the cheaper user fee to cut the grass (because there was no contractor to take a share), and the net value of the grass collected in 1986 was from two to four times higher than the sums the contractors had earlier paid the Forest Department (Chopra *et al.* 1990).

Compared to other CPR management systems in the hills, the approach of the HRMSs involves greater use of auction values and fees to legitimize user group control over a certain area. Regulation by villages is closely linked to the need to raise substantial sums of money from relatively poor villagers to pay the auction related value of the grass. The high degree of commercialization results in problems in collecting fees (especially for the more valuable bhabbar grass), and in villagers sometimes organizing to pay the low rate set by the Forest Department and then immediately reselling the grass cutting rights to outsiders at the higher payment.

Villages have shown considerable innovation in developing and revising the rules governing grass harvesting. In Sukhomajri, for instance, the society decided to exempt widows and families facing economic hardship from paying anything.

Elections for the executive positions on the HRMS have been held in Sukhomajri and the neighbouring villages from the first phase of the project. In many of the villages this has led to the original officials being replaced. In some this has resulted in the loss of those who had been most involved, and who had demonstrated most ability. In others, it has broadened the leadership away from the original beneficiaries, who usually were those with relatively more irrigable land.

The decreased involvement of external organizers in more recent village sites has led to a decline in the initial strength of village organizations. In many of the more recent project villages, irrigation systems and grass leases have begun before effective HRMSs have been established. In some cases villagers demonstrated their traditional resourcefulness by initiating their own systems of resource allocation and conflict resolution. They also used links through local politi-

cians and other leaders to develop parallel channels through which to lobby for increased investments from the Forest and other departments. In other villages, however, the new resources are underutilized and are dominated by the traditional elite.

The importance of a strong HRMS and sets of formal rules and procedures has proved to be more important in the larger villages with a number of different caste groups. While many of the smaller villages with one dominant caste have had some trouble with the equitable spread of irrigation water and maintenance responsibility, they generally prove to be very effective at enforcing the ban on open grazing in their catchment and the surrounding forest land. Larger more heterogeneous villages often required external arbitrators to settle disputes over resource use.

Development

As the original project village, Sukhomajri received the greatest amount of external financial assistance and involvement. Although these villagers have unquestionably received the most benefits, the high level of external involvement seems to have stifled the long term ability of the village to mobilize internal resources for necessary maintenance activities. The next set of project villages were not as internally homogeneous as Sukhomajri, and also received less external investment and organizing assistance. Like Sukhomajri they are also relatively near major market centres and have both functioning irrigation systems and direct grass leases. Although there have been a number of conflicts over the distribution of benefits from the irrigation water and the leases, Forest Department officials have been able to settle the more serious disputes. Both the villages and the surrounding watersheds have benefited substantially in terms of productivity and sustainability.

The most recent villages to be included in the programme are more remote and have received even less organizational input. While the potential for irrigation is at least as great as in the initial villages, weaker market linkages and more limited technical input regarding irrigation management have reduced the effective use of water. Many villages are not using irrigation, and most have not organized to get the leases for bhabbar grass. The rapid progress in dam construction in these areas has apparently left little time for Forest Department staff to help organize HRMSs.

In the first stage of the programme the focus was on developing technical and rights systems to spread the benefits of the irrigation investment as widely as possible. Considerable funds were invested in extending the coverage of the irrigation infrastructure. Subsequent village level interventions had relatively less external investment in the irrigation system, but added other resources which could be jointly managed by the village and the Forest Department, which increased the potential quantity and equity of benefits.

This made the HRMS more difficult to manage as

the users and rules for each product were often different. The management of bhabbar and fishing leases has proved to be problematic in villages where a significant section of the village does not have experience in collecting and processing the products. In many cases the villages have simply resold the lease to contractors. This has often caused considerable conflict, and suggests that more effective rules need to be developed where different groups have substantially different approaches to the use of local resources. The experiences in the earlier villages suggests that it is possible for these rules to be developed internally if the decision makers can be held accountable.

The original need for village level organization was related to irrigation management. A major innovation that was attempted, but not always fully instituted, was to replace the regionally typical system of *warabundi* (rotation of irrigation time according to land parcels) with a system where each household, no matter how much land it owned, would have equal water rights. In actual practice, the patterns observed have been a mix of the traditional system with some land poor households using their newly acquired political power to press for a better share of a variety of common property resource rights within the village (Stewart in press). Institutional rules for managing a variety of forest based products are still at a relatively immature stage compared to the more successful Van Panchayats in Uttar Pradesh. A significant new attempt to strengthen the system of leasing forest products to villages, and in some cases to sub-village user groups, is currently under way.

C.3 Forest Protection Committees, West Bengal

The Forest Protection Committees (FPCs) of West Bengal have little in common ecologically with the Himalayan situation of the two previous cases (being located on the edge of the forest belt), but represent one of the most recent examples of bureaucratic innovation regarding common property resource management. The programme currently covers over 150,000 ha, primarily in the upland lateritic areas in the western part of the state. Most of the land was previously a sal dominated mixed forest, which has been substantially altered by heavy cutting and plantations.

Nearly 1300 Forest Protection Committees have been organized in response to Forest Department offers to provide preferential rights to certain tracts of degraded forests to specific villages, in return for villagers taking on responsibility for their protection (Malhotra and Poffenberger 1989). The Forest Department chose villages or hamlets as the user groups rather than official panchayats. The highly politicized village and panchayat level leadership often plays a major role in deciding which villages will be chosen for the scheme but no financial benefits are distributed through them. Benefits flow directly to specific users. There is a triangular rather than hierarchical relationship between the state, intermediate organization and individuals. Virtually all households are

members of the village Committee, which selects its own officials.

Protection

Although commercial harvesting was illegal, these forests were the source of large quantities of fuelwood required by West Bengal's large urban and industrial users. The primary harvesters were local women with few other sources of income. Firewood contractors employing local or outside labourers were also major users.

Protection of boundaries requires considerable labour for guarding in areas of high population density and road access, and must be organized collectively. The most common form of village level protection is group patrolling with rotating responsibility. The guards are nearly all men and are more numerous than those in the Van Panchayats of Uttar Pradesh. This is probably due in large part to the greater road access to the forests and relatively greater shortage of wood products.

Daily guarding done by villagers needs to be backed up by a quick response to illegal use by the Forest Department. The impressive protection which has taken place in many villages is evidence of the considerable faith the villagers have in the state, the local political bodies, and other villagers holding to the agreements. However, some Committees have voiced concern about the insecurity of their position in the absence of enabling legislation.

Boundary divisions between villages have gradually become more of a problem as the approach has been expanded, and the Forest Department is considering methods for the broader delineation of preferential use right zones.

Regulations

Use regulations depend on the management system, which varies considerably from village to village. The basic model developed at the Arabari Forest Range involved drastically reduced local use of the forest for income generating firewood cutting and animal husbandry (and reduced local fuelwood use) in return for employment in forestry activities. The costs therefore tend to bear most heavily on the poorest, who were most dependent on the output previously.

Much of the area where the FPC approach is being extended is primarily inhabited by Santal tribals who have long and intricate traditions of forest management. The main products they collect and process are tendu leaves for bidi cigarettes, sal leaves for plates, tasar cocoons for silk, and sal seeds for oil – all known as minor forest products. As these regenerate rapidly in protected sal forest, benefits are forthcoming after only a few years. Nevertheless, the villagers must still invest a considerable amount of labour and time before even these benefits are forthcoming. Benefits from pole plantations take much longer before they are available.

In the mid 1980s a decision was taken to share the benefits of the planned pole revenue, from regeneration and plantations, between the villagers and the Forest Department in a 25:75 ratio. The beneficiaries were supposed to be those households which had

contributed labour to the original establishment work and had participated in the guarding. Each household was to get an equal share of the villagers' 25% portion. Income from minor forest products accrues to those villagers who collect them.

In both types of management the regulation of use is done by the beneficiaries. Unfortunately, there is little evidence about how villagers actually distribute access rights internally, and about what is done when the restrictions on local fuel and fodder collection drastically change the overall availability. In areas where minor forest products are available it would appear that it is those with the skills and interest to harvest and process them who benefit most, mainly women (in particular poor women). Guarding is less difficult in regenerating sal areas than in pole and firewood stands, as it is considerably more difficult for outsiders to remove significant amounts of produce in a short time.

Development

The rapid spread of the FPC programme has owed

much to the demonstration effect of existing Committees. Apparently villagers already committed to protection of their area have been anxious to see neighbouring villages do the same, in order to reduce poaching of forest produce across village boundaries.

The FPC approach has been most successful in villages bordering extensive tracts of degraded forest land. In these villages the forest to household ratio is much higher than the average for the region and state. FPCs have also been organized where the ratio is low but they have been considerably less successful.

In the areas without any or much sal forest which could be regenerated it has proved difficult so far to develop viable production options. Plantations are costly to establish, take much longer to produce returns, and the returns to the villagers are lower. A large scale project is currently under review which would greatly increase the amount of investment available for developing new approaches.

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Glossary

Auran	Bush and tree covered plots in parts of Rajasthan. Usually associated with local religious deity. Access is controlled by local religious leaders and strong social sanction against any use.
Benas	Private grass plots in Uttara Kannada district of Karnataka.
Bettas	Plots of forest land with total usufruct rights to households with arecanut orchards in Uttara Kannada district, Karnataka.
Bhabbar grass	(<i>Eulaliopsis binata</i>). Grass which grows in the Shivaliks. Highly valued because of its long and strong fibres. Used for rope making as well as paper production.
Bhoodan	Gift of land; donated by landowners to the Ghandian land leader Vinoba Bhave for distribution to the poor.
Fodder farm	Typically 5- to 10-hectare plots of revenue or panchayat land which is levelled, usually irrigated, and used to grow green fodder throughout the year.
Ghasnis	Private grass plots in Rajasthan and Uttar Pradesh. Usually on steep slopes or undulating sites.
Mukhias	Traditional heads of important families, lineage, or caste groups in north Rajasthan.
Panchayat	Lowest level of Indian government. Usually covers from 3 to 10 villages and many more hamlets. Elections are tied to party based state elections but have not been held at regular intervals in most states.
Patta	Certificate of tenure issued by the Revenue Department authorities.
Poromboke	Lands incapable of cultivation or set apart for public or communal purposes. Products are in practice used by nearby users or auctioned by local administration.
Protected Forests	Forests where local rights include all uses except those which are not permitted under legal notification.
Reserved Forests	Forests where all local uses except those in notified lists are forbidden. Generally these lands contained the better forests or played an important protection function.
Ryotwari	Land settlement system adopted by the British in western and southern India, under which uncultivated lands became government property.
Shamilat	Traditional classification of common land in most of North India.
Soppinabetta	See betta.
Tree patta	Patta issued for the sole purpose of growing trees.
Zamindari	Land settlement scheme adopted by the British in areas where one group of families claimed to own all land, under which uncultivated land was generally incorporated into its estate.

