

**The Four Levels of Institutional Analysis of Evolution of Joint Forest Management (JFM) in India: A New Institutional Economics (NIE) Approach<sup>+</sup>**

**Bhagirath Behera and Stefanie Engel**

**Center for Development Research (ZEF), University of Bonn, Germany**

**Paper to be presented at the Annual Conference of the International Association for the Study of Common Pool Resources (IASCP) in Mexico, August 9-13, 2004.**

**Abstract**

This paper makes an attempt to analyze the evolution of the Joint Forest Management (JFM) institution in India in the light of the ‘New Institutional Economics’. To structure the analysis and shed light on different sources of persistent problems related to JFM, the paper uses the ‘four levels of institutional analysis framework’ developed by Williamson. The First Level emphasizes ‘embeddedness’ of an institution and highlights conflicts between informal institutions in Indian forest management and formal rules institutions under JFM. In the second level of institutional analysis, the institutional environment (‘formal rules of the game’) is discussed. In particular, it is argued that the shift from state to co-management is a step in the right direction given the realities encountered in India. The incomplete and often incoherent transfer of specific rights from the state to local communities is, however, an important source of incentive problems on the part of communities. The third level of institutional analysis deals with the governance of contractual relations (‘play of the game’). Here, the distribution of rights and responsibilities between forest department and communities, as well as within communities is discussed at a more disaggregate level, using transaction cost economics. A more elaborate discussion of the rule setting process within JFM institutions is also presented. The fourth level of institutional analysis focuses on issues related to incentive structures, individual participation, and rule compliance among the different stakeholders in JFM institutions.

---

<sup>+</sup> Funding for this research was provided by the German Academic Exchange Service (DAAD) and the Robert Bosch Foundation.

## I Background and Motivation

### 1.1 Motivation of the study

Devolution of resource management and access rights to local communities has become an important policy tool for many developing countries. Over the last two decades a profound change has been witnessed in the area of natural resource management, with countries at least partially devolving rights and responsibilities over their natural resources to the users. The apparent change in policy from the traditional state-managed top-down approach to the community level is fueled by the recognition of the limits of government agencies in managing resources at the local level, which has resulted in massive degradation of natural resources and of local people's livelihood systems. The power to local communities has been strengthened either through power-sharing arrangements with the state, more legal access to natural resources, or decentralization within government institutions that ensure more power to local communities.

India has been at the forefront of devolving natural resource management to the local-community level, particularly in the forestry sector, for more than a decade. Its 1988 forest policy was a landmark, because for the first time it recognized the importance of community involvement in forest management for achieving improvements in community livelihood and the protection of forest resources. In a follow-up document issued in 1990, the central government issued guidelines to all the state governments to implement 'Joint Forest Management Systems' by devolving everyday forest use and management rights to the community. Accordingly, almost all the states have formally resolved to implement JFM, making it one of the largest of such programs in the world.

The overall empirical evidence on the outcomes of JFM in India shows mixed results. Some studies have shown improvements in outcomes such as increased yield of timber and non-timber forest products (NTFPs), fuelwood, and fodder (Joshi, 1999; Khare et al., 2000; Ballabh et al., 2002). Others indicate a lack of control and management of forest by the communities, despite the fact that communities have *de jure* rights over the forests (Bulte and Engel, 2004). It is also argued that the differences in outcomes of JFM may partly be due to the fact that the degree to which specific rights and benefits were actually devolved from the forest department to the local communities differs significantly across states (Damodaran and Engel, 2003, Sarin, 2002, Ballabh, et.al, 2002, Agrawal and Ostrom, 2002).

The objective of this paper is to analyze the evolution of the Joint Forest Management (JFM) institution in India and the sources of persistent problems in the light of the 'New Institutional Economics'. To structure the analysis the paper uses the 'four levels of institutional analyses framework' developed by Williamson (2000). The paper is based mainly on a review of existing literature and complemented with results from a recent field study conducted by the authors in 55 JFM villages in the state of Andhra Pradesh.

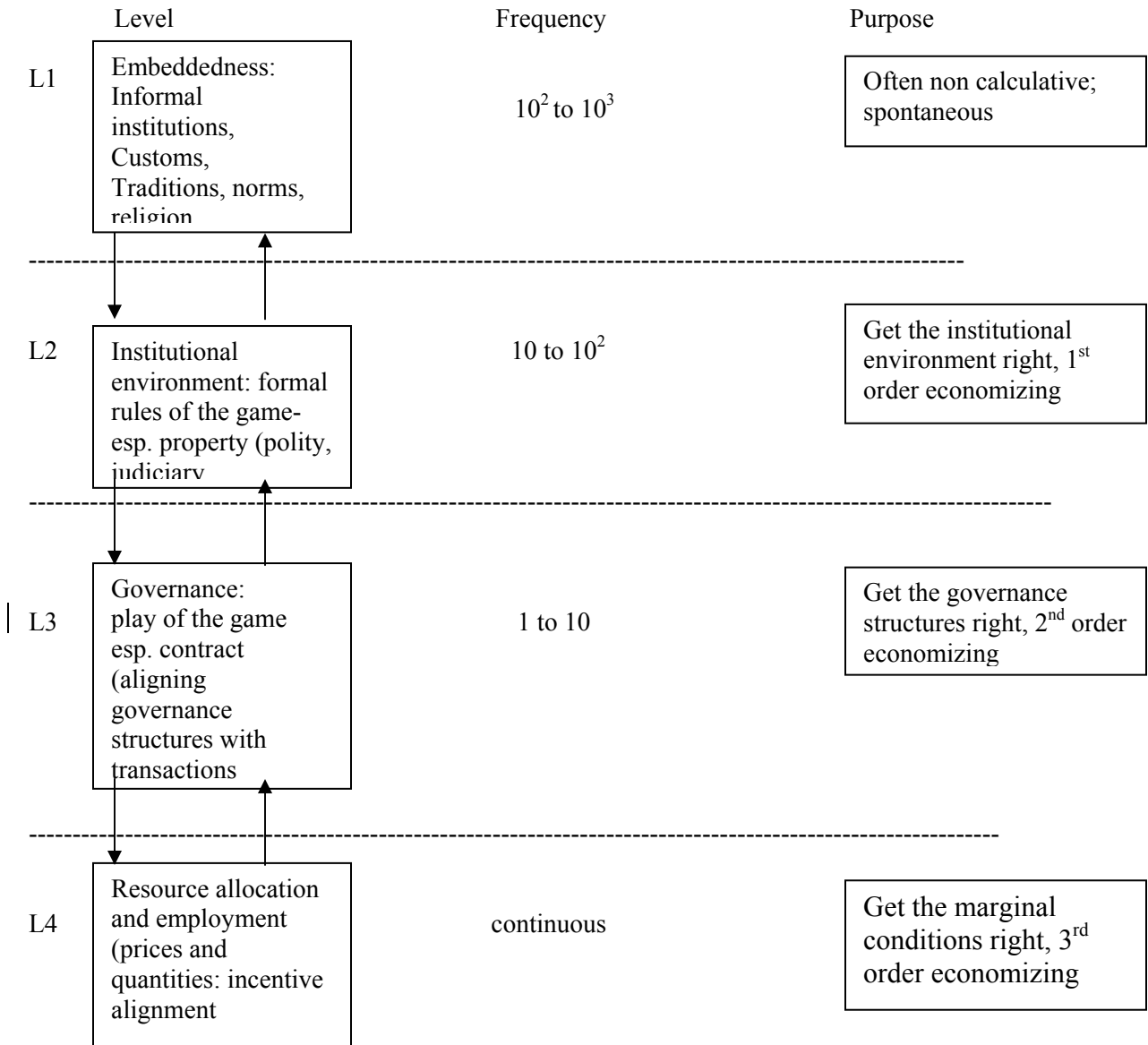
### *1.2 Four levels of institutional analysis*

The various influences that an economic institution such as JFM is subjected to are manifold and complex. To identify these influences demands creating a structure in which an analysis can be carried out. Williamson (2000) provides such a structure with four levels of institutional analysis to analyze complex institutions. Analyzing the evolution and functioning of JFM in Williamson's framework helps to shed light on the sources of problems experienced under JFM and to gain insights on how to overcome them. A brief analysis of Williamson's framework is discussed below.

Figure 1 depicts the four stages in which an institution functions and the time it typically takes to change institutions at each stage. The first level is 'embeddedness'. It deals with the informal constraints such as customs, taboos, traditional norms etc. that the institution (here JFM) is embedded in. Such informal constraints are usually present in a society for a long period, take centuries or millennia to change, and are believed to be spontaneous in origin. The second level refers to the institutional environment that human beings create through formal rules (e.g., constitutions, laws, property rights, etc.). Institutions on this level tend to change faster than at the previous level, with a time frame of decades or centuries. The theoretical framework for this level is given by the economics of property rights, which implicitly assumes costless or easy enforcement of rights. However, this assumption has been disputed and rejected by the advocates of transaction cost economics (e.g., Williamson, 1998). As a consequence, level 3 deals with how the game is played or 'the governance of contractual relations'. Here, institutions of governance are discussed, including issues of contract definition and enforcement, as well as conflict resolution mechanisms. The idea is that for each specific transaction there exists an efficient, i.e. transaction-cost minimizing governance structure. Changes at this level take place within much shorter time than at level 1 and 2 (one to ten years). The fourth level deals with economic activities and is concerned with getting the marginal conditions right. Neoclassical economics (where continuous adjustment of prices and quantities takes place to optimize marginal conditions) as well as theories of asymmetric information (including adverse selection and moral hazard problems) are located here. At this level the incentives are shaped by the combined effects of the other three levels.

Stages are interconnected with each other in the following manner. The arrows that connect a higher with a lower level signify that the higher level imposes constraints on the level immediately below. For example, it can be expected that the evidence of centuries-old traditional community management of forest has a demonstrative role in changing the formal institutional environment (Forest Department) and its governance (play of the game) and incentive structures (benefit sharing with the local community). The reverse arrows that connect lower with higher levels signal feedback

**Figure 1: Economics of Institutions**



- L1: Social theory
- L2: Economics of property rights/positive political theory
- L3: Transaction cost economics
- L4: Neoclassical economics/agency theory

Source: Williamson (2000)

In the remainder of this paper the four levels of institutional analysis are discussed as they relate to the specific case of JFM. Section II highlights the role of traditional informal institutions in Indian forest management and its implications for the outcomes of JFM (level 1). The formal institutional environment (level 2) is discussed in section III, where detailed analyses of the evolution of property rights in respect to JFM are

presented. Section IV analyzes the evolution of the JFM institution from the point of view of transaction costs of forest management (level 3). It also discusses more elaborately the issues of rule setting, monitoring and enforcement within JFM institutions. Section V deals with the fourth level of institutional analysis and focuses mainly on issues related to tenancy, incentive structures and rule compliance among the different stakeholders under JFM. Section VI concludes.

## **II Embeddedness (Informal rules of the game)**

Institutions that govern natural resources in general and forest resources in particular can broadly be divided into formal and informal (North, 1990). Formal institutions are rules devised by human beings, are socially recognized by everyone and are subject to sanction in case of violation. These rules can be modified or changed easily through legislation whenever there is need for change. Informal institutions are rules, norms, and customs that are typically being practiced for centuries. These rules, norms and customs take a long time to change and are generally found to have a strong underpinning in the religion, culture, and tradition of a community. For example, some religious groups (*Vaishya*) in India refuse to cut trees and kill animals. Obviously, the existence of such informal institutions can influence the exploitation of natural resources enormously.

Successful devolution of forest management from the state to local communities requires that communities act collectively to develop effective use and access rules and to monitor and enforce such rules. Formal rules of a resource regime are rooted in informal institutions that exist in the community. That is, both informal and formal institutions coexist. In many cases, the same formal institutional arrangements yield different results as a consequence of differences in the existing informal rules and norms across communities. A classic example in this regard is the performance of natural resource management systems under the purview of local government institutions (Panchayats) in India. Essentially, the organizational structure and distribution of power for controlling and managing the natural resource are more or less the same in all villages. What makes the difference in the outcomes are the varying informal rules and norms of each village (Reddy, 1998). The same argument applies to JFM institutions. The organizational structures, power relations, rules and regulations of all the Forest Protection Committees (FPC) are more or less the same at least within states<sup>1</sup>. Several studies from many states have highlighted the importance of informal rules and norms for understanding differential outcomes of forest protection committees (FPCs) (Heltberg, 2001; Saxena, 1997; Sarin, 1999).

In that respect community forest management in India is not a totally new concept. It is documented that communities have been involved in effective management of forest areas for centuries (Kothari, et al., 1998). Many traditional systems and practices of forest management are still active in successfully preserving forests across India. An example is

---

<sup>1</sup> However, significant differences exist across states.

the wide network of sacred groves<sup>2</sup> (Guha, 2002). However, the efficiency of these institutions depends on their adaptability to changing socio-economic, political and environmental conditions (Gadgil, 1999). Many sacred groves are now encroached on, leading to severe degradation.

Nevertheless, there are still many cases of traditional forest conservation, especially in the Western part of India. Kings or princes preserve certain forest areas for recreational purposes like hunting. This kind of forest preservation not only helps to conserve ecological diversity in the region but also provides a permanent supply of fodder and small timber for the peasants. A classic example was reported from the state of Rajasthan where Rajput Princes had preserved a vast area of forest for hunting (Guha, 2002). Here it can be seen that a traditional hierarchical system of forest management, with power concentrated in the hands of a single person, can result in very effective management and use of forest resources over a long period of time.

Despite the establishment of the Forest Department in the 1860s, which officially brought Indian forests under state control, communities in many parts of the country have continued to informally manage forests that are close to their villages (Saxena, 1997; Poffenberger and McGean, 1996). Communities engaged in forest use managed to devise elaborate rules and regulations and to sustain these over time by building mutual trust among the users within the community. These rules can be considered informal institutions in the sense that the state authorities did not recognize them and that they evolved spontaneously without any intervention from outside agencies. More importantly, the influence of religion, traditional social norms and customs on the evolution of these institutions cannot be denied (although deterioration of livelihood systems of the communities certainly was another major reason). For instance, in Orissa the 'Movement for the Trees and Living Beings' (BOJBP) is one of the oldest cultural and most conservation-oriented federations known, and it has been very active and instrumental in motivating villagers to conserve forests and animals (D'Andrea, 1996). In general, the most extensive examples of success of informal institutions for forest management are found in the poorest regions of India, such as Orissa and Bihar, where thousands of communities have been involved in managing forests with self-devised rules (Saxena, 1997; D'Andrea, 1996; Singh, 2002 and Nayak, 2002).

With the formalization of *de jure* rights of the FPCs, new institutions are imposed on the traditional system, leading to several types of conflicts and problems. Most importantly, the FPCs defined under JFM frequently exclude some of the individuals and/or communities that customary and traditional rights to forest usage and resources (Bathla, 1999; Kumar, 2000). The failure of the JFM program to address customary rights has resulted in inter- and intra-village conflicts and tenure insecurity on the part of traditional users excluded from FPCs. For example, particular portions of forest are frequently allotted to a nearby village community, while villagers who stay far away from the forest areas are deprived of fuelwood and fodder on which their livelihood depends. Depriving

---

<sup>2</sup> This is a traditional system of forest preservation based on religious taboos not to cut any trees from a particular area or harm any animals living therein. It has a widespread network across the country from Devara Kadus of Coorg in the South to the deodar temple groves in the Himalaya (Guha, 2002).

communities living far from the forest but who claim traditional rights is a sensitive issue. In Orissa, inter-village rivalry and clashes arose when neighboring villages demanded a share in the usufructs (Nayak, 2002)). Similarly, many parts of Jammu, Kashmir and Rajasthan experienced serious problems in implementing the JFM program when nomads, a tribal group that has traditional rights to graze their cattle in forests but does not belong to the local communities, were denied involvement in the decision making process (Bathla, 1999).

To sum up the discussion, informal constraints such as norms, culture, conventions, code of ethics etc., evolve over time in a society and are found to be more pervasive than formal rules. These informal institutions do not change immediately in reaction to changes in formal rules. As a result, they play an important role in structuring interactions among the users of forest resources. However, it is also found that the resulting tension between changed formal rules and the persisting informal institutions has implications for the overall socio-economic outcomes (North, 1990).

### **III Institutional environment (Formal rules of the game)**

The manner in which people use environmental resources depends on the property rights governing these resources (Tietenberg, 1994). In particular, it has been argued that property rights, whether *de facto* or *de jure*, significantly affects the incentives individuals face, which ultimately determine the final outcome of resource management. It is argued that one of the reasons for the massive degradation of natural resources in developing countries is a lack of well-defined and secure property rights (Panayotou, 1993, Pearce and Warford, 1993). Many conflicts over forests arise because of difficulties in clarifying the property regimes (Bromley, 1991). In this section, we first describe and assess the shift from a state property regime to a co-management regime that has occurred in India. We then proceed to analyze in detail to what degree various types of property rights have or have not been transferred to FPCs.

#### *III.1 From state management to co-management*

The property rights regime over forest resources in India has been undergoing considerable change over time. During the pre-colonial period the forests were controlled and managed by village communities. The forests were then a common property with no private claims by individuals and all the members of a community had access to forests according to their needs (Ghate, 2003; Hazra, 2002). This property regime changed when the first forest policy statement of the colonial British government announced in 1865 that forests were transformed into state property (Guha, 1983).

After Independence, however, the government of India did not reverse the main centralization trend of colonial forest policy. On the contrary, it clearly opted for strengthening it through a series of legislative and other measures aimed at enhancing government's control over forest resources and through multiplying restrictions imposed upon the tribal population in view of the continuous degradation of these resources (Baland and Platteau, 1996: 239). Since independence, there have been three forest policy

pronouncements in India: the 1952 Forest Policy, the National Commission on Agriculture (NCA) 1976, and the 1988 Forest Policy (Saxena, 1999). It is widely argued that the four decades of forest policy preceding 1988 were mainly concerned with timber production for commercial purposes, and have neither been sustainable in terms of checking the process of deforestation, nor have they improved people's access to forests for meeting their basic needs.

With the increased social unrest and conflict between state and village communities as a consequence of resource scarcity due to massive deforestation and forest degradation, the 1988 Forest Policy was a landmark in the 200 years of Indian forest policy. It introduced the concept of Joint Forest Management (JFM), a radical shift from the earlier revenue orientation, with conservation now being considered a priority. According to this policy, forests are not to be commercially exploited by industries. The major objective is to conserve soil and the environment, and meet the subsistence requirements of the local people. In a follow-up document issued in 1990, the central government issued guidelines to all state governments to implement 'Joint Forest Management Systems' in order to regenerate degraded forest and improve living standards (GOI, 1990). The guidelines suggested that the state governments might devolve everyday forest protection, management and development responsibilities to local community institutions at the village level and prescribe benefit-sharing arrangements following regeneration, implying a clear shift from a system of pure state management to one of co-management.

Since the 1988 forest policy, the gradual change in Indian government policies towards more decentralization and devolution of forest management has continued. Three important policy statements are made in the 2000 guidelines, which are considered to be very significant from the point of view of recognizing and devolving powers to the FPCs (GoI, 1990, 2000). These are: 1) legal status to FPCs proposed through registration under the cooperative societies act, 2) 33% reservation for women in the General and Executive Body of the FPCs, 3) extension of the JFM program to healthy forests in addition to degraded forests. From these three policy statements, it is pronounced that the communities under the JFM program enjoy certain rights of access, withdrawal, and management over forest resources, which they protect.

Is the shift in the overall property rights regime from one of state management to co-management desirable? Bulte and Engel (2004) point out how the state and local communities differ in their abilities to deal with different sources of market failure that are at the heart of the overexploitation of forests. The arguments are summarized in Table 1.



**Table 1: Strengths and weaknesses of state vs. communities in dealing with sources of market failure**

SOURCE OF MARKET FAILURE	BETTER DEALT WITH BY	
	STATE	COMMUNITY
<b>Externalities</b>		
Community-level	X	X ?
Other local/Regional/National	X	-
International	-	-
<b>Transaction Costs</b>		
Costly monitoring & enforcement	-	X
Lack of information on local conditions/needs	-	X
Adoption to changes in local conditions	-	X
Lack of technical/scientific information	X	-
<b>Tenure Insecurity</b>		
Lack of formalization of customary rights	-	X

Source: Authors, based on Bulte and Engel (2004)

The state generally has an advantage in dealing with issues of externalities, public goods, and scale which are an important source of market failure in forest management. On the other hand, high transaction costs associated with monitoring and enforcement of state-imposed use and access rules and a lack of information about local conditions and needs have been major reasons behind the government's failure to effectively protect forests in the past. The informal sanctioning mechanisms, repeated interactions, and better access to local information within communities can save on such transaction costs. On the other hand, the lack of formalization of customary rights under state management implies tenure insecurity on the part of traditional forest-dependent communities. This is a potential advantage of devolving formal rights to local communities. Communities and the state also differ in their ability to deal with policy failure (Bulte and Engel, 2004). While state management has often tolerated illegal logging activities in order to relieve social pressures or extract rents from commercial logging, empirical evidence also indicates that community elites may manipulate devolution outcomes in their own interest, at the cost of weaker segments of the communities (Shackleton et al., 2002; Platteau, 2003).

It is clear that all of these considerations are applicable to the case of forest management in India. Thus, both communities and the state have potential strengths and weaknesses in forest management, indicating that the move towards a co-management regime is certainly a step in the right direction (Bulte and Engel, 2004). Nevertheless, it will be shown in other parts of this paper that the devolution process has been often incoherent and incomplete and has not fully exploited the comparative strength and weaknesses of the two parties involved (state governments and communities).

### *III.2 Degree of property rights transfer*

We now proceed to discuss to what degree specific types of property right have been devolved from the state to local communities (FPCs) under JFM. Drawing on the existing literature on the commons, we distinguish four types of property rights that are most relevant for the case of common-pool resources (Schlager and Ostrom, 1992): (1) the right to enter a defined physical area and obtain resource units or products of a resource system (e.g., cutting firewood or timber, harvesting mushrooms etc.) (*withdrawal right*), (2) the right to regulate internal use patterns and transform the resource by making improvements (e.g., planting seedlings and thinning trees) (*management right*), (3) the right to determine who will have an access right, and how that right may be transferred (*exclusion right*), (4) the right to sell or lease management and exclusion rights (*alienation right*).

In general, the degree to which specific rights and benefits were actually devolved from the FD to local communities differs significantly across states (Damodaran and Engel, 2003) (see Table 2). In 12 out of the 23 states that have implemented JFM, the FD has unilateral power to cancel the JFM agreement and in most cases to even dissolve the FPC (Khare et.al, 2000). Most state program guidelines do not provide long-term rights to communities (Poffenberger & McGean, 1996).

#### *1. Right to Withdrawal:*

Under JFM, members of FPCs have obtained the right to use several non-timber forest products from their village forests, and to keep a share of the proceeds from the sale of timber once forests have matured. However, withdrawal rights are not granted to communities for all NTFPs. For instance the right to collect *beedi*, *sal* and *tendu* leaves, which constitute lucrative forest produce for the governments and contractors, has not been fully devolved to the communities. In Andhra Pradesh, for instance, the collection of *beedi* leaves is given in lease to contractors and their collection and sale by FPC members is restricted, despite the fact that a sizable amount of tribal people's livelihood depends on this NTFP. In Andhra Pradesh, 22 NTFPs are given in lease to a state government agency called GCC (Girijan Cooperative Corporation), providing it with thereby prohibiting collectors from the villages to sell these products in the open market. Villagers also do not have the right to harvest timber products by themselves, unless the wood is dry or has fallen to the ground. In some cases, their share of the proceeds from timber harvests is limited, and has been reduced after successful protection (Agrawal and Ostrom, 2002). The share of benefits obtained varies across states (SPWD, 1998). Finally, a very important restriction in the transfer of withdrawal rights lies in the fact that, in the event that FPCs fail to protect the forests, the government can withdraw the usufructs rights from the communities unilaterally without any compensation for previous efforts of forest regeneration by the FPCs.

#### *2. Right to Management:*

The right to manage forests is partially transferred to the FPCs under JFM. The communities have the right to select tree species that they would like to plant, but this has to be approved by the FD. A joint working plan or micro plans outlining a detailed management plan are to be prepared by the FD in consultation with the FPCs. In some

**Table 2. Powers of Community Forest Protection Committees under Joint Forest Management in India (by state)**

States	Punishment/ fine	Cancellation of membership	Framing rules	Distribution of benefits
Andhra Pradesh	Assist FD	Yes	Yes	No
Arunachal Pradesh	Yes	No	Yes	No
Assam	Assist FD	No	Yes	Assist FD
Bihar	No	Yes	Yes	Assist FD
Goa	-	-	-	-
Gujarat	Assist FD	Assist FD	Assist FD	Assist FD
Haryana	Yes	Yes	Yes	Yes
Himachal Pradesh	Assist FD	No	Yes	Yes
Jammu & Kashmir	No	No	Yes	-
Karnataka	Yes	Yes	Yes	Yes
Kerala	No	Yes	No	No
Madhya Pradesh	Yes	Yes	Yes	Yes
Maharashtra	No	No	No	No
Manipur	-	-	-	-
Mizoram	Assist FD	No	Assist FD	Assist FD
Nagaland	No	No	No	No
Orissa	Yes	No	Yes	Yes
Punjab	Assist FD	No	Assist FD	Yes
Rajasthan	No	No	No	No
Sikkim	Assist FD	Assist FD	-	Assist FD
Tamil Nadu	Yes	Yes	Assist FD	Yes
Tripura	No	No	No	No
Uttar Pradesh	Yes	Yes	Yes	Yes
West Bengal	Assist FD	No	Yes	Assist FD

Based on Government of India (2002), SPWD (1998), TERI (undated)

Yes=Community has power, No=Community has no power, FD=Forest Department

Source: Sawhney and Engel, ZEF (2004)

cases, such as in Andhra Pradesh, the preparation of the working plan or micro plan is entrusted to the local communities, but the FD needs to give final approval of the plan to implement it. In reality the micro plans are frequently prepared by the FD or NGO personnel with little consultation of the FPCs. Our field experience in Andhra Pradesh showed people being instructed by the FD on what activities they should undertake in their forest areas. It was found that people have invariably adopted silvicultural procedures such as singling and coppicing to raise good quality timber irrespective of the tree species. As a result, a drastic decline in NTFPs was reported due to heavy cutting of the branches of the NTFP tree species in singling operations, especially in the areas where NTFP species are dominant species. Plantation activities are frequently carried out against the wishes of the people. For every action that the communities would like to initiate they have to wait for the permission from the FD officials. Therefore, Forest Department officials significantly shape the degree to which villagers can frame their own rules of use and management, and get involved in day-to-day management of village forests (Jeffery and Sunder, 1999). Villagers have the responsibility to protect trees and vegetation and the ability to allocate non-timber benefits within the community. But where more significant issues are at stake such as transfer of power to villagers,

formation of forest protection committees, share in timber sales, or ability to negotiate rule changes, villagers are highly constrained in their ability to act (Kumar, 2000).

*3. Right to Exclusion:*

The right to determine who will have an access right is under JFM formally granted to the FPCs. According to JFM guidelines, it is the communities who should be able to organize themselves into a village institution for the protection and regeneration of the forests and become beneficiaries from it (GoI, 1990). This implies that the communities have the right to decide who has access to the forest and who has not, depending on the commitment and willingness to cooperate in their collective effort. Although a few communities have succeeded in excluding non-members, the communities' ability to enforce access rights is, however, generally limited as it depends on the FD's willingness to provide adequate support in terms of legal backing and conflict resolution between FPC members and non-member users. For instance, in one occasion in a meeting with JFM presidents a FD official in charge of JFM announced that the committees should allow access to forests by grazers who have been grazing their cattle in the forest since centuries. In a few instances the FD forced the committees to accommodate other non-members against FPC wishes. This kind of erratic changes of policy on the part of the FD violates the rights of exclusion given to the communities.

*4. Right to alienation/transfer:*

The right to alienate or transfer is considered as an important property right, which according to the property rights school is required to assure an efficient use of resources. The right to transfer implies that the right holder should be able to sell and transform the resources. Under JFM, this right has been transferred to the communities only to a very limited degree. It is very clearly mentioned in the guidelines that no ownership or lease rights over forest land shall be given to the communities (GoI, 1990). However, the other rights (withdrawal, management and exclusion) over forests can be transferred by the community from one generation to the other. This also applies within a family where the rights over forest can be transferred from the parents to their kith and kin. The right to transform the resources is also limited to afforestation activities, denying users to indulge in deforestation activities.

**Table 3. Rights given to local communities under the JFM program**

<b>Rights given to communities</b>	<b>Rights not given to communities</b>
a. Access to forest lands and usufruct benefits.	a. Grazing is restricted in the protected areas.
b. A share of matured trees of final harvest.	b. Restriction on the use of timber.
c. Choice to plant tree species of community interest.	c. Restriction on the collections of valuable NTFPs.
d. Right to exclude non-members	d. No ownership or lease rights over forest land.
e. Transfer of withdrawal, management and exclusion right from one generation to the other.	e. Usufruct benefits will be withdrawn if the community fails to protect the forest.

Table 3 presents a summary of different rights that are either transferred or not transferred from the FD to the communities. It is clear that the rights are only partially transferred to the communities. The impression emerges that the FD wants communities to collect forest produce not as a matter of right but at the instance of the forest department. This is reflected in the restrictions imposed on the collection of many valuable NTFPs such as *beedi*, *sal*, and *tendu* leaves discussed above, as well as the constant intervention of the FD in community decision making processes.

To conclude, devolution of rights has not kept pace with devolution of responsibilities ('transfer of responsibility without authority'), resulting in half-hearted policy change with potentially counter-productive effects (Bulte and Engel, 2004). Uneven transfer of rights and responsibilities reduces community incentives for sustainable resource management, provides incentives to overexploit forests for quick economic benefits (Bulte and Engel, 2004).

#### **IV Governance of contractual relations (play of the game)**

This level is concerned with the contractual relations (contract laws and enforcement) between the governments (Forest Departments) and FPCs that are outlined in different JFM guidelines. That is, it deals with how the formal rules are translated or enforced and its implications for different outcomes.

##### *4.1 Rule Setting*

The process of setting rules and regulations for resource use and management is an important issue in natural resource management in general and for JFM in particular. Rule setting in JFM undoubtedly is the result of complex and complicated procedures as there are layers of hierarchies in bureaucratic and government agencies involved in it. A broad framework is provided by the central government to the state governments under which all the state governments have to bring their own framework of resolution. Specifically, the 1990 JFM resolution laid down broad conditions on the basis of which the state governments have to adopt JFM, such as the confinement of JFM to degraded forests, the right to dissolve FPCs by the FD, the limitation of community access rights to selected NTFPs only, the lack of tenure rights to communities, etc. The revised 2000 JFM resolution has made some significant changes, including the extension of JFM to good forest cover and the requirement that 33% of FPC members be women.

Within the broad framework of rules and regulations provided by the central government, the state governments have further scope to implement their own resolution of rules and regulations, depending on their prevailing requirements and situations. This is clearly reflected in terms of the wide variation in the percentage of benefit sharing between communities and FDs across states (SPWD, 1998; see table 2). A considerable variation is found in terms of revenue sharing from final timber sales - from 10% in Kerala to 100% in Andhra Pradesh. Similar variations are observed in the sharing of NTFPs and other forest products. With regard to institutional aspects, differences across FPCs are

also seen in the formation of membership criteria, like eligibility to the General Body (GB) and Executive Committees (EC), and entitlement to benefit sharing within a household. There are differences in a number of other activities related to JFM which are political and bureaucratic in nature. The basis on which varying rules in each state are made is little known. Certainly, the interests of FDs and the governing political party influence the decisions. Donor activities also play an important role (Damodaran and Engel, 2003). Decisions are rarely made on the basis of economic, social and institutional efficiency, unless there is pressure from donor agencies, NGOs or civil society (Lele, 2000; Khare et al., 2000; Saxena, 1999; Vira, 1995).

The state government guidelines make up the basic framework of rules for the Forest Departments, which in turn lay down rules for all FPCs governing the use and management of forest resources. The FPC members are responsible for harvesting, distribution of benefits and access to forest produce according to the rules. The fundamental questions that arise are: Who sets the rules? On what basis are the rules being set? What are the processes and procedures that are followed in making decisions on the adoption of these rules? Is the poorer section of people in the communities consulted in the rule-making process? These issues are likely to be crucial to the sustainability and distributional outcomes of JFM.

The communities under JFM broadly have a two-tier organizational structure: a General Body (GB), which can draw members from the whole village, and an Executive Committee (EC) consisting of some 9-15 persons (Agarwal, 2001). According to the state JFM resolutions, Executive Committee members are supposed to be elected democratically by the members of the GB who come from all the groups (different castes, religions, gender, income levels) of a community. Generally the GB meets once or twice a year and the EC about once a month to discuss issues related to enforcement of rules for forest use and management. However, some argue that in reality FPCs function under two to three persons within the EC, namely the secretary, president and treasurer, thus changing the organizational structure of FPCs into a three-tier system (Sarin et al., 1998). In particular, the president sometimes takes decisions without the consent of the other executive members. This is primarily the case when the president belongs to a dominant class in the community (Ballabh et al., 2002).

Since JFM is a co-management system, not all authorities for making constitutional, collective choice and operational level rules are concentrated with the FPCs. The FD retains its authority to make rules at three levels: area allocation and boundary demarcation; preparation and approval of micro-plans and designation of forest protection methods; and, in most states, determination of disposal procedures for commercially valuable NTFPs (Prasad, 2002; Saxena, 1997). In fact, the provision in most state resolutions that a forest officer be a member in the FPCs indicates the influence of Forest Departments on community level decision-making. Studies show that the FPCs are completely dependent on FDs for day-to-day activities and decision-making processes (Ballabh et al., 2002; Sarin et al., 1998; Saxena, 1997). However, studies have also shown that the degree of FD's intervention in the FPCs varies from state to state (Table 2, Kumar, 2000; and Ballabh et al., 2002). Governments also often maintain

control through extensive bureaucratic procedures (forest management plans), withholding information and lack of capacity building (e.g. in the state of Madhya Pradesh locals were completely unaware of rules for budgetary allocations or use of funds) (Bulte and Engel, 2004).

Both GB and EC have become the most commonly used mechanisms for facilitating participatory consultation and decision making for FPCs. However, experiences from the field have indicated that the decisions are seldomly taken at these meetings. Those villagers (elites) who are aware of the meeting's objectives, and have high stakes in the outcomes, often come to the meeting after having had rigorous group discussions and pre-meetings in which key decisions are negotiated between the powerful interest groups (Sarin et al., 1998, Gorada, 2003). This indicates that not all rules that are set by the committees are necessarily based on a democratic process within the FPCs. There exist possibilities for the elite groups within the FPCs to influence the rule setting. This can also lead to collusion between members of the elite and forest officials that could undermine the interests of marginalized sections of the communities. However, not much research has gone into this issue and the nature, extent and distributional impact of the problem. Some evidence on the unequal distribution of benefits from JFM is presented in section 4.3 below.

#### *4.2. Enforcement of rules*

The basic purpose of institutions is to structure human behavior in order to achieve the settled objectives. If the objectives are set and rules are framed to achieve them, an effective mechanism must be implemented to make sure that the rules are enforced and observed. In other words, a governance structure must be in place, which should be able to guarantee order and thereby to eliminate conflicts and realize mutual gains. Effective enforcement requires a mechanism to detect the violation and proper sanctions to deter anyone from violating the rules. The FPCs and the FD are, through various contractual relations, bound to certain rules that concern benefit sharing, forest protection and management. Violation of such rules from both sides is common. Communities violate the rules when they cannot protect the forests from fire, grazing and tree felling. The Forest Departments violate rules when they indulge in illegal activities in the forests protected by the FPCs, e.g., by supporting unauthorized persons (smugglers, grazers, contractors, and headloaders) in using the forests for their own rent seeking interests or failing to provide required legal support to the FPCs in resolving conflicts with outsiders and neighboring villages. Many such instances of violation committed by the FD staff were reported during the implementation process of the JFM program and also later on (own observation). No detection and sanctioning mechanisms are framed in the JFM guidelines that deter the FD officials from violating the rules, whereas there exists an enforcement mechanism for the event that FPCs violate the rules. It stipulates that if the communities fail to protect the forests, all rights to use and manage the forests will be withdrawn without any compensation for their previous efforts towards forest regeneration. In reality, however, no community has been reported punished for their negligence. Rather it is seen that whenever communities are disintegrated and commit large scale violations in the forests, FDs tend to spend more money on forest activities. This not only facilitates rent seeking by the FD in the event of lack of monitoring from

the communities, but also encourages the FPCs not to take the rules seriously. Due to lack of deterrence mechanisms, rampant rent seeking activities are reported in Andhra Pradesh, the second largest JFM state in terms of number of FPCs in India (own fieldwork).

#### *4.3 The implications of the rules*

Who are the people within the communities that actually benefit most from the JFM program? Are forest dependent and marginalized people, who are supposed to benefit from the JFM program, actually better off than before JFM was introduced? A comparative study between JFM and non-JFM villages in the state of Jharkhand found that richer sections of the communities have benefited under JFM at the expense of poorer ones (Kumar, 2002). Given a share in total benefits from the final harvest of timber, community rules favor long-run timber benefits through forest closure and plantation of high-value species. As a consequence, poor, forest-dependent households are marginalized as they suffer from the reduced availability of and access to NTFPs (ibid). Similar observations are made by several other studies which have documented that under the strict rules of JFM, poor people are deprived of their genuine rights to access non-timber forest produce (Sarin, 1996, 1999; Agarwal, 2001). Often unclear and overlapping jurisdictions and mandates lead to institutional conflict and struggles for power and revenues within a community (Kumar, 2000). For instance, conflicts between traditional village leaders (or elite groups in the village), local elected governments, and FPCs are prevailing in many states (Saxena, 1999 and Sarin, 1996). In many cases the influence of government and local elites in the decision-making process is found to be very strong, which may severely dilute community representation. NGOs and donor agencies also shape the outcomes by allying themselves with a particular local group or government officials (Shackleton et al, 2002 and Kumar, 2000). In some instances, donor agencies have caused damage to existing well-functioning institutions due to a poor understanding of the local situation (Sarin, 2001). For example, donor agencies tried to alter some of the rules that the communities had adopted for the use and management of forests.

#### *4.4 The role of collective action*

A community's ability for collective action is likely to be an important determinant of its success in organizing community management activities as well as for monitoring and enforcement of use and access rules. In the literature on collective action, starting from Olson (1965), it has been argued that small and homogenous user groups are more likely to cooperate, as free riding can more easily be overcome. However, in an interesting study on India by Heltberg (2001) it was found that larger villages are more likely to have active management institutions. However, the author could not give obvious explanations for this phenomenon. A study conducted in community forest management in Nepal also found that larger groups (of over 300 households) were no less effective than smaller groups (of fewer than 100 households) (Hobley and Shah, 1996). The authors argued that a highly factionalized but well represented and managed large group may be more effective than a non-factionalized but non-representative, poorly managed small group.



The relationship between resource scarcity and collective resource management outcomes has been an issue of controversy in the recent CPR literature. Some scholars argue that villagers are likely to follow joint rules and arrangements to achieve intensely felt needs that could not be met by individual action, which implies a positive relationship between scarcity and community resource management outcomes (Wade, 1988). On the other hand, Bardhan (1993, as quoted in Heltberg, 2001) argues that community resource management outcomes are more likely at moderate levels of resource scarcity. At high levels of scarcity and ecological stress institutional arrangements often break down as people scramble for survival and discount rates increase.

It is argued both theoretically as well as empirically that the openness and stability of the community is a crucial determinant of community resource management outcomes. That is higher the rate of migration, mobility, and market integration, the lower the possibility of voluntary cooperation or organization (Ostrom, 1990). However, in the case of JFM, it is often argued that greater market integration for NTFP is necessary in order to bring more people's cooperation in the JFM program, as middlemen and faulty government policies exploit the rural poor by undervaluing their NTFP (Bathla, 1999).

The role of heterogeneity in affecting the community resource management outcomes is strongly debated in both the theoretical and empirical literature. It is generally argued that heterogeneity based on identity (ethnic, political, gender, etc.) can create obstacles to performance of community resource management (Agrawal, 2001; Baland and Platteau, 1999) because it can make communication and cooperation difficult. The effect of economic heterogeneity (e.g., inequality in land holding or other endowments) is less clear. One school of thought holds that inequality (based on endowments, e.g., wealth and land distribution) is good for performance of community-based resource management, as those with greater interests may decide to provide the common good even if the poorly endowed group chooses to free ride (Olson, 1965). Others argue that heterogeneity hampers community resource management outcomes (see for instance, Johnson and Libecap, 1982; Jayaraman, 1981, Easter and Palanisami, 1987). Empirical evidence on this aspect remains ambiguous (Baland and Platteau, 1999; Kanbur, 1992). In a recent study in Nepal from 18 forest communities it is found that heterogeneity is not a strong predictor of the level of community resource management outcomes (Varughese and Ostrom, 2001).

Political structure and processes of a state or village can influence its ability for collective action tremendously. For instance, recent political developments, such as decentralized participatory politics and percolation of party system to the village level in India have immensely increased the transaction costs of coordinating and organizing collective action (Reddy, 1998).

Communities with prior experiences in institutional cooperation are argued to be significantly more likely to cooperate in forest management (Baland and Platteau, 1996). We also realize from our field experience that wherever communities had prior experiences of self-initiated forest protection the JFM program in those communities are

found to be successful. Of course, this leaves the question why self-initiatives emerge in some communities and not in others.

## **V Resource allocation and employment**

This level emphasizes basically the nature of individual stakeholders' incentives to participate in different levels of forest management decisions and activities and to comply with rules. In the case of JFM, stakeholders include FPC member households, non-member forest-dependent households (e.g., shifting cultivators, head loaders, grazers, NTFP collectors), and forest department officials at different levels. Apart from these there are other pseudo stakeholders who indirectly influence the program, such as private contractors, bidders, and timber smugglers.

Problems occur especially in situations where several stakeholders benefit from rule violations. For example, setting fire in the forests before the start of the rainy season is not only beneficial to the large farmers in terms of availability of grass for their large herds of cattle, but also to the contractors who get the lease from the FD to collect *beedi* leaf as fire promotes the growth of these leaf. Daily wage earners may also benefit from fire through increased employment in beedi leaf collection. Forest Departments also benefit through increased revenues from leases, as well as bribes. The main loser, the environment (the forest itself) and possibly some forest-dependent households tend to have little voice in the process.

In such a complex situation a very strong enforcement of rules is needed, where all the involved agents including Forest Department must be accountable for any rule violations.

### *5.1 Household incentives for participation*

As explained in part III, it is often argued that involving communities in forest management can lead to substantial reductions in transaction costs. Nevertheless, that the transaction costs associated with community forest management can be substantial (Adhikari, 2002). Activities like meetings, obligatory forestry activities and monitoring are very time consuming. For individual resource users, transaction costs of resource management are related to participation, opportunity costs of time involved in meetings, time required to acquire information and communication, as well as direct monetary expenses for travel, communication and information. These costs tend to be borne disproportionately by the poorer sections of the forest communities. In particular, the opportunity cost of time of participating in collective management activities is extremely high to a poor person, as participation implies foregone income that may be crucial to the subsistence of the person's family. As a consequence, poor community members are less likely to participate in decision-making within the FPCs and are less likely to share in the benefits. Moreover, the actual cost from community management is likely to be high, once transaction costs are included. These arguments also provide a potential explanation for the unequal outcomes of JFM described in section 4.3.

FPCs also often have low incentives to enforce forest use and access rules for two reasons: (1) the opportunity costs of forest protection of the members and (2) the failure

on the part of FD to provide adequate legal support to the FPCs (Bulte and Engel, 2004). When the opportunity costs of a community increase due to improvement of non-forest activities, people may not show interest in forest protection. When the enforcement of forest laws by the FD is weak people prefer to indulge in illegal tree felling which they find more beneficial than participating in the program at least in the short run. Hence strong enforcement of forest laws by the FD and people's participation is positively related.

Finally, it needs to be pointed out that given current incentive structures, forest-dependent communities may not have an incentive to protect forests to the degree that might be optimal from a national or even global perspective. First, as long as benefits from the forest that occur as externalities outside the community are not translated into financial incentives for local communities, the latter have no incentive to internalize such externalities. Second, the incomplete transfer of rights to FPCs and the high level of uncertainty about the long-run sustainability of these rights under JFM induces tenure insecurity on part of FPC members and thereby yields strong disincentives to consider the long-run effects of their actions (Bulte and Engel, 2004).

### *5.2 Incentives of government officials*

The issue of asymmetric division of power and relationship between the Forest Department and local community in JFM institutions can also be stated with the help of agency theory as a principal-agent problem. The core of the agency theory is that there is a hierarchical system, in which a principal delegates responsibilities to so-called agents. The agent has significantly discretionary decision margin because it is impossible for the principal to watch over all activities of the agents, and because the agent might have its own interests, the principal is not guaranteed the optimal outcome he is pursuing. There is an asymmetric division of information between the principal and agents. The agent often has more specialized knowledge and is closer to the information source because he performs the work. This all leads to tension between the agents who have more information and his own interests, and the principal who tries to pursue his own and organization's interest, and therefore, he monitors the activities of agents.

In a democratic society like India, the people – citizens - can be considered as the principals because they elect representatives (Member of Parliaments (MPs) to the central government and Members of Legislative Assembly (MLAs) to the state government) to rule on their behalf (Bardhan, 2002). These agents, if not subject to scrutiny and monitoring, begin to think of themselves as principals who run a government in their own interests. Further, the agents' (government) wishes are implemented by the bureaucracy, who are subagents and have their own interests. The civil servants (bureaucrats) are not elected representatives and therefore are not accountable to the people, but accountable to their seniors in the civil service and enjoy security of tenure and protection by the Constitutions (for more details see Vyasulu, 2004).

The bureaucrats in the FD are the real executer of the JFM program on behalf of the government and have its own interests of managing forest that suits the timber and revenue needs of the government (silvicultural methods) and their own interest of rent

seeking. Due to a lack of accountability, often combined with an ignorance of local knowledge, customs, and habits of local communities and being educated in a largely illiterate society, these bureaucrats often think themselves more knowledgeable than the local communities. They considerably limit access to information regarding allocation of funds and other related matters to the local communities (own fieldwork). However, this helps the bureaucrats immensely to involve in rent-seeking activities by having an understanding with the local communities to retain a percentage share from the allocated money that is meant for carrying out forest activities.

Generally the lower cadres of the FD staff are in charge of the implementation of the JFM program. These FD staffs have an incentive to undermine the monitoring and enforcement of use and access rules, since they collect a sizable amount of money from the grazers, head loaders and smugglers by allowing them to access the forest resources illegally. They are also aware that once a community institution becomes vibrant, they are more likely to oppose the illegal access to their forests by the outsiders. Hence it is in the interest of the FD to ensure that JFM does not work properly.

### *5.3 Incentives of FPC leaders*

Lack of accountability of FPC leaders (president and secretary) to the members is also a problem of incentives, which leads to misappropriation of funds. The problem lies basically with the way these leaders are elected. In particular, the FD often directly influences the election by proposing the candidates to be selected from. As a result, the leaders who got elected consider themselves to be obliged to the FD and dependent on it for reelection. In many cases, these leaders have been occupying the posts from the beginning despite member requests for a change and against the JFM resolution which allows the election of presidents and secretaries every two years. As a consequence, FPC leaders work very closely with the FD, lack accountability towards FPC members, and have very little support and recognition from the members (own observations).

In the absence of people's support to the JFM program it would be very difficult to ensure accountability and transparency. One important suggestion in this regard would be to include the local government (panchayat), which can be more effective to bring accountability and transparency. Activities under the Panchayat system are likely to be more transparent and the leader (sarpanch) more accountable to the people because the members of rival political parties will be always alert and will supervise all activities being carried out by the panchayat. Thus, rather than creating another institution such as FPCs to manage forests, the responsibilities for forest management should be entrusted to the already existing locally elected government. This (Panchayat) is also empowered under the 73rd Constitutional Amendment Act of India. Under this act the Panchayat has emerged as one of the key potential stakeholders in forestry management. Furthermore extension of this Act to Schedule V (tribal) areas has wider implications on forest resources in tribal areas (as specified in the Fifth Schedule). In fact, the Panchayat is formally endowed with the right of ownership of NTFPs and granted to meet the *bona fide* requirements of the local community. The Act empowers the local body government of traditional communities to manage its community resources in accordance with its customs and traditions (GoI, 1996). There is thus an underlying contradiction between

JFM and the Panchayat Raj Act. Because the Panchayat Raj Act is a law whereas the JFM scheme is based on administrative orders, the former must take constitutional and legal precedence over the latter.

## **VI Concluding Remarks**

In this paper we have analyzed the performance of JFM and the sources of persistent problems by structuring the evidence according to Williamson's four levels of institutional analysis.

Level 1 has highlighted the important role of informal institutions in the implementation of JFM. It was found that little attempt has been made on the part of policymakers to accommodate these institutions into the JFM program. Studies confirm that the existence of strong informal institutions can have positive influence on the outcomes of formal institutions like JFM and other local institutions in natural resource management (Sarin, 1999). JFM has, however, failed to take advantage of informal institutions in several ways. First, by excluding important forest-dependent groups from FPCs, the program introduces tenure insecurity on part of these groups and a strong potential for conflicts. Second, by superimposing a new structure like the FPC without consideration of existing structures (panchayats, traditional forest management institutions, etc.) JFM fails to benefit from the existing accountability and credibility of these existing structures.

The second level of analysis highlighted the fact that—while the move towards co-management is certainly a step in the right direction—the transfer of property rights from the FD to the local communities has been incomplete and incoherent, with differences across states and across different types of forest products. As a consequence, FPCs face serious disincentives to consider the full long-run effects of their forest management actions. A clear assignment of property rights over forest access and management must be provided to the local communities along with strong institutional backing by the forest department to support effective rule enforcement.

The third-level analysis has shown important problems in the 'play of the game', including inequalities in the distribution of benefits and serious enforcement problems. The community's ability for collective action is one prerequisite to effective management under JFM. Perhaps more importantly though, it was shown that the FD severely limits and often even undermines the scope for the community to set and enforce effective use and access rules. The FD not only routinely intervenes in everyday decision-making within the community. Rent seeking activities also lead to FD officials supporting the violation of FPC rules.

Finally, the fourth-level analysis has pointed out incentive problems related to the participation of individual member and non-member households as well as the performance of FPC leaders and FD officials. High transaction costs discourage the participation of poorer segments of forest communities in FPC decision-making, thereby freeing the way for richer segments to adopt rules that are biased towards their own

interests. The lack of accountability of both FPC leaders as well as FD bureaucrats is an important factor in explaining the strong prevalence of rent seeking activities.

### References:

Adhikari, B., 2002, "Property Rights and Natural Resource: Socio-Economic Heterogeneity and Distributional Implications of Community Resource Management in Nepal", Paper Presented in the second world congress of environment and resource economists, California, June 24-27.

Agrawal, A and E. Ostrom, 2002, "Collective Action, Property Rights, and Decentralization in Resource Use in India and Nepal", *Politics and Society*, 29(4), 485-514.

Agarwal, B. 2001, "Participatory Exclusions, Community Forestry, and Gender: An Analysis for South Asia and a Conceptual Framework", *World Development*, 29(10), 1623-1648, October.

Agrawal, A. 2001, "Common Property Institutions and Sustainable Governance of Resources", *World Development*, 29(10), 1649-1672, October

Ballabh, V, K. Balooni, and S. Dave, 2002, "Why local resources management institutions decline: a comparative analysis of Van (forest) panchayats and forest protection committees in India," *World Development*, 30(12), 2153-2167, December.

Baland, J-M., and Platteau, J. P. 1999. The ambiguous impact of inequality on local resource management. *World Development*, 27(5), 773-788, May.

Baland, J-M. and Platteau, J. P. 1996, "Halting Degradation of Natural Resources: Is there a Role for Rural Communities?". Oxford: Clarendon Press.

Bardhan, P. 2002, "Decentralization of Governance and Development", *Journal of Economic Perspective*, 16(4)

Bathla, S. 1999, *Externalities Impinging on Participatory Forest Management in India*, Policy and joint forest management series-4, World Wild Fund for Nature, India.

Bromley, Daniel, W. 1991, *Environment and Economy: Property Rights and Public Policy*, Oxford Blackwell Publishers.

Bulte, E., und S. Engel. (Accepted for publication.) "Conservation of Tropical Forests: Addressing Market Failure". *Sustainable Development: New Options and Policies*. López, R., Stiglitz, J., and M. Toman (eds.). Oxford University Press, New York.

D'Andrea, C. 1996, Field Visit to Eastern India, SDI Report, The Sustainable Development Institute (SDI), Washington, D. C. [www.susdev.org](http://www.susdev.org).

Damodaran, A., and S. Engel. 2003, Joint Forest Management in India: Assessment of Performance and Evaluation of Impacts, ZEF-Discussion Papers on Development Policy No. 77, Center for Development Research (ZEF), Bonn, Germany

Easter, K.W. and Palanisami, K. 1987. Small scale surface (tank) irrigation in Asia. *Water Resources Research* vol. 23.

Gadgil, M. 1999, "Recognizing and rewarding common pool knowledge resources", In: *Institutionalizing Common Pool Resources*, (Ed.) D.K. Marothia, Concept Publishing Company, New Delhi, pp.439-451.

Gorada, P. 2003, *Joint forest management in Eastern Ghats of Andhra Pradesh: A study of stakeholders' participation*, Ph.D. dissertation, University of Hyderabad, India.

Ghate, R. 2003. "Ensuring collective action in participatory forest management", Working Paper-3-03, South Asian Network for Development and Environmental Economics (SANDEE), Nepal

GoI. 1990, *Involving of village communities and voluntary agencies for regeneration of degraded forest lands* (Letter no. 6-21/89-PP dated 1 June 1990), New Delhi, Government of India, Ministry of Environment and Forests.

GoI, 1996. *The provisions of the Panchayat extension to the schedule areas act, 1996*, Ministry of Rural Development, Government of India, No.40, December

GoI. 2000. *Guidelines for strengthening of joint forest management program* (Letter no. 22-8/2000-JFM (FPD) dated 21 February 2000), New Delhi, Government of India, Ministry of Environment and Forests.

Guha, R. 2002. The Prehistory of Community Forestry in India, Environmental History.

Guha, R. 1983, "Forestry in British and Post British India: A Historical Analysis", Economic and Political weekly, Vol. XXVIII, No. 44.

Hazra, A. K. 2002, "History of Conflicts Over Forests in India: A Market Based Resolution", Working Paper Series, Julian L. Simon Centre for Policy Research.

Heltberg, R. 2001. "Determinants and impact of local institutions for common resource management", *Environment and Development Economics*, Vol. 6.

Hobley, M and K, Shah. 1996, "What makes a local organization robust? Evidence from India and Nepal", *Natural Resource Perspective*, Number-11, Oversea Development Institute, London.

Jarayaman, T.K. 1981. Farmers' organizations in the surface irrigation project: Two empirical studies from Gujarat. *Economic and Political weekly*.

Jeffery, R and N, Sunder. 1999 (eds). *A New Moral Economy for India's Forests? Discourses of Community and Participation*, Sage Publication, New Delhi.

Johnson, R.N. and Libecap. 1982. "Contracting Problems and Regulations: the Case of the Fisheries. *American Economic Review*, 72(2): 1005-23.

Joshi, A. 1999, "Progressive Bureaucracy: an Oxymoron? The Case of Joint Forest Management in India" Rural Development Forestry Network, Oversea Development Institute, London.

Khare, A, M, Sarin, N. C, Saxena, S, Palit, S, Bathla, F, Vania and M, Satyanarayana. 2000, *Joint Forest Management: Policy, Practice and Prospects, Policy that works for forest and people series no: 3*, World Wide Fund for Nature-India and IIED London.

Kanbur, R. 1992. Heterogeneity, distribution and cooperation in commons property Management, background paper for the 1992 world development report, World Bank.

Kothari, A. N. Pathak, R. V. Anuradha and B, Taneja. 1998 (ed), *Communities and Conservation: Natural Resource Management in South and Central Asia*, Sage Publication, New Delhi.

Kumar, N. 2000, All is not Green with JFM in India, in *Forest, Trees and People*, Newsletter No. 42, June, Rome.

Kumar, S. 2002, "Does participation in common pool resource management help the poor? A social cost-benefit analysis of joint forest management in Jharkhand, India", *World Development*, 30(5): 763-782.

Lélé, S. 2000, Godsend, sleight of hand, or just muddling through: Joint water and forest management in India', *ODI Natural Resource Perspectives* 53.

Nayak, P. K. 2002, "Community Based Forest Management in India: The Issue of Tenural Significance", Paper Presented at the 9<sup>th</sup> Biennial Conference of the IASCP, Zimbabwe.

North, D. C. 1990, *Institutions, Institutional Change and Economic Performance*, Cambridge University Press, Cambridge.

Olson, M. 1965. *The logic of collective action: public goods and theory of groups*, Harvard University Press, Cambridge, MA.



Ostrom, E. 1990. *Governing the commons: the evolution of institutions for collective action*, Cambridge University Press, New York.

Panayotou, T. 1993, *Green Market: The Economics of Sustainable Development*, Institute for Contemporary Studies Sans Francisco, California.

Pearce, D. W. and Warford, J. J. 1993, *World Without End: Economics, Environment and Sustainable Development*, Oxford University Press.

Platteau, J.-P. 2003. Decentralized development as a strategy to reduce poverty? Paper prepared for the Agence Francaise de Développement (AFD). Centre de Recherche en Economie de Développement (CRED), University of Namur, Belgium.

Poffenberger, M and B. McGean (eds) 1996, *Village Voices, Forest Choices: Joint Forest Management in India*, Oxford University Press, New Delhi.

Prasad, R. (2002), “Joint Forest Management in India and the Impact of State Control over non-wood forest products”, Indian Institute of Forest Management, Bhopal, India.

Reddy, V. R. 1998, “*Managing the commons in Developing Economies: Towards a Theory of Collective Action*”, Paper Presented at the International Conference for the European Society for Ecological Economics, Geneva, 4 –7, March.

Sarin, M, L Ray, M. S, Raju, M, Chatterjee, N, Banerjee and S, Hiremath, 1998, “Gender and Equity Concerns in Joint Forest Management”, in *Kothari et al (eds), Communities and Conservation: Natural Resource Management in South and Central Asia*, Sage Publication, New Delhi, India.

Sarin, M. 1996, “From conflict to Collaboration: Institutional Issues in Community Management”, In *Poffenberger and Betsy McGean (eds), Village Voices, Forest Choices: Joint Forest Management*, Oxford University Press, Calcutta.

Sarin, M. 1999, *Policy Goals and JFM practice: An Analysis of Institutional Arrangements and Outcomes*, Policy and Joint Forest management Series-3, World Wide Fund for Nature-India.

Sarin, M. 2001, “Disempowering in the name of participatory forestry?-village forests joint management in Uttarakhand”, *Forests, Trees, and People Newsletter No. 44*

Sarin, M. 2002, “Devolution as a Threat to Democratic Decision-Making in Forestry? Findings from Three States in India, Chapter of Book, CIFOR, Indonesia.

Sawhney, P and Engel, S. 2004, Center for Development Research (ZEF), University of Bonn, Germany.

Saxena, N. C. 1999, *Forest Policy in India*, Policy and Joint Forest Management Series-1, World Wide Fund for Nature-India.

Saxena, N. C. 1997. *The Saga of Participatory Forest Management in India*, Centre for International Forestry Research, Indonesia.

Schlager, E and E, Ostrom. 1992, "Property Rights Regimes and Natural Resources: A Conceptual Analysis," *Land Economics*, 68(3): 249-62.

Singh, S. K. 2002, "Conflicts and Disturbance – A Reason to Change: Lesson from Community-Based Natural Resource Management Institutions in Orissa, India", Paper Presented at the 9<sup>th</sup> Biennial Conference of the International Association for the Study of Common Property, Victoria Falls, Zimbabwe.

Shackleton, S, B, Campbell, E, Wollenberg and D, Edmunds, 2002, "Devolution and community-based natural resource management: creating space for local people to participate and benefit" *Natural Resource Perspectives*, No. 76, Oversea Development Institute, London.

SPWD, 1998. *JFM Status Book*, Society for Promotion of Wasteland Development, New Delhi.

Tietenberg, T. 1994, *Environmental Economics and Policy*, New York; Harper Collins College.

Varughese, G and E, Ostrom. 2001. The Contested Role of Heterogeneity in Collective Action: Some Evidence from Community Forestry in Nepal", *World Development*, 29(5): 747-765, May.

Vira, B. 1995), "Institutional Change in India's Forest Sector, 1976-1994: Reflections on state policy", OCEES Research Paper No. 5.

Vyasulu, V. 2004, "Transformation in Governance since 1990s: Some Reflection", *Economic and Political Weekly*, pp. 2377-2385, June, 5.

Wade, R. 1988, *Village Republic: Economic Condition for collective Action in South India*, Cambridge University Press.

Williamson, O. 1998, Transaction Cost Economics: How it works, where it is headed, *De Economist* 146(1): 23-58.

Williamson, O. 2000, "The New Institutional Economics: Taking Stock, Looking Ahead," *Journal of Economic Literature*, Volume XXXVIII, September, pp. 595-613.