



Why Local Resources Management Institutions Decline: A Comparative Analysis of *Van* (Forest) *Panchayats* and Forest Protection Committees in India

VISHWA BALLABH

Institute of Rural Management, Anand, Gujarat, India

KULBHUSHAN BALOONI

Indian Institute of Management, Kozhikode, Kerala, India

and

SHIBANI DAVE *

Leadership Management International, Baroda, Gujarat, India

Summary. — Building and nurturing institutions are most challenging tasks in any development work. In this paper an attempt has been made to understand the rise and fall of institutions involved in the management of forest resources. This has been done through comparative case studies of *Van* (Forest) *Panchayats* of Uttaranchal and Forest Protection Committees of West Bengal in India. As has been documented, *Van Panchayats* have been created as a response to the people's movement against forest reservation at the beginning of the 20th century. The concept of Forest Protection Committees under Joint Forest Management in India has recently emerged in response to the severe degradation of forest resources and the persistent conflicts and movements against the State. The paper goes on to explain the evolution, management systems and effectiveness of these institutions along with the issues they are confronted with in the management and protection of forest resources.

© 2002 Elsevier Science Ltd. All rights reserved.

Key words — Asia, India, participatory forest management, proprietary rights, resource utilization and distribution, enforcing regulations

1. INTRODUCTION

Joint Forest Management (JFM) in India has emerged as a response to the severe degradation of forest resources and the persistent conflicts and movements against the State. The State not only prevented forest dwellers' equitable access to forest resources vital for their subsistence but also systematically drained resources to support others. In this context, **JFM is supposed to re-establish the vital link between the forest and the people living in and near the forestlands and is thus expected to empower people to control and manage the forest resources.** It is

* The authors would like to thank the Ford Foundation for providing financial support for the research on which this paper is based. The paper was presented at the International Workshop on "Shared Resource Management in South Asia" held at Institute of Rural Management, Anand, India during 17–19 February 1998. The authors would like to thank the workshop participants for their comments and suggestions, which have been helpful in the revision of this paper. The authors also wish to thank Dr. Archana Burde for her perceptive editing. Final revision accepted: 18 July 2002.

presumed that forest-dependent communities will then be able to identify themselves with the forest, thus establishing a complementary relationship between the development and protection of the forest and welfare of the people. Consequently, JFM assumes a shared responsibility of forest management between the State and the community, incorporating a combination of the traditional know-how of the people and the technology and resources available with the State. The technical expertise of the Forest Department may be combined with the communities' wisdom and their indigenous knowledge for mutual benefit. Moreover, the local community has the resources to provide low-cost social fencing for the protection and management of forests. JFM, therefore, is presented as an evolutionary process of the transformation of forest management with the willing co-operation of the people. Such co-operation involves the community's active participation in the conservation and development of the forest, and in turn, leads to the development of people themselves.

The crucial factor that will determine the success of the JFM program is the structural relationship between the Forest Department and the community organizations. In theory at least, JFM is supposed to pool individual resources and efforts in a manner that is complementary to both elements, leading to a higher level of joint production. The effectiveness of this process would therefore depend upon the capacity to devise rules and structures in which community organizations have sufficient incentive to contribute their best. The purpose of this paper is to examine how the effectiveness of local level institutions in forestry changes in the context of different structural relations and rules. This is done by comparing the functioning of *Van* (Forest) *Panchayats* (hereafter VPs) in the State of Uttaranchal¹ and Forest Protection Committees (hereafter FPCs) in the State of West Bengal in India. The selection of Uttaranchal and West Bengal has been deliberate. First, people's institutions in both places have emerged out of persistent conflict between people and the government for control over forest resources. VPs have been created as a response to the people's movement against forest reservation at the beginning of the 20th century (Ballabh & Singh, 1988; Guha, 1983; Saxena, 1987; Singh & Ballabh, 1991) and FPCs in West Bengal emerged out of conflicts and compromises made by the forest officials

who found it difficult to conserve and protect the forest without people's involvement (Roy, 1992; Singh, 1994). Second, both institutions have a widespread impact on participatory forest management and have been cited as successful examples of people's involvement in forest management.

This paper is based on two case studies each of VPs and FPCs and on a comparative examination of the problems and issues they face. The paper is divided into seven sections. Section 2 describes a brief history of the origin and evolution of VPs and FPCs. Section 3 provides a description of the selected villages, VPs and FPCs. Section 4 gives a detailed account of the organization and management of the forests by the local institutions involved, while Section 5 discusses the aspects of resource utilization, distribution of benefits and the enforcement of rules and regulations. Section 6 contains a comparative overview of VPs and FPCs in the states of Uttaranchal and West Bengal respectively. The paper ends with a summary of the emerging issues and conclusions.

2. A BRIEF HISTORICAL ACCOUNT

The *Van Panchayats* (VPs) in Uttaranchal are an upshot of the people's resistance against the State's efforts to take over and exploit the forests that belonged to the people much before the British came to India. During the British rule in 1916, however, a group of Indian elite formed the Kumaon association to look into the forest problems of Kumaon² originating from the reservation of forests by the State. They organized people in Uttaranchal to take up forest issues that affected their lives and livelihoods (Ballabh & Singh, 1988; Guha, 1983). Of the two forest settlements in Uttaranchal since the issuance of the Forest Act in 1878, the second settlement done during 1911–17 was quite extensive. All but cultivated land were brought under the control of the Forest Department and a wide range of restrictions were imposed on grazing, lopping and collection of forest produce. These brought severe hardships to the people and several social movements, protests and agitations were initiated in the Kumaon region of Uttaranchal. A result of these protests was the setting up of a Forest Grievances Committee by the State to redress people's grievances. The committee realized that any further effort to impose strict forest regulations was likely to lead to blood-

shed. The committee recommended reclassification of forests. The formation of VPs was recommended instead, where forests with low commercial value but which had high value for the locals, were classified as Class I forests and handed over to the Revenue Department. In consequence, Forest *Panchayat* rules were enacted in 1931, Class I forests were de-reserved and VPs were also formed for the management of civil forest³ areas (for details see Ballabh & Singh, 1988; Somanathan, 1991). According to 1995 figures, Uttaranchal has more than 4,800 VPs covering 244,800 ha of forest area spread over six districts of the State.

In West Bengal, on the other hand, the idea of community participation in the management of forests emerged in 1971–72. The then District Forest Officer of East Midnapore Forest Division, AK Banerjee is considered to be the motivating force behind it. Concerned with the fast degrading forests of Arabari, he painstakingly convinced the people to desist from forest exploitation in the agricultural lean period, in return for relief work he was willing to offer them, with the assistance of the then Block Development Officer. Together they persuaded all the 618 households living in and around the forest to create a Forest Protection Committee (FPC) and allowed them free access to all nontimber forest products (NTFPs). Twenty-two people from the 11 participating villages, along with some help from forest guards started patrolling the forest in the daytime. A Government Resolution in 1989 and a modified one in 1990 finally formalized this partnership between the communities and the Forest Department. The resolution stipulated five years of protection for the forest to be eligible for harvesting and a 25% share of the net sales from it to the FPC members (Singh, 1994). The program now covers 490,582 ha in West Bengal through 3,431 FPCs (Bahuguna, 2001).

The above story, however, is an oversimplification of the whole context. The spread and acceptance of JFM is also correlated with the failure of the State to involve people in the Social Forestry programs designed to reduce pressure on the forest resources (Ballabh, 1996). The conflict between the State and local communities for control over forest resources during the 1970s led to the recasting of the State's agenda in terms of protecting the environment through people's participation (Pathak, 1994). But since the State-directed afforestation programs failed or could not meet

the requirements of the forest-dependent communities, the conflict between the Forest Department and local people continued. For example, in Gujarat alone, an average of 18,000 forest offences are recorded each year (Pathan, Arul, & Poffenberger, 1991). Similar experiences are reported from other States (see for example Kolavalli, 1995). At the same time, the State Forest Departments find it difficult to exclude people from forests through punitive methods. JFM, from this perspective, appears to be a method of reducing the cost of monitoring and enforcement of the States' prerogatives on forest resources. Nevertheless, the potential of JFM is enormous provided the people's stake and involvement is recasted in a manner that enlists their meaningful participation.

3. SELECTED *VAN PANCHAYATS* AND FOREST PROTECTION COMMITTEES

Two VPs namely **Parwara** in Dhari Development Block in Nainital District and Dolpokhra in Hawalbag Development Block in Almora District in the State of Uttaranchal were selected for the study. We selected the **Parwara** VP purposively to compare the results of its present study with another study of the same VP undertaken by Ballabh and Singh (1988) 10 years back. The Dolpokhra VP was also selected purposively to represent the diverse forest vegetation to that of Parwara VP. The forest managed by the **Parwara** VP is Oak (*Quercus* spp.) dominated, whereas the forest managed by the Dolpokhra VP is a Chir Pine (*Pinus roxburghii*) dominated forest.

The two FPCs selected for the study were Nutandihi (Chalakpara) and Garhmal, both situated in Moupal Beat of the Bhadutola Forest Range under the East Midnapore Forest Division. This area falls under Midnapore District in the State of West Bengal. The choice of the two FPCs was deliberate, Nutandihi (C) being a very small and self-sufficient village with a successful forest protection program and Garhmal being a comparatively larger village, rife with internal conflicts and one of the only two unsuccessful FPCs in the Bhadutola Forest Range. Both forests are mostly Sal (*Shorea robusta*) dominated, with the Garhmal forest partly consisting of a miscellaneous plantation. Tables 1 and 2 provide the salient features of these villages and local institutions.

Table 1. *Basic information about selected villages*

Particulars	Van Panchayat village		Forest Protection Committee village	
	Parwara	Dolpokhra	Nutandihi (C)	Garhmal
<i>Land^a (in ha)</i>				
Total geographical area	504.4	178.4	193.42	359.76
Cultivated land	130.4	19.0	189.68	342.53
Noncultivated Land	—	—	3.74	14.63
Forest managed by Van Panchayat/Forest Protection Committee	322.6 ^b	88.0	40 ^c	89.05 ^c
Grazing land, cultivable and other wastelands	89	71.4	—	2.6 ^d
Ratio of cultivated and uncultivated land	1:3.2	1:8.4	1:0.2	1:0.3
<i>Demographic details^e</i>				
Total population	875	102	319	1061
Total households	140	16 ^f	27	219
Caste ^g	Dominated by <i>Kshatriyas</i> (130 households); three households are <i>Brahmins</i>	Dominated by <i>Kshatriyas</i> (13 households)	Majority households (21) are <i>Kshatriyas</i> and <i>Brahmins</i>	Majority households (160) are scheduled castes and scheduled tribes
Literacy (%)	46.7	23.5	11.3	16.4

^a As per the land records of *Patwari* Office and Forest Department for the selected *Van Panchayats* and as per land records of Revenue Office, *Gram Panchayat* #8, Midnapore District for selected Forest Protection Committees.

^b Includes 37.6 ha of civil forest handed over to *Parwara* Van Panchayat in the year 1990 for its management.

^c Forestland owned by the Forest Department and managed by Forest Protection Committee.

^d Village common land (grazing land) converted into Eucalyptus plantation.

^e Based on 1991 Census of both states.

^f According to our household survey in the village Dolpokhra, there were 20 households. According to the Census 1991, however, there were 16 households in the village.

^g Traditionally *Kshatriyas* and *Brahmins* have more control on natural resources in the village socioeconomic-political arena as compared to Scheduled Castes and Scheduled Tribes in India.

Table 2. *Salient features of selected Van Panchayats and Forest Protection Committees*

Particulars	Van Panchayat		Forest Protection Committee	
	Parwara	Dolpokhra	Nutandihi (C)	Garhmal
Year of establishment	1932	1958	1987	1981
Van Panchayat/Forest Protection Committee managed forest (in ha):				
—Per household	2.3	4.4	1.48	0.41
—Per person	0.37	0.86	0.13	0.08
—Per cattle unit	0.48	0.94	0.69	1.71
Reserved forest ^a in the vicinity of village	No	Yes	No	No
Type of forest	Oak (<i>Quercus</i> spp.) dominated broad-leaved forest	Chir Pine (<i>Pinus roxburghii</i>) dominated forest with some patches of broad-leaved trees	Sal (<i>Shorea robusta</i>) dominated forest	Sal dominated forest
Status of forest (quality)	Fair (some patches of degraded forest)	Fair	Fair	Fair
Women's involvement in forest management	Yes (<i>Sarpanch</i> /President of VP Committee is a woman)	No (even though there is a woman member in the VP Committee)	No	No

^a Reserved forests are controlled by the Forest Department. People have limited rights and concessions in them.

4. ORGANIZATION

The *Parwara Van Panchayat* Committee (hereafter VP Committee) has **nine** members selected from amongst the villagers through a **democratic process**. One committee member is from **Scheduled Caste** and the rest belong to the **dominating caste** (Table 1). In the case of Dolpokhra village there are seven members in the VP Committee. One of the members belongs to neighboring village Badgal Rautla, representing 20–25 households of the village having land in Dolpokhra. The committee also has a female member. In the present committee, four out of the seven members are relatives of the *Sarpanch* (President of VP). Our discussions with the households seem to indicate that people belonging to one caste, *Kshatriyas*, have more say in the management decisions since they numerically dominate the village (Table 1).

The FPCs of Nutandihi (C) and Garhmal have six and 13 executive committee members respectively. In both cases, the committee members are selected by the villagers in the presence of the Beat Officer of the Forest Department. In the case of Nutandihi (C) there are no elections or rotational selection and the same people have been members for the last 10 years. As for Garhmal, the executive committee is dissolved and selected every year and there have been a number of changes in the members. During the course of the data collection for the present study, two members were dropped from the committee because the villagers did not have faith in their commitment to protect the village forest. There are households belonging to different castes in Nutandihi (C) and Garhmal. Since there is no single caste domination in either of the villages, such peculiarities are not reflected in the selection of the executive committee. Nutandihi (C) being a small village, all the members are involved in the decision-making process. In Garhmal, however, though there are no dominant castes, disputes prevail within the village among the two different *paras* (hamlets)—East *para* and West *para*. In consequence, it seems that the East *para* is more actively involved in the decision making process of forest management.

The election to the VP Committee is mostly done in an informal manner by raising hands, not by secret ballots. The VPs are not free from factionalism and groupism. However, the system of informal elections to the VP Committee had in the past provided the opportunity for participation across groups and moderate

members of the opposition groups were always co-opted in the VP Committee (Ballabh & Singh, 1988). The decision used to be arrived at through a process of consultation and consensus. This process appears, however, to have eroded over time. The last election for the post of Chairman and the executive members of the Dolpokhra VP was held in the year 1987. Some villagers argued that the current Chairman has colluded with the *Van* (Forest) *Panchayat* Inspectors⁴ and managed to prevent the VP from holding any further election. The *Brahmins*, numerically minority caste in the village, have tried to hold new elections for the VP Committee but in vain. **But the elections for the VP Committee take place regularly and in a democratic process in the village Parwara.**

As in Dolpokhra, Nutandihi (C) has not had any executive committee elections/selections for the last 10 years. Unlike Dolpokhra, however, this has not been the decision of any one individual or caste of the village for personal gain, but more of a community decision where people have been satisfied with the functioning of the FPC and do not see the need to revamp it. Apparently the notion of collective responsibility has emerged in this village. In Garhmal, the story is completely different where the executive committee is selected every year in a village meeting in the presence of more than 25% of the member community. Here, though internal disputes continue, most members are actively involved in forest management; almost all know about the JFM program going on in the village and are aware of the dissolution and reconstitution of the new executive body.

There is complete dominance of the President of Dolpokhra VP in the management of the forest for the last 10 years. The President sometimes takes decisions without the consent of any of the executive members of the VP. This is apparent from the case of the establishment of the community orchard in the VP forest (Balooni & Ballabh, 2002). This has resulted in conflicts in the management of the VP forest with every action and decision of the President belonging to the dominating caste opposed by the households belonging to the minority caste. The result is the absence of any developmental activities in the village. Most of the developmental activities have previously taken place (school, health-care) around the settlements of the dominant caste. Now any new activity taking place in these settlements is interrupted by the other communities in the form of making complaints to the concerned officials on the

issues of corruption and the breach of Government laws. The result of this rivalry within the village has a bearing on the management of VP forests and hinders the effective enforcement of rules and regulations.

As noted above, in the case of the FPCs, since almost all members are present for meetings in Nutandihi (C) and about 30 members are present at each meeting in Garhmal, there is some notion of transparency to be seen in the decision-making process as all decisions are taken in the presence of a number of the FPC members. Yet in Garhmal, the dispute between the two *paras* (hamlets) has influenced the decision making process. The village records of FPC meetings and from talks with the villagers indicated that the West *para* residents no longer attend the meetings because of the hostile relations between them and the East Garhmalis. The other side of the story is that the East *para* members have meetings with the Beat Officer without informing the West *para* members. Naturally then, decisions averse to the benefit of West Garhmalis are taken which lead to conflict within the village.

5. MANAGEMENT

The **Van Panchayat Act** outlines the broad parameters within which the management practices of the panchayats take place. However, the villagers themselves craft the specific rules that govern the withdrawal of benefits from their forests, may create monitoring, sanctioning and arbitration devices to resolve the vast majority of disputes within the local space (Agrawal & Yadama, 1997, p. 438). According to Ballabh and Singh (1988, p. 14):

depending upon the demand and supply of the forest products, each *Van Panchayat* makes its own rules, regulations and determines methods of utilization. Not only does the entitlement of proprietary right holders vary, methods of utilization also vary from one *Van Panchayat* to another *Van Panchayat*.

The West Bengal Forest Department lays down similar rules for all FPCs in the State, governing the utilization of forest resources by them. The FPC members undertake harvesting, distribution of benefits and access to the forest produce both timber and nontimber, according to the rules laid down by the government regulations. Each FPC has more or less the same rules and regulations in terms of the distribu-

tion of benefits wherein 25% of the proceeds of sales from the timber harvest is distributed among the FPC members. They are also entitled to 25% of the proceeds from cutting and thinning operations, either in cash or in kind and have free access to all NTFPs. Table 3 presents the utilization pattern of forest produce by sample households in the selected VPs and FPCs.

(a) *Resource utilization and distribution*

(i) *Grazing, grass cutting and distribution*

The forest managed by the Dolpokhra VP is abundant in grasses. The villagers graze their cattle inside the forest. People from nearby villages, which have no forest of their own, also graze their cattle in the Dolpokhra forest. It was also reported that some households in the village sell grass to nearby villagers. A section of the villagers from the minority caste revealed that the Dolpokhra VP can earn substantial income from the sale of the grasses by implementing a system for harvesting on a fee basis. The households related to the President do not, however, allow him to implement any rule for the equitable distribution of grass among the villagers. The Dolpokhra village is scattered among a number of settlements inside the forest. It was revealed that some of the households do not allow others to graze their cattle in the forest areas adjoining their private lands and this sometimes leads to conflicts among the villagers.

In the forest managed by the Parwara VP, grazing by cattle is unrestricted. However, it is prohibited in the areas handed over to the Forest Department for rehabilitating degraded forest areas. Grass cutting is also restricted in such areas of around 60 ha and in an area of 8 ha specifically earmarked for grass production. Of late, the Parwara VP has started collective harvesting of grass. These areas are open for harvesting for 15 days during the months of September–October and each household is allowed to cut one bundle of grass of around 20–30 kg per day for a nominal price of Rs. 1 (US\$1 = Rs. 48 in 2001). The revenue earned from the sale of grass goes to the local account of VP.

The villagers of Nutandihi (C) and Garhmal FPCs take their cattle to the forest for grazing and grass is neither harvested nor carried home. They also allow their cattle to graze in the fields and feed them with hay and straw obtained from the fields. Residents of neighboring vil-

Table 3. *Utilization pattern of forest produce by sample households in selected Van Panchayats and Forest Protection Committees*

Particulars	Van Panchayat		Forest Protection Committee	
	Parwara	Dolpokhra	Nutandihi (C)	Garhmal
Sample households	70	20 ^a	27	30
Average family size	6	5	12	5
Average live-stock (cattle unit)/household	5	6	2	2
Average quantity of fodder used (in quintals/household/annum):				
—Dry fodder	14.97	15.67	—	—
—Green fodder	27.76	28.73	—	—
Average quantity of fuelwood consumption (in quintals/household/annum)	39.60	36.47	36.99	34.05
Average collection of dry leaves from forest for making manure (in quintals/household/annum)	30.17 ^b	19.03 ^c	Sal leaves are collected for making plates	Sal leaves are collected for making plates
Number of households collecting other forest products:				
—Wood used for stacking agricultural crops	49	12	—	—
—Fruits	70	20	—	—
—Medicinal plants	6	—	—	—
—Mushrooms	4	—	—	—
—Sal leaves	—	—	27	16

^a See Note d in Table 1.

^b From Oak and other broad-leaved tree species.

^c 18.25 quintals of Chir Pine needles, and 0.78 quintals of Oak and other broad-leaved tree species.

lages are frequently allowed to graze their cattle in the Nutandihi (C) and Garhmal forests, however, they have no claim to the forest and may be prohibited. Forest grasses are not a major source of fodder here.

(ii) *Fodder and collection of dry and fallen leaves*

In the village Parwara, before 1990, every year in the month of January, the VP opened two compartments of the forest on a rotational basis to meet people's requirement for green fodder. This also depended upon the location of the compartment from the two hamlets (*aar* and *paar*) of the village. The VP allowed the villagers to take a bundle of around 20 kg per day for a fee of Rs. 5 for the whole month. The VP also advised the villagers to lop only three-fourth of the tree crown; the remaining top one-fourth was left for future growth of the tree. They did not, however, follow this rule resulting in the degradation of the forest. In the year 1990, the VP decided in its annual meeting to forgo this system for the sake of the regeneration of the degraded forest. Now people are

allowed to collect only dry Oak leaves from the forest during March to May to meet their requirement for making manure after mixing with cow-dung. An added advantage in doing so is the reduced danger of summer fires in the forest.

The sample households in the village Dolpokhra reported that there is an acute shortage of green fodder from the forest. In the last two decades the number of fodder-yielding trees such as Oak, Utish (*Alnus nepalensis*) and other broad-leaved species has declined drastically in their forest owing to lopping beyond the threshold level. Only a few fodder trees are left and their habitat is being encroached on by the Chir Pine trees. This has resulted in the shortage of good quality fodder for cattle and hence reduction in the milk output. The scarcity has affected the use of leaves as manure, which substituted for fertilizers in Uttaranchal. For green fodder, the households are now dependent on the trees standing on their agricultural lands.

There is no restriction on the collection of Chir Pine needles from the forest in Dolpokhra.

The Chir Pine needles are used as a cushion for the cattle, which on an average, is replaced once in a week. The removal of the Chir Pine needles also reduces the risk of fire during the summer season and helps the growth of many useful herbaceous species.

Green fodder is not collected from the forests in either Nutandihi (C) or Garhmal. The only green fodder consumed by the cattle is when they are grazed in the forests. Sal leaves are collected for making plates, which are sold in nearby markets. There are no rules and regulations governing this activity and the FPC allows all villagers to collect as many leaves as they want. In Nutandihi (C) all the villagers are involved in this activity, while in Garhmal only the tribal community makes Sal plates. On a smaller scale, Kendu/Tendu (*Diospyros melanoxylon*) leaves are collected in both villages, more so in Nutandihi (C) and sold to traders for *bidi* (traditional cigarette) making.

(iii) Fuelwood

During our visit to sample households in the Parwara and Dolpokhra villages, we observed that they have a large stock of fuelwood in their court yards, which can be used for months. The people of both the villages have the right to collect the dry and fallen branches and twigs. However, they are not allowed to cut green twigs and branches from the forest. If our discussions with the households are any indication, this prohibition is followed by each and every household. The VP sells the dead and dying trees, and those trees which fall during winters to the people at nominal prices.

Each household collects its own fuelwood in Nutandihi (C). Women do this work almost four to five times in a week. In Garhmal however, not all the villagers go to collect the fuelwood themselves. The tribal communities collect fuelwood from the forest and sell it to the rest of the villagers. It was found that people in Nutandihi (C), Garhmal and all surrounding villages were free to collect dry and fallen twigs, but cutting of green branches and twigs was prohibited. On being asked, the villagers very strongly denied ever having cut live branches and insisted that they collected only dry and dead twigs and branches.

(iv) Timber

The Government has imposed a ban on the felling of live trees since 1981 in the Kumaon region. The VP cannot sanction any living tree to the villagers. But, trees fallen during winters

or storms and due to fire or some other reasons are either sold to the villagers or given to the local contractors appointed by the Forest Department. Illegal cutting of trees from the VP forest by the people of the Parwara village and its neighboring villages is one of the major constraints faced by the VP Committee in its management. The occurrence of such incidents in the same village 10 years ago was rare (Ballaiah & Singh, 1988). Now, almost everyday the President of the Parwara VP comes across complaints of illegal cutting of trees. People generally cut the trees during the night and leave the fallen trees. Consequently the Parwara VP is left with no choice but to auction these trees, otherwise the villagers take them free of cost. The trees are sold at very low prices. The ban on the felling of living trees in the VP forest has resulted in the diversion of the people of Dolpokhra and the neighboring villages to the nearby reserved forests to meet their demand for timber and fuelwood. These reserved forests are less protected as compared to the forests managed by the VPs.

To obtain timber for personal use, members of the FPCs in West Bengal need to apply to the Beat Officer through the FPC, but, dead and fallen trees are sold within the village. In Nutandihi (C), the FPC members provide trees free of cost in the event of a death or marriages. In both the villages there were signs of theft and illegal cutting of trees, more so in Garhmal where serious conflict is raging in the village with regard to last year's distribution of benefits from the harvesting. According to East para (hamlet) residents, the West para people are an irresponsible lot who have cleared out their own side of the forest and are now turning to the part nearer to the East para. But, the forestlands farther away are equally purged and there is evidence of large-scale felling in those parts. The only solution for Garhmal according to the villagers seems to be the formation of separate FPCs for both hamlets and consequently, partition of the forest.

(v) Other forest products

Resin extracted from Chir Pine is a major output of the VP forest of Dolpokhra. The sale of resin substantially contributes to the income of the VP. Resin is also collected from the Chir Pine trees standing on private lands (*nap* land) and this helps villagers earn some income. In the case of resin tapping from the VP forest, the Forest Department calls for tenders. The application with lowest quotation for resin tap-

ping is given the contract. Anyone from Dolpokhra or any other village can collect resin from private land with villagers' consent. In this case, a person has to obtain a number of approvals for resin tapping and bear the expenditure (bribe) involved in moving his/her application from one office to the other.

Mining or collection of stones from the forests of Parwara and Dolpokhra is not free and miners must pay a royalty to the VPs. In the village Parwara, the fee is Rs. 300 per month for those belonging to the village and Rs. 400 for outsiders. In Dolpokhra, a miner has to pay a royalty of Rs. 200–300 to the VP for extracting stones from the forest. The total royalty depends upon the size of the house being constructed by the miners. In Parwara, the person extracting stones by mining the forest-land, generally a degraded patch, has to assure the VP that no damage will be done to the living trees. Otherwise the person is charged a fine depending upon the value of damaged trees. Persons involved in the illegal extraction of stones are charged a fine according to the number of stones extracted, although, the Dolpokhra VP reported no such regulations.

(b) Enforcing regulations

To enforce the rules and regulations of resource utilization and for the protection of the VP forest, the VPs have been empowered under the *Van Panchayat* rules. The VPs also develop their own formal and informal institutional arrangements to protect the forests and to check that the villagers adhere to the rules and regulations. Again, these formal and informal institutional arrangements vary from one VP to another, depending upon factors such as size and species composition of the forest, manpower availability (for social fencing) and resource availability, in terms of revenue with the

VP to appoint forest guards. The VP Committees are also empowered to fine an offence up to Rs. 50 and up to Rs. 500 with the permission of Sub-Divisional Magistrate, who is the ex-officio Forest *Panchayat* Officer.

Similarly, FPCs are empowered to fine the offenders. Offenders may be fined between Rs. 20 and Rs. 100 according to the seriousness of the offence or depending on the value of product being pilfered from the forest. As far as possible, the FPCs deal with the offenders themselves by warning them and issuing small penalties. When they fail in dealing with the matter, the FPCs report the cases to the Beat Officer. According to the villagers, people taken to the Beat Officer are likely to be imprisoned (such cases have occurred in nearby villages) or heavily fined. Other measures such as fencing are rarely undertaken in these villages.

(i) Nonpayment of fines

One of the sources of revenue for VPs is the fines collected from the offenders. The revenue collected may reflect the grip of governance but is not an indicator of the sustainable use of resources. The more crimes are committed, the more fines are collected and the more revenue is collected, all at the cost of the forests. In Parwara, it was realized that fines have become a form of regularization of offences. The sample households revealed that people would generally pay fines, as they considered them to be the price of the produce they collected from the forest. But, an analysis of the amount of fines imposed and collected, and the default cases registered in the fine book of the Parwara VP indicated that the offenders are not paying the fines (Table 4). The VPs registered 646 default cases against the offenders from village Parwara as well as its neighboring villages during 1992–96. The total value of the default fines has compounded to Rs. 18,096. This value does

Table 4. Fines imposed, collected and evaded during 1992–96 in Parwara Van Panchayat (in Rs.)

Year	Number of cases registered	Imposed fine	Collected fine	Number of default cases	Value of default fines
1992	153	2,273	683	71	1,590
1993	186	5,254	1,289	94	3,965
1994	155	3,662	450	132	3,212
1995	309	7,419	1,655	236	5,764
1996	153	4,345	800	113	3,545
Total	956	22,953	4,877	646 (67) ^a	18,096 (79) ^b

Source: Records of Parwara Van Panchayat, Dhari Development Block in Nainital District, Uttarakhand.

^a Percentage of total number of defaults to total number of cases registered.

^b Percentage of total value of default fines to total imposed fine.

not, however, represent the market value of the produce pilfered from the forest. Out of the total cases registered, only 33% of the fines have been paid whereas the rest of them are yet to be paid to the VP. The VP can only collect a fine of maximum of Rs. 50. Fines imposed by the VP above this amount, generally for tree cutting, are collected by *Patwari*, the concerned Revenue Officer. But the President rarely refers such cases to the *Patwari* to save the offender from exploitation at the hands of the *Patwari*. Instead, in such cases, fines are converted into a small number of fines accumulating to the same amount and the offender is asked to pay up.

An analysis of the accounts containing fines imposed by the Dolpokhra VP on offenders involved in illegal activities in the forest revealed that no fine has been imposed on any one after the year 1992. The President revealed that no person in the village is involved in any illegal activity; hence no fine has been imposed in the last five years. The sample households, however, refuted this claim. According to the villagers interviewed from the cluster of villages including Dolpokhra, the forest managed by Dolpokhra is treated almost like an "open-access" resource for cattle grazing and harvesting of grass. Even people from neighboring villages come and take away grass.

In Nutandihi (C) there are still a few villagers who do not comply with FPC's rules and regulations and continue to illegally fell trees. Such cases occur once or twice in a month and fines of Rs. 20–100 are imposed when somebody is caught. The villagers believe that some people have learned their lesson and have stopped stealing fuelwood, but others continue. In their experience, Nutandihi (C) villagers usually pay up their fines within a few days. In rare cases people are made to pay by taking them to the Beat or Range Officer. The little revenue earned from the paid-up fines is used for village *pujas* (religious ceremonies). As for keeping records, we found exactly two records of paid-up fines with the FPC Secretary of Nutandihi (C).

In Garhmal, the situation is worse. Illicit felling continues on a large scale and people are reportedly fined, but there are no records. People playfully accuse and point out each other as offenders, some even talk of having paid fines, but it has no documentary evidence. On a more serious note, the East Garhmalis talk vehemently of large-scale theft by the West *para* (hamlet) residents and how the East Garhmal residents have informally divided the forest into two parts to protect the forest from

the latter. There is however no information on fines.

(ii) *Social fencing*

Some VPs in Uttaranchal still use *social fencing* for protection of the forests managed by them. An earlier study, however, suggests that many VPs, including Parwara, kept paid forest guards and also provided rotational services for protection and management of the forests (Ballabh & Singh, 1988). During the course of the present study we found that Parwara VP has one paid forest guard. But, a majority of the sample respondents feel that as the VP is paying wages to the forest guard so it is his/her duty to protect the forest. Besides there are three *Mahila Van Suraksha Samitis* (Woman Forest Protection Committees) (MVSS),⁵ involved in protection of the village forest in Parwara, each MVSS having thirteen members in village Parwara. Two of the MVSS were formed in Parwara (for the two hamlets, *aar* and *paar*) and one MVSS was formed in the Majedha village since a majority of the households in this village have usufruct rights in the Parwara forest. Formed in the year 1996 the MVSSs have divided the forest into three parts, each taking care of one part. The MVSSs go on forest rounds in groups of five-six members every month to check the damage done and the extent of encroachment. The members of all the three MVSSs meet on 12th day of every month to discuss their findings and take decisions for future action plans. Only one woman per household can become the member of MVSS, but all women can participate in the MVSS activities and discussions. There are also other organizations like the *Mahila Mangal Dal* and the *Yuvak Mangal Dal* involved in undertaking various developmental activities in Parwara. These organizations also help the VP in the protection of the forest. In spite of these arrangements, the pressure on the Parwara VP is increasing due to poor forest resources in neighboring villages, which makes it difficult for the Parwara residents to protect the forest from pilferage by others.

The FPC members in West Bengal are actively involved in patrolling the forests. Usually, two to three groups of about seven members each are formed in each FPC to patrol the forest during the daytime. The forests are not always guarded during the night since the villagers do not deem it necessary. However, almost all the villages visited gave indi-

cation that they participated in patrolling the forest.

(iii) *Protection of a massive forest area*

Apparently, the population–forest ratios in Nutandihi (C) and Garhmal are not major hindrances to the FPCs in the protection of their forests. In both villages the problem seems to be more of easy accessibility of the forests to surrounding villages and their location, rather than their size. The distance of the forest from people's habitat strongly influences the extent of people's participation in the management and protection of the forest (Balooni & Ballabh, 2000). In Nutandihi (C), the part of the forest nearer to the village is easily monitored and is in a much better condition than the other which is nearer to the surrounding villages and more easily accessible to them. Neighboring villages like Moupal, Chengshol who have practically degraded their own forests, come and pilferage from this part of the Nutandihi (C) forest. When Nutandihi (C) villagers complained to the District Forest and Range Officers about it, they were told that it was their job to protect their own forest and that the Forest Department could do nothing about it. The villagers argue that since they are smaller in number, it is difficult for them to oppose felling by members of larger and better-off villages.

In Garhmal, the forest is a huge scattered expanse of almost 90 ha (60 ha of Sal and 30 ha of Eucalyptus plantation). It is located mainly in four places, a pure Sal forest bordering the length of the village, a Eucalyptus plantation adjoining the village and extending across the approach road and in that direction, a pure Sal forest about 2 km away from the village, and a mixed plantation cum Sal forest about 5 km away from the village. The distance of the forest plots from the village and from each other makes it difficult for the Garhmal villagers to monitor and protect these fragmented forestlands effectively. The proximity of some of these plots to surrounding villages however, makes them easily accessible to offenders from those villages.

(iv) *Encroachment of forestland*

Due to small landholdings in Parwara (average landholding of 0.93 ha per household), encroachment of forests during the agricultural season has become a common occurrence. The President of the Parwara VP revealed that five to six such cases of transient encroachments take place almost every agricultural season.

But, the encroachments by the people of adjoining villages are even more troublesome. In spite of having been served notice by the Parwara VP, the encroachers refuse to vacate the land occupied by them. The Dolpokhra VP is also facing a similar problem of forestland encroachment, but to a lesser extent.

In the East Midnapore Forest Division in West Bengal, encroachment evictions for 80 ha took place under four different ranges during 1993–97. But, there were no signs/reports of encroachment in either village. The reason in Nutandihi (C) may be the small size of the village and therefore the ability to regulate the villagers' use of the forest or perhaps, a higher sense of propriety and peer pressure.

6. VAN PANCHAYATS AND FOREST PROTECTION COMMITTEES: A COMPARATIVE OVERVIEW

As evident from these case studies, the effectiveness of VPs and FPCs in the management of resources varies considerably. At the local level, there are cases of successful designs for sustainable and equitable use of resources. As the case studies also demonstrate some of the VPs and FPCs are unable to craft and enforce rules to resolve the collective action dilemma. The VPs of Uttaranchal have been admired and commended by many scholars and researchers for managing vast tracts of forest resources (Ballabh & Singh, 1988; Saxena, 1987). Some scholars (see for example Prabhakar & Somanathan, 1999), however, believe that VPs have degenerated, and they suffer from incursions, encroachments, pilferage and corruption. Their argument is that VPs follow a conservationist approach and modern silvicultural practices are not adopted in VP forestlands. In the villages we visited, the older people also seem to have noted the signs of deterioration and degeneration of forests.

Two important questions that need to be answered concern the nature of factors that influenced the institution of VPs and its implications for FPCs formed under JFM programs. Recent studies on long-enduring and robust institutions, which collectively manage forest, water, fisheries, and grazing land, have demonstrated that they survive when the resource users themselves have devised, applied, and monitored rules to control and use resources. These rules are designed following set principles of constitutional, collective and operation level

decision-making. Institutions can provide information and counteract opportunism, and thus help human beings to overcome the constraints of co-operation. This is possible only when these institutional arrangements are shared and understood by the members of the community. The community's shared knowledge and understanding can be reinforced through various institutional arrangements, which pertain to problem-solving activities in the daily life of individuals (Lam, 1994; Ostrom, 1992). Common knowledge can be built through communication and interaction with one another; therefore, institutions should be designed to encourage communication and interaction (Hardin, 1991). All this is possible only when the community is given sufficient flexibility to engage in day-to-day problem-solving activities and without dependence on external forces.

The VPs started with all the above characteristics; they were free to make their own rules and regulations about protection, distribution and management of forests. Fines and sanctions imposed by the VPs were treated as final for offences committed within the VP managed forests (Ballabh & Singh, 1988; Singh & Ballabh, 1991). These powers and flexibility have reduced over time. Now, prior to making any changes, the VPs have to take approvals from the Sub-Divisional Magistrate for every administrative matter, and from the Forest Department for technical matters. The new provisions not only affix significant cost to the VPs but also cause considerable delays in resolving issues. In recent times, the boundaries of some VPs have been arbitrarily redefined so that villages which previously shared have new areas for their exclusive use. In many cases, these new demarcations did not follow the traditional boundaries (Arnold & Stewart, 1991), resulting in confusion and disputes among villages. Encroachments and illegal fellings are the two major problems here. The need to go through government judiciary and revenue authorities is time consuming and creates uncertainty. The blueprint approach to a wide range of problems provides arbitrary power to government officials associated with VPs (Ballabh & Singh, 1988). As a result, some of the VP presidents collude with the *Van Panchayat* Inspectors and prevent significant participation of the people in forest management. The uncertainty about when and how the government will involve itself in the adjudication of rights has also weakened the effective management

of VP forests (Arnold & Stewart, 1991). This provides officials the opportunity for rent-seeking and corruption. In addition, the decision to implement JFM programs in the VP forest areas erodes the rights of these VPs and is likely to create more confusion among the people, Forest Departments and Revenue Departments. The VPs will now be subject to the JFM resolution of the Uttar Pradesh Government,⁶ although, many provisions of the VPs and JFM contradict each other. For example, the association of VPs with the Forest Department is only for technical matters and commercial sales. On the other hand, the JFM resolution provides wide-ranging powers to the Forest Department to enable intervention in organizational and management issues of the FPCs.

As for JFM programs, these too are confronted with similar issues. The current resolutions of JFM in most states restrict the development of shared understanding among the members of FPCs. Almost all state resolutions allow people to form committees to protect only degraded forests, and the size of the committees and the executive committees is predetermined. The area to be allocated and the demarcation of the boundary are fixed by the Forest Department. Micro-plans concerning the method of protection need to be approved by the Forest Department. In most states, the Forest Department retains the right to determine disposal procedures for commercially valuable products, including NTFPs. Above all, Forest Departments can terminate FPCs and dissolve executive committees without assigning any reasons. The Beat Officer from the Forest Department is either an *ex-officio* member of the executive committee or in some states, a member secretary (such as in West Bengal). The FPCs, therefore, always look to the Forest Department to address conflicts instead of resolving their own collective problem. This leads to further conflicts. To illustrate this point, two villages, Pingot and Mota Jambuda in the Bharuch District of Gujarat State developed their own agreements, shared a common forest and protected areas conveniently allocated to them. But the whole forest is within the revenue jurisdiction of Pingot village; therefore, the Forest Department did not recognize the proprietary rights of Mota Jambuda in the protection and management of the forest (Dobriyal & Ballabh, 1995). Such cases are abundant in the literature; for example, Roy (1992) reports that confusion over forest

boundaries is a recurring problem for the FPCs in West Bengal. In Chandmura village, in the Arabari Forest Range, the villagers realized only when the timber was harvested and sold that they were not part of the program. The extent of centralization in decision-making in JFM can be gauged from the following description (Pandey & Campbell, 1996, p. 12).

...Even silvicultural decisions relating to the treatment of particular forest patches, the scheduling and harvesting are still quite centraliz[ed]. Working plans are prepared by a special Divisional Forest Officer, distinct from the territorial officer who must implement them. These plans must then be approved at regional level. Exceptions and deviations of these plans must be approved at a state level. In many states micro-plans must also be approved at a senior officer level. This kind of highly centraliz[ed] decision making structure militates against the site specific and adaptive management in which prescriptions may have to be modified annually and in order to fine tune the more complex interactions between sets of management activities. Furthermore innovation is discouraged in such centraliz[ed] systems.

Where the Beat Officers are also responsible for convening meeting of FPC executive committees, they find it difficult to meet the requirements. A survey revealed that most Beat Officers give priority to their other official assignments than to the FPCs (Roy, 1992). Furthermore, the capability of FPC members to hold meetings and articulate issues in the presence of Beat Officers is an issue. It was found that Beat Officers avoid convening meetings where villagers record unfavorable opinions (Roy, 1992). When an individual is assigned the authority to make decisions affecting others, the mere existence of the unequal decision-making capabilities potentially creates incentives and opportunities for the individuals with authority to exploit and prey upon the efforts of others (Ostrom, 1996). The problem is exacerbated because the Forest Department officials make decisions on behalf of the FPCs to whom they are not accountable. Moreover, the lower level officials have general tendencies to conceal and twist information when it suits them. This may prevent meaningful deliberations in FPCs. Externally imposed rules that allocate resources and determine benefits, have an added disadvantage in that they may either be ignored by resource users or may lead to conflicts (Ostrom, 1994).

This brings us to the crucial question of what should be the relationship between the supporting agencies, more particularly of the

Forest Department in JFM, with the people's institutions. It is also clear that people's institutions need the support of the public agencies to resolve some of the conflicts they face in the collective action situation and to protect themselves from the uncertainty generated by other social aggregation devices and collusions. The existence of mere provision of support from these organizations does not guarantee that this support will in fact be provided in a manner that strengthens the people's institution. On the contrary, publicly funded organizations have a tendency to maximize their power and opportunities to control are abundant due to monopolies and information asymmetries. An example is the increasing control of Revenue and Forest Departments over VPs. Thus the provisions of support can take effect only if they are enforced and adhered to; otherwise they remain words, no matter how well they are crafted. The issues confronting VPs and FPCs are not adequately addressed and resolved due to the lopsided authority and power given to only one of the two parties, namely, the Forest and Revenue Departments *vis-à-vis* VPs and FPCs. In order to make VPs and FPCs really vibrant organizations their autonomy needs to be restored and shared understanding generated to bring both parties at equal playing field and be accountable to each other.

7. CONCLUSIONS

VPs were vibrant systems once upon a time—controlled, managed and devised by the people. The increasing control of the Revenue and Forest Departments over these self-regulated and self-enforced institutions is leading to degeneration and erosion of the VPs capacity to manage. In relative terms, the VP is still capable of protecting and managing the forests better than alternative systems such as reserved or civil and *soyam* forests. But due to increasing control of the Revenue and Forest Departments and poor support system, VPs are besieged by several types of conflicts and have difficulty in maintaining their proprietary rights. Encroachments on forestlands and pilferage have become common occurrences. This is largely due to delays in resolving these conflicts through administrative and Judiciary departments and involving rent-seeking by government officials. Heavy control by the

Forest Departments over these people's institutions and the loss of autonomy at the grass-roots level magnifies the conflict within and between VP Committees. As a result, the VP system is on the decline.

FPCs are emerging out of the JFM program in several states of the country through an evolutionary process in which the Forest Department seeks people's co-operation. These institutions too are facing similar problems. Policy resolutions seem to hinder rather than encourage the spirit of co-operation and "sharing" between the community and the Forest Department. The Forest Department's autonomy over allocation and demarcation of forestlands, their control over micro-plans and

over the disposal of forest produce leave no room for "people's participation." Centralization of silvicultural decisions and working plans does not allow adoptive management to suit specific sites. This seriously hampers the successful implementation of programs. As previously mentioned, allocation of resources and benefits, without the participation or consultation of the communities involved, are either ignored by the resource users or lead to conflicts. To make FPCs and VPs more dynamic, it is vital that they be given a free hand in the management and protection of the forests without any undue influence of the Forest/Revenue Departments in their decision-making process.

NOTES

1. Uttaranchal was earlier known as the Uttar Pradesh hills. In November 2000, the State of Uttaranchal was carved out from the State of Uttar Pradesh.
2. The State of Uttaranchal is divided into two regions, Kumaon and Garhwal. The present study focuses on *Van Panchayats* in the Kumaon region.
3. Civil and *soyam* forests are controlled by the Revenue Department and managed by the *gram sabha* (village council). Usually people have unlimited rights and concessions in them.
4. *Van* (Forest) *Panchayat* Inspectors belonging to the State Revenue Department regulate and monitor the activities of democratically elected *Van Panchayat* Committees.
5. *Mahila Van Suraksha Samitis* (MVSS) are informal associations formed by women. *De jure* MVSS do not have any proprietary rights to manage forests. Whereas, the *Van Panchayats* (VPs) are formal organizations working under the framework of VP rules. Parwara VP has, however, recognized the role played by MVSS in protection of forest of village Parwara. Formation of MVSS gives an indication of increased role of women in protection of forests. There is also a movement going on in Uttaranchal to give more statutory powers to women and their groups.
6. As Uttaranchal was carved out recently (see Note 1), for the time being, all the rules and regulations including rules pertaining JFM in Uttar Pradesh shall be applicable to Uttaranchal subject to revision by Uttaranchal State Legislative Assembly.

REFERENCES

- Agrawal, A., & Yadama, G. N. (1997). How do local institutions mediate market and population pressures on resources? Forest panchayats in Kumaon, India. *Development and Change*, 28(3), 435-465.
- Arnold, J. E. M., & Stewart, W. C. (1991). Common property resources management in India. Tropical Forestry Paper No. 24. Oxford: Oxford Forestry Institute, University of Oxford.
- Bahuguna, V. K. (2001). Production, protection and participation in forest management: an Indian perspective in achieving the balance. In Proceedings of the 16th Commonwealth Forestry Conference on Forests in a Changing Landscape. Promaco Conventions Pty Ltd., Canning Bridge, Australia.
- Ballabh, V. (1996). Joint forest management in India: promise and prospects. Mimeo, Institute of Rural Management, Anand.
- Ballabh, V., & Singh, K. (1988). *Van* (forest) *Panchayats* in Uttar Pradesh hills: a critical analysis. IRMA Research Paper No. 2. Anand: Institute of Rural Management.
- Balooni, K., & Ballabh, V. (2000). Managing village plantations through tree growers' co-operatives: emerging issues and policy implications. *Agricultural Economics Research Review*, 13(1), 52-70.
- Balooni, K., & Ballabh, V. (2002). Sustainability of local institutions in shared management of resources: an analysis of institutional, socio-economic and physical attributes of *Van* (forest) *Panchayats* in Kumaon,

- India. Mimeo, Institute of Rural Management, Anand.
- Dobriyal, K., & Ballabh, V. (1995). A comparative study of joint forest management in West Bengal and Gujarat. IRMA Working Paper No. 79. Institute of Rural Management, Anand.
- Guha, R. (1983). Forestry in British and post British India: a historical analysis. *Economic and Political Weekly*, 18(45&46), 1940–1947.
- Hardin, R. (1991). Trusting persons, trusting institutions. In R. J. Zeckhauser (Ed.), *Strategy and choices*. Cambridge, MA: MIT Press.
- Kolavalli, S. (1995). Joint forest management: superior rights. *Economic and Political Weekly*, 30(30), 1933–1938.
- Lam, W. F. (1994). Institutions, engineering infrastructure, and performance in the governance and management of irrigation systems: the Nepal case. Unpublished doctoral dissertation, Indiana University, Bloomington.
- Ostrom, E. (1992). *Crafting institutions for self-governing irrigation systems*. San Francisco, CA: ICS Press.
- Ostrom, E. (1994). Institutional analysis, design principles, and threats to sustainable development. Mimeo, Workshop in Political Theory and Policy Analysis, Indiana University, Bloomington.
- Ostrom, V. (1996). *The meaning of democracy: The vulnerability of democracies*. Ann Arbor: The University of Michigan Press.
- Pandey, D. N., & Campbell, J. (1996). How far can we stretch the forest? Moving from joint forest protection to joint forest management. Paper presented in the 6th Annual Conference of the International Association for the Study of Common Property. University of Berkeley, California, CA, June 5–8.
- Pathak, A. (1994). *Contested domains: The state, peasants and forest in contemporary India*. New Delhi: Sage Publications.
- Pathan, R. S., Arul, M. J., & Poffenberger, M. (1991). Forest management initiatives in Gujarat. Working Paper No. 7. Ford Foundation, New Delhi.
- Prabhakar, R., & Somanathan, E. (1999). Property regimes and deforestation: a quantitative study of the Central Himalayas. IRMA Working Paper No. 124. Institute of Rural Management, Anand.
- Roy, S. B. (1992). Forest protection committees in West Bengal. *Economic and Political Weekly*, 27(29), 1528–1530.
- Saxena, N. C. (1987). Commons, trees and the poor in Uttar Pradesh hills. ODI Social Forestry Network Paper No. 5f. London: Overseas Development Institute.
- Singh, K. (1994). *Managing common pool resources: Principles and case studies*. New Delhi: Oxford University Press.
- Singh, K., & Ballabh, V. (1991). People's participation in forest management: Experience of Van Panchayats in UP hills. *Wastelands News*, 7(1), 5–14.
- Somanathan, E. (1991). Deforestation, property rights and incentives in Central Himalayas. *Economic and Political Weekly*, 26(4), PE37–PE46.