

Joint forest management in India

India's forests have played an integral role in sustaining its people over many millennia. In addition to an abundance of nutritional, medicinal, and subsistence goods, wilderness areas have provided the environment for spiritual and cultural expression of the Indian people. In the pre-British period, the ownership of forests resided with the rulers of the various kingdoms across India. Forest management was geared toward minimizing social conflicts through a fair, although not necessarily equal, distribution of returns to all sectors of society. For example, the Maurayan empire (324 BC to 180 BC) aimed to satisfy the requirements of all social strata through a classification of forests, based on use requirements: reserve forests, for the king or the state; forests donated to eminent Brahmans; and forests for the public (Dwivedi 1980, p.9). There are no records of classification-based forest management in the post-Maurayan period.

With few exceptions, access to forests was largely unrestricted throughout the pre-British period (Guha 1983). The focus of forest "management" continued to be fair distribution of returns. At the village-level, the use of all natural resources was managed by a local community institution known as the *Panchayat*, composed of five village elders who managed all village affairs. A significant part of their duties revolved around settling disputes over land, access to water, and mediating conflicts among villagers. These *Panchayats* were the institutional expression of village solidarity (Guha 1989, p. 21).

Some well-documented examples of community-based management systems are the Kans of Uttar Kanada, the sacred groves in the Himalayas, the Orans in Rajasthan, and the Shamilat forests in Punjab (Sarin 1993). In the non-consumerist Eastern cultures, a distribution perceived to be fair by local communities, but not necessarily equal, was sufficient to prevent the rise to serious conflicts that would have hampered forest management decisions. Hence, fair distribution of forest resources helped reduce conflicts among communities, and between ruler and communities.

During the British period, the sole purpose of forest management became to redistribute economic gains in favour of the empire. This was achieved by large-scale deforestation, commercialization of timber, and restriction of the rights of local people. Restrictions on people's access to forests were accompanied by an increase in reserve areas (Guha and Gadgil 1989).

The exclusion of local people from forest resources led to conflicts between the empire and local people. The local people searched for a solution through various non-violent movements, although some eventually turned to violent means. Their success was sporadic and limited: for example, the British agreed to community-based forest management for some forests in the Himalayas - Van Panchayats in Uttar Pradesh and to Forest Cooperatives in Himachal Pradesh (Guha 1983). Thus, the British period created large-scale conflicts among forest managers and local people, and marked the beginning of the breakdown of a symbiotic relationship between many communities and the forests in which they were situated (Shah 1996). In the process, traditional communal systems of forest management began to disintegrate.

After independence, from 1947 to 1987, the Government of India tried to redefine social-utility and social-welfare functions, but the emphasis of forest management regimes continued to be on

commercial timber exploitation and the exclusion of local people. This further distanced forest-dependent communities from essential resources and fostered conflicts between them and forest managers over rights of access and use.

The continuation of forest regimes geared toward revenue maximization was a result of several factors (Kant 1998):

- inertia in the attitudes of forest managers who were trained during the colonial period,
- the expectation of increasing returns from heavy investments in the establishment of reserves and the training of forest managers,
- the effects of the attitude of the "old guard" on new forest service personnel, and
- the expectations of the government based on the scientific training of forest managers.

Post-independence forest regimes led to the alteration of forest ecosystems and to the devastation of vast tracts of forest (Biswas 1988; Palit 1996; Poffenberger et al. 1996). In addition, the increase in population began to exert strong pressure to convert forest lands to agriculture. Furthermore, after independence the *Panchayat* was transformed from a system of local governance to one of a state regulated "representative democracy" (Sarin 1993). The former legitimacy of local leadership and the tradition of collective decision-making were abolished; in their place, a new institution, which continued to be referred to as the *Panchayat*, took over (Sarin 1993).

In the late 1970s and early 1980s, forest protection initiatives by local communities emerged across India in response to growing scarcities of forest products and threats of exploitation by outside groups. These community actions were an indication of conflict between formal and informal institutions involved in forest management, and of inefficiencies in the existing forest regimes. In isolated cases, some innovative and daring forest officers attempted to resolve these conflicts by supporting local forest protection initiatives, thus violating normal practices and legislative policies of the forest department.

By the mid-1980s, both government and environmental circles began to admit the failure of exclusion-based forest regimes and their corollary affect of generating conflict between local people and forest managers. As a result, the *National Forest Policy 1988* was tabled in parliament; it sought popular participation as a means for resolving conflicts between local and national goals of forest conservation and for restoring wastelands. The issuance of a circular on 1 June 1990 requesting that all states adopt JFM was the first tangible attempt by the government to engage local communities in a partnership for managing and protecting India's forests. The most crucial aspect of this circular, which marks a radical departure from past policies, was the decision to place people's needs above those of commercial interests (SPWD 1993).

As a result of these steps by the national government, in 1991 the government of Madhya Pradesh issued an order specifying details of JFM and the method of establishment of this program in the state. It stipulated that Forest Protection Committees (FPCs) should be set up in "sensitive areas"

(areas in which forest cover is over 40%) and that they should receive 20% of net income derived from the forest areas they protect. In degraded areas (canopy cover less than 40%), Village Forest Protection Committees (VFPCs) would be established, and forest regeneration activities undertaken. VFPCs were allocated 30% of the final timber produce, 30% of income obtained from nationalized non-timber forest products (NTFPs) and unrestricted access to non-nationalized NTFFPs. In addition, VFPCs were entitled to 100% of revenues from intermediate yields, such as from thinning and clearing (SPWD 1993).

In 1995, the state government amended many provisions of the 1991 order. One of the major changes was that FPCs were no longer entitled to a percentage of the final timber harvest — only access to traditional rights were guaranteed. The provision guaranteeing VFPCs 30% of income from nationalized forest products was also revoked, and the forest department's working plans were replaced with 10-year micro-plans developed in consultation with the villages. In addition, all FPC/VFPCs are to be constituted in villages or clusters of villages located within 5 km of the forest boundary, and provisions were made to engage *Gram Panchayats* (local governing institutions), women, and the landless in the JFM process (GOMP 1995). Although the 1995 amendment clarifies and further develops several components of JFM, the revoking of financial and other benefits narrows the scope of the program.

In response to these government orders, the Madhya Pradesh Forest Department started the JFM process by establishing FPCs and VFPCs. Four villages selected for this case study are Kundwara, Tikaria, Roriya, and Jamuniya (Table 1) from the Kundwara region of Kundam Development Block in Madhya Pradesh. Kundwara, a forest village (established by the forest department in the early 1900s for its labourers) and the smallest of the four, comprises primarily people of the Gond tribe. Tikaria, the largest village, is inhabited mainly by Baigas tribals, and has a significant population of caste members. Several houses have TVs, and a tower has been built to install a telephone line to the village. Tikaria is the only one of the four villages that has a small store-cum-tea stand. Although Roriya is the second largest village, it has the smallest forest area. The four villages, which are all within 15 km of each other, come under one *Gram Panchayat* with the head of the *Panchayat* (*Sarpanch*) and five other councilors (*Panchs*) residing in Tikaria.

Table 1. Comparison of the populations and areas of the four study villages.

	Kundwara	Tikaria	Roriya	Jamuniya
Population	248	624	312	286
Ethnic groups	Gond tribe (except 7 people)	Baigas tribe (125 caste members)	Gond tribe (9 people belong to various castes)	Kol tribe (20% of pop. are members of various castes and other tribes)
Forest area	303 ha	300 ha	70 ha	303 ha
Agricultural area	88 ha	383 ha	182 ha	93 ha

The main economic activity in this area is agriculture; one rainfed crop is grown each year. Because grain and other stored crops are sufficient for only 6-8 months, the majority of the villagers are dependent on forest products to meet their nutritional and economic needs. As a result, NTFP collection, primarily by women, is a widespread activity in this area. The few employment opportunities are with the forest department and other farmers. A significant number of youth as well as landed villagers migrate to other areas in search of employment for several months of the year. Overall, the Kundwara region is economically impoverished, which in turn increases the dependency of the villagers on the forest for survival.

The initial situation

The four villages are only 60 km away from Jabalpur (one of the major cities of Madhya Pradesh), and Bagaraji — a large town and commercial centre — is only a few kilometers away from Jamuniya. Demands for fuelwood and timber from these two cities are the main cause of many problems faced in the four villages. As the city limits of Jabalpur expanded with its population, villages surrounding the city became the suppliers of wood to meet the growing needs of the metropolis. As nearby forests were denuded, pressure shifted to those further away, and the Kundwara region became one of the primary suppliers of these products. This situation was compounded by population increases within the villages themselves. Throughout the 1970s and 80s, illicit cutting of timber was common in the Kundwara area, and the forests suffered significant deforestation and degradation. Furthermore, in the late 1980s a fire swept through the Roriya forest leaving it devastated.

Rather than purchase wood from forest department depots, merchants from Jabalpur recruited Kol tribals as suppliers of cheap illegal timber. Kol tribals, who are adept at cutting timber, responded to this new economic activity with enthusiasm. Similarly, Baigas tribals — traditional collectors of fuelwood — became the primary suppliers of firewood for visiting merchants. Gond tribals on the other hand have traditionally farmed the land and have relied on forests for soil nutrients and maintenance of groundwater supplies, as well as for augmenting their nutritional needs during lean periods. Thus, activities of the Kol and Baigas tribals were viewed with disfavour by the Gonds in the area. Furthermore, conflict between the forest department and Kol and Baigas tribals began to intensify, as forests under the protection of the department began to disappear at a rapid pace.

The majority of caste members in the villages are landed farmers and are economically better off. They are less dependent on the forest, using it primarily as grazing grounds for their livestock. Because the felling of trees by Kol and Baigas tribals led to the opening of the canopy cover and the subsequent formation of grasslands within the forest, caste groups had minimal objection to this activity as it increased the supply of fodder. In addition, several of the influential households that belong to caste groups became intermediaries between timber merchants and loggers and were able to benefit significantly from this illegal activity.

Thus, although the forest resources were under state control, in practice they were being used as

an open resource. There were no considerations of economic efficiency, equity, or sustainability in resource use. The problem was apparent to the villagers as well as to the forest department officials since about the mid-1980s. If the rate of timber and fuelwood extraction had continued at the same rate, forest cover would likely have disappeared and conversion of the land to other uses would have been complete.

The process of change

In 1989, acute resource shortages caused by the fire in Roriya brought together village elders to confer on the problem, and out of this came a "self-initiated" forest protection committee. Visiting forest officers using the department's guesthouse in Kundwara became aware of Roriya's protection activities and, after the state government's order of 1991, this informal protection committee worked as a catalyst for initiating JFM in this area.

In 1992, due to the degraded conditions of forests in the area, the local forest officer approached the elders of Tikaria and explained the objectives of the JFM program. The villagers agreed, and the first official VFPC was established. However, Tikaria's VFPC was dissolved a year later by the forest department on the grounds that the villagers were not conducting forest protection activities adequately. The villagers contested this, saying that they did not see the necessity of conducting protection activities when the forest department still had a forest guard in its service. According to informal JFM agreements between the forest department and villages, forest guards' services were to be discontinued, and their wages were to be deposited in the FPC/VFPC collective fund.

In 1994, World Environment Day, organized in Tikaria by the State Forest Research Institute (SFRI), brought most of the villagers and forest department officials into close contact and provided an opportunity for sharing views and understanding each other's perspectives. At the request of the villagers, the forest department reconvened their VFPC soon afterward. Concurrently, after discussion between local forest officials and village leaders, a FPC was also formed in Jamuniya.

The establishment of the Madhya Pradesh Forestry Project in 1995 — funded by the World Bank and other bilateral donor agencies — provided impetus to the JFM program and motivated the forest department to form other forest protection committees in the area. As a result, discussions were initiated with the local people of Kundwara and Roriya, and the self-initiated committee of Roriya was formalized as a VFPC and a FPC was established in Kundwara.

The process by which the forest department formed FPCs and VFPCs was the same for all villages. Initially, individuals and groups were informed of the JFM program, and these people discussed the program with others in the village. Subsequently, the deputy ranger and the local forest officer — in the presence of the *Sarpanch* (head of the local *Panchayat*) — would convene a general meeting in the village. According to the 1995 JFM amendment, a minimum of 50% of the adult population had to be present at this meeting; with their agreement, a forest protection committee could be formed.

No more than 40 villagers were present at these meetings. However, there was representation from both categories of local stakeholders: tribal as well as non-tribal groups. The forest department does not recognize timber traders from nearby towns as stakeholders, as they get their returns only through illegal activities and, thus, have no claim over the forests. Hence, they were not asked to attend the meetings. Women were also absent, due to local customs, which usually prohibit interactions with outsiders. However, decisions were made known to female members of households.

The organizational structure of the FPCs and VFPCs was established by the government order. They have an "executive committee" comprising a president, vice-president, secretary (the local forest officer), at least two women and landless people, all elected *Panchayat* officials, and a resident teacher. The officers and members of the executive committee are elected annually. The executive committee is expected to meet monthly to carry out its responsibilities. The executive committee is responsible for enforcing all rules and implementing decisions made at the monthly meetings.

The main management rules include

- prohibition of timber felling;
- protection of forests from fire;
- prohibition of fuelwood extraction for commercial sale (only one headload per family it permitted for domestic use);
- prohibition of livestock grazing in the forest; and
- sustainable harvest of NTFPs.

An FPC or VFPC has the power to prohibit people in neighbouring communities from access to their forest patch. Although NTFP harvesting is still allowed, the FPC/VFPC can prevent people, including its own members, from collecting certain types of NTFPs within specific areas in the forest and can ensure that all collection activities are conducted sustainably.

Most of the management rules are similar across the committees because broad guidelines were specified in the 1995 government order. However, FPC/VFPC members can develop situation-specific and innovative rules to deal with their own problems. In Jamuniya, for example, the committee does not enforce a ban on the commercial harvest of fuelwood. The process of sitting together and drafting a rule about forest use that is acceptable to almost everyone, facilitates the understanding of different perspectives and contributes to the evolution of a mechanism to reduce conflicts. Thus, these new institutions play an important role in managing local conflicts over forest use.

To meet JFM objectives, villagers are required to patrol the forest to ensure that rules are not being broken and to check for fires. Initially, two male members of different families carried out this responsibility on a rotational basis. Problems arose because villagers could not patrol during busy periods of the farming cycle. Currently, patrolling is conducted by a specific watcher hired by the FPC/VFPC. Watchers are paid a monthly salary of INR 500-600 (INR 42 = 1 USD) from

the FPC/VFPC collective fund.

Other management rules require that degraded areas be reforested and that resources resulting from forest protection be distributed equitably among villagers.

The FPC/VFPC has the authority to levy fines against anyone who breaks the rules. Penalties for illegal timber cutting are determined by the local forest officer in consultation with the committee and the offender; they are calculated according to the species, size, shape, and volume of the felled tree. Offenders have been eager to settle their debt by this process rather than be taken to court, which could be time-consuming and costly. At the discretion of the local forest officer, part of this fine is deposited in the collective fund and the remainder in the forest department's account. This is an example of an open consultative process for resolving conflicts between three parties; because the offender is usually from the same or a neighbouring village, this process contributes to the resolution of conflicts in and between villages.

The FPCs/VFPCs acquire financial resources through membership fees, contributions from the forest department for their protection activities, fines, and interest from loans. Two other sources of funding arose through innovations of FPCs/VFPCs regarding NTFPs. Previously, NTFP collectors were at the mercy of visiting traders, who usually paid rates far below market prices. Now protection committees facilitate transactions between traders and collectors and are able to demand higher returns. For every INR 10 that a collector receives, INR 2 are deducted as commission. In the second initiative, FPCs/VFPCs purchase mahua flowers (*Madhuca longifolia*), which are stored for sale at a higher price during the offseason. The profits accrued from both these schemes are deposited in the collective fund, which is banked in a joint account with the forest department. The president of the committee and the local forest officer have authority for signing cheques.

Use of the collective fund is determined by consensus. FPC/VFPC members present their views at a general meeting. Each idea is assessed by the general membership in terms of its utility for the entire village. A short list is drawn up and, depending on available resources, one or several of the proposals are selected. This process further strengthens understanding of others' views about the common interest of the village.

Outcomes at the village level

State of the forests

In all four villages, the quality of the forests has improved significantly since the inception of forest protection activities. Natural regeneration and other ecological processes are proceeding remarkably well now that pressure on the forest resources has been reduced. Afforestation efforts in 1993-94 in Tikaria and in 1995 in Roriya are reclaiming several wasteland areas. As a result of early protection activities in Roriya, water retention capacity has increased in several areas of the forest; several streams and ponds that had dried up during the early 1980s are now filled with water.

Kundwara has become a model for forestry management activities, because of the special attention it has received as a consequence of its proximity to the forest department's guest house. The village has benefited from projects in the area. A research project funded by the Ford Foundation is seeking to develop better methods of drying, storing, and marketing NTFPs. A plot to grow medicinal plants has also been established. Roriya is also involved in this project, which is attempting to establish three valuable medicinal plant species (*Withania somnifera*, *Abelmoschus moschatus*, and *Asparagus racemosus*) in degraded areas in the forest.

The forest department has trained several Kundwara FPC members in participatory rural appraisal methods. These people, in turn, are to train other villagers. The forest department also coordinated the sale of 200 quintals of grass collected from Kundwara and two other villages outside the area to the Lucknow army. Unfortunately, in Kundwara the sale has put pressure on grazing resources needed at the end of summer and created a situation that contributes to forest degradation. Although the initiatives launched by the forest department are praiseworthy, neighbouring villages feel that it is neglecting them in favour of Kundwara.

Jamuniya has the only FPC that does not officially ban the sale of fuelwood; approximately 65% of its families engage in the sale of this resource. Because Jamuniya's forest is adjacent to Bagaraji, it is the most vulnerable to illegal timber extraction. Nevertheless, since the inception of the FPC, there has been a reduction in illegal harvesting and the rate of deforestation has decreased.

Community development

In June 1997, the collective funds of the four villages were INR 37 495 (Kundwara), 10 280 (Tikaria), 19 582 (Roriya), and 8420 (Jamuniya). In all the four villages, musical instruments were the first purchases made with the funds. Villagers take pride in the fact that they own their own *harmonium* (wind driven keyboard), *dholak* and *tabla* (percussion instruments), *majiras*, (shakers), and, in the case of Kundwara, microphones and amplifiers. Furthermore, to enliven the atmosphere at community gatherings, cooking utensils, a mat for the community gathering area, and petromax lamps have been purchased. The villagers feel that this money has been well spent, and it appears that these purchases are fostering better community relations.

The collective fund has also been used for other development activities. For example, a 3-horsepower motor was purchased for irrigation in Kundwara, and electric grain-milling machines were purchased for Kundwara and Roriya. A religious shrine was constructed in Jamuniya.

Financial assistance

The collective fund serves as a source of credit for villagers. Small loans at interest rates that are 2-5% lower than those offered by village moneylenders (10%) are provided to those in need. These loans are usually used for emergencies, marriages, medical treatment, and the purchase of agricultural inputs. The amount of the loan is determined by the earning capacity of the borrower and the ability of that person to repay it. These terms put poorer members of the community at a

disadvantage; however, the service is being used extensively.

Welfare of the poor

Many of the NTFP collectors belong to the lowest economic group in the village and comprise mainly women. The NTFP value-added projects have substantially enhanced their economic status. Collectors of *mahua* flowers in Tikaria have been selling their produce at higher prices to the Kundwara FPC, which is storing it for sale during the off-season.

The Roriya VFPC has devised an innovative scheme for reducing competition among NTFP collectors and for distributing resources equitably. Depending on its size, each family has been assigned 2-4 *mahua* trees for harvesting flowers. Also, group collection is encouraged to ensure that no family's allocated resources are infringed upon. This scheme is a very good example of local innovations for reducing possible conflicts. However, due to the ban on the commercial sale of fuelwood, an important source of income for many families has been denied. These families are now shifting towards collection of other products.

Community health

The purchase of community assets from the collective fund is fostering better relations in all villages. In many ways, the collective fund has become a source of pride and has helped galvanize the communities. FPC/VFPCs have gained legitimacy because they manage the collective fund, and this has led villagers to look to them to resolve conflicts. FPC/VFPC meetings have become a forum for discussing various issues unrelated to forest protection, such as religious festivals and social activities. As a result, since the inception of the VFPC in Tikaria, drunken disorderliness and fighting among villagers has decreased; thus, the VFPC has begun to play the role of a controlling force, normally reserved for the *Panchayat*. This situation could lead to conflict with the *Panchayat*, where rumblings of discontentment are evident among those who think their authority has been usurped.

Comparison of outcomes among the villages

It is clear that Kundwara and Roriya are functioning relatively better than Tikaria and Jamuniya. Kundwara's accomplishments illustrate the level of success that can be achieved under the proper guidance and with the resources available to the forest department. Their ability to capitalize on the NTFP value-added initiatives organized by the forest department has benefited individual collectors and the community as a whole. The homogenous composition of Roriya and Kundwara has also allowed them to pursue forest protection activities more easily than the other two villages. Furthermore, the populations of these villages are predominantly Gond tribals, who have traditionally depended on farming and who are aware of the natural resources that forests can provide for maintaining agricultural productivity. As a result, they have taken to the idea of forest protection more readily. Roriya's success is linked to the community's resolute capacity to respond to circumstances of resource scarcity. In Roriya, there is an enthusiasm for and greater knowledge of JFM practices. This is facilitated by the age composition of the executive committee, as most members are in their 20s or early 30s. VFPC meetings are held fairly regularly

and are well attended.

In Tikaria and Jamuniya, the dominant tribal groups are Baigas and Kol, who have traditionally lived through the harvest and sale of forest products. Regulations restricting their access to forest products, thus, meet with greater resistance. Also, the presence of an appreciable number of caste groups in these two villages tends to confound forest protection efforts, as the economic situation of these villagers makes them less dependent on the maintaining the forest. Population pressures in Tikaria and the proximity of Jamuniya to Bagaraji raise additional obstacles.

The lessons learned

Considering the short period in which JFM has been practiced in the four villages, the success achieved illustrates the abilities of the rural populace to be partners in conservation, even in the face of many challenges. The villagers dependence on and proximity to the forest make them ideally suited for managing and conserving forest resources. However, to ensure the long-term sustainability of the JFM system, attention must be directed toward the barriers observed during this short phase that are creating existing or potential conflicts among local people and between local people and forest managers.

Lack of complementarity of institutions

Forest management regimes are the rules that shape human interaction with respect to forest resources. Such a regime is an aggregate of informal and formal institutions. Informal institutions are endogenous to user groups and cannot be changed rapidly because of their inherent inertia. Formal institutions are, normally, exogenous, and should complement existing informal institutions. Likewise, if formal institutions for forest management are linked, either horizontally or vertically, to other formal institutions, they should be complementary. Non-complementarity of formal and informal institutions will lead to conflict between forest managers and local people. Furthermore, non-complementarity between different formal institutions will undermine the objectives of JFM and contributes to conflict among local people.

In the case of JFM institutions, a number of conflicts can be observed between formal and informal institutions, as well as among formal institutions. According to the 1995 JFM amendment, executive committees should include all *Panchayat* members, a resident teacher, and at least two landless persons. All members of the executive committee must be elected annually by the general membership. However, *Panchayat* elections are held every 5 years, and the elected officials thus remain on the FPC/VFPC for this period. Also, in a village where there is only one teacher, as is the case in Kundwara, that person becomes a semi-permanent member of the committee. Thus, the annual elections will not have much effect on the composition of the executive committee. This situation can lead to conflict among FPC/VFPC executive committee members, as certain groups become entrenched and monopolize resources; for example, in the four villages, the paid position of watcher has been seized by *Panchayat* officials.

Although, legally, the authority of the *Panchayat* supersedes that of FPCs/VFPCs, their

overlapping jurisdictions make them competitive rather than complementary. This could lead to tension between the two institutions that would be counterproductive to the goals of JFM. For example, previously, a transit pass issued by the district forest officer was required to transport any type of timber. In 1997, this regulation was relaxed, and the *Panchayat* was granted the authority to provide transit passes for 10 tree species. This arrangement could lead to conflict if the *Panchayat* acted counter to the goals of forest protection.

The ban on the sale of fuelwood is another instance in which formal institutions are incompatible with informal ones. The regulation banning the sale of fuelwood under JFM denies poorer groups an economic activity that has been widely practiced by many families in Jamuniya and Tikaria. Complementarity of the formal and informal institutions in Roriya and Kundwara and non-complementarity in Jamuniya and Tikaria is one of the reasons for different outcomes in these two sets of villages. Changes in the practices of these households cannot be brought about abruptly by creating new institutions. A mechanism has to be developed to change informal institutions gradually.

In the collection of fines for illegal cutting of timber, the formal and informal institutions are again at odds. Having expended little effort, the forest department appropriates a percentage of the financial penalty in addition to the seized timber. However, the villagers are the ones who have exerted the energy to apprehend the illegal timber loggers. This non-complementarity is felt by the villagers, even though it has not resulted in any serious threat yet.

The Watershed Development Program (WDP) is another formal institution that operates in this area. The objectives of JFM and WDP are similar in that they both attempt to restore the ecology of the watershed. However, the fact that these institutions are under the guidance of two government departments (the forest department and the rural development department) makes them work independently and at odds with each other. The formation of different local institutions for the delivery of the WDP is also straining the human resources of the villages and is weakening both programs. In many cases, due to conflicts between the members of these two organizations, one program has come to overshadow the other. Linking them and making them complementary would reduce the conflict among people involved in these two programs and would enhance their efficiency.

Full transparency of institutions

Partial transparency of institutions transmits varied signals to different members of the community, and can become a major source of conflict among community members, as well as between the communities and the state. When protection committees were established, essential details contained in the 1995 JFM order were not disclosed. This lack of transparency does not allow for the development of relationships based on trust.

Furthermore, documentation, such as a memorandum of understanding, is necessary to specify the formal and informal details of the agreement between the forest department and FPC/VFPCs. In the absence of such documentation, inaccurate information has filtered down to the communities and, as a result, confusion among the villagers is acting as a barrier to the proper functioning and implementation of JFM. For example, for a long period, people in Tikaria believed that they were

entitled to 50% of the final timber harvest, and were unaware of their entitlement to 100% of intermediate timber yields. When they learned of the actual provisions contained in the 1995 JFM order, their mistrust of forest officials was consolidated. Such situations lead to conflicts and failure of the program.

Accountability of change agents

The situation at the field level indicates that change agents are not accountable either to the government or to the public for their actions. For example, except for Roriya's, the protection committees meet sporadically. As a result, conflicts that emerge are not dealt with in a timely manner and can snowball into complicated issues that require sophisticated mediation. In Jamuniya, the lack of regular meetings has allowed the local forest officer to bypass democratic processes and appoint an influential member of the community as president of the FPC. The FPC president, in turn, has appointed himself and a Kol tribal to the paid post of watcher. These actions have caused discontent among the villagers and are fostering a sense of disillusionment with JFM. This example reflects how the lack of accountability of forest department officials influences others to follow suit.

Many irregularities have occurred in Jamuniya: the misappropriation of funds by the president; and collusion between the deputy ranger, the local forest officer, and the president to provide illegal timber to carpenters in Bagaraji. As a result, the villagers in Jamuniya are dissatisfied with the status quo.

Panchs in the other villages have also used their positions to become the president or watcher for their FPC/VFPC. Not only are they attempting to enhance their power within the village, but they have also snared the only paid job related to forest protection. These nonaccountable actions of change agents have created new conflicts within the village, and, if this situation continues, these conflicts may become unmanageable.

According to the 1995 JFM order, 10-year micro-plans were to replace the forest department's working plans. However, the forest department continues to harvest mature trees from 10-ha plots in the Tikaria forest. The Tikaria VFPC has not been given a percentage of these harvests, nor have they been granted the 100% of intermediate yields from thinning operations that have been conducted since the inception of the VFPC. These nonaccountable actions of the forest department violate the provisions of the 1995 order and are contributing to conflict between the state's representatives and the local community. Although this has not resulted in uncooperative outcomes yet, the villagers' feelings of mistrust signal a deficiency in the system. It is evident that there is a need for stronger accountability of forest officials and *Panchayat* members as a means to prevent these self-created conflicts.

Paradigm shift

Under the new JFM environment, forest officials have to be open to a paradigm shift that requires a change from management by exclusion to management in partnership with local people. This will require a change on the part of forest officials from being conflict generators to conflict



managers. There is evidence that many higher-ranking forest department officers have made this shift. However, the unwillingness of those in the lower ranks to give up power and its corollary benefits establishes a major obstacle in the way of realizing the objectives of a participatory management regime. Many of the activities of the forest department — such as the nondisclosure of entitlements under the government order, the appointment of the FPC president by the local forest officer, and the dissolution of the Tikaria FPC without consulting the villagers — are all indicators of the department's inertia. Thus, a participatory and conflict-minimizing management regime will require forest officials to adopt a new paradigm.

Uncertainties

One of the objectives of forest management systems is to reduce uncertainty and provide stability by offering **an institutional structure** to all stakeholders in the resource. A certain and stable environment is also conducive to conflict resolution. However, rapid changes in formal institutions (amendment of the 1991 order in 1995) and the failure to implement formal institutions fully (by not divulging essential details nor replacing working plans with micro-plans) create an environment of uncertainty that facilitates the emergence of new conflicts. The frequent transfers of forest officers can also give rise to new conflicts; for example, a new officer may overturn an informal agreement between the villagers and the previous officer. Varying attitudes and conflicting views of forest officers regarding the provisions of the government's order also create an environment of uncertainty. This uncertainty, in turn, discourages the community from embracing the program, and fuels the pessimistic view of villagers that government programs are transient and unreliable.

Gender equity

Although Indian cultural traditions are diverse, in most women rarely play a role in decision-making related to community affairs and are normally absent from community forums (Sarin 1993). In the case of forest use, the critical role women play in collecting and processing forest products and the contribution of activities to the household economy make them vulnerable to decisions regarding JFM. Hence, their participation in JFM is critical not only from a gender equity perspective, but also from a forest management perspective.

The government of Madhya Pradesh has made provisions for women's representation on executive committees. In our four villages, even though FPCs/VFPCs have taken the initiative in promoting household equity and increasing returns to the poor, gender equity is still a low priority. Women are largely uninformed about JFM, and little has been done to include them in the process.

Many of the activities under JFM actually operate against women. As mentioned earlier, most NTFP collection is conducted by women. Thus, the INR 2 commission for the services provided by the FPC/VFPC in facilitating the sale of NTFPs, disproportionately taxes the efforts of women. As yet, the collective fund has not provided any specific benefits to women, and the purchase of cooking utensils for providing meals for community gatherings has in fact increased their workload.

Although gender inequity may not endanger the JFM process in the short-term, if the concerns of women are not addressed, this could lead to disproportionate costs being shouldered by this segment of the community and, consequently, the creation of a dynamic that facilitates the rejection of conservation goals as well as equity goals.

Conclusions

Due to a lack of resources, communities cannot manage large areas of forests independently. Thus, partnerships like JFM are critical. Local JFM institutions are evolving all across India and in other parts of the world. The communities of the four villages we studied have demonstrated ingenuity in adapting and designing innovative local institutions for the welfare of local people. These will contribute to the evolution of JFM. Given the presence of many barriers, the successes achieved in relation to improvement of forest quality and the welfare of local people are remarkable. It is evident, therefore, that there is great potential for establishing JFM on a large scale.

However, for the long-term sustainability of JFM, conflict resolution mechanisms must be built into its institutions and processes. The continuation of the program in the presence of dissatisfaction of local people, due to the existence of conflicts in peoples' perception should be evaluated carefully. The continuation of conflicts over a long period may lead to the failure of the program. Thus, potential sources of conflict should be identified and dealt with. The complementarity of institutions, transparency of agreements, accountability of change agents, equitable distribution, and a certain and stable environment will help reduce the emergence of conflicts between community members and forest managers, and among community members. Likewise, a paradigm shift in the attitude of forest managers will help resolve existing conflicts. Efforts should, therefore, be made to address these issues, which have emerged during this study.

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