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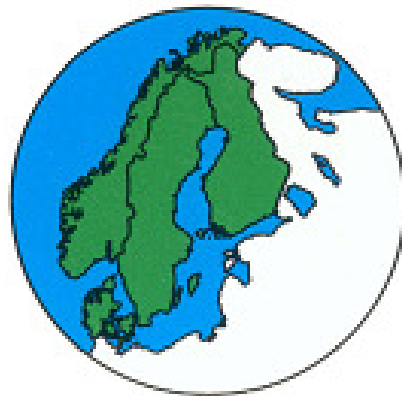
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Who gains or who loses from Joint Forest Management? Lessons from two case study areas from Andhra Pradesh, India

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Abstract

In 1990, the government of India issued a national guideline to all states to adopt Joint Forest Management (JFM) to achieve better resource conservation through partnerships between Forest Department (FD) and Forest Protection Committee (FPC)s which consists of local villagers. While JFM has also been viewed as a means to improve the livelihood of the forest dependent, several uncertainties and questions remain. First, it is not clear how such institutionally defined FPC can gain from JFM. Secondly, it is not clear whether FPC are in effect facilitating equitable distribution of benefits from forest related activities. Finally it is not clear what consequences the process of formalizing local institutional units and defining their forest boundaries may have at the local level benefit distribution from forests. This paper thus aims to further understanding of “who gains and who loses from JFM” based on an empirical investigation of two case study areas from the Khammam and Medak districts of the Andhra Pradesh state, India. The paper firstly analyzes local level processes involved in JFM and changes in the way in which concerned local actors access to direct and indirect benefits derived from forest related activities.

Key words: Joint Forest Management, Decentralization, Property and Access

Background

Over the last decades, a prominent trend has been within the forest sector in developing countries, to shift from centralized, top down towards more local based inclusive forest management approaches including in India.

Until late 1980s, national forest policies in India had been characterized with the top down approach, which was mainly led by the state's interest to maximize economic revenue from forests under their ownership. In many parts of India, as shown in Table 1, the relationship between the Forest Department (FD) officers and local villagers was the one between those regulate and those subject to regulations. The FD officers, being sole official managers of forests, had exclusive property rights to forest resources and lands and exercised policing power over local villagers. Local villagers, who had no official rights or roles to use or manage forest resources, were often identified by the FD as illegal encroachers or offenders to forests and were forced to pay fines, permission fees, or bribes to the FD. In spite of the presence of such regulations, however, most of those locals had *de facto access* to forest resources, entering forests by carefully avoiding the timings and places of the FD officer's patrols. Thus, it was a more or less "open access" situation where all villagers access to forest resources in nearby forests.

Table 1 Roles, responsibilities, and property rights related to forests before JFM

		Forest Department	Villagers and others
Roles		<ul style="list-style-type: none"> Regulators of intruders to forests (with a policing authority) Manager of forests with a primary focus on plantation 	No
Responsibilities		<ul style="list-style-type: none"> Protection and management of forests 	No
Property rights	Forest resources	<ul style="list-style-type: none"> Exclusive property rights to forest lands and resources 	No
	Revenue from forest related activities	<ul style="list-style-type: none"> Exclusive property rights to revenues generated from forest lands under their jurisdiction 	No

In 1988, the new national forest policy showed a drastic shift in terms of policy objectives, which placed higher priorities on forest conservation rather than maximization of revenue from forests. The policy also gave the first official recognition of the importance of incorporating the

needs of local people in governing forests. Following the policy, the Ministry of the Environment and Forests issued a guideline to all states in 1990 to adopt Joint Forest Management (JFM). The objective of JFM is to achieve better resources conservation through partnerships between Forest Department (FD) and Forest Protection Committee (FPC)s which are consisted of local villagers (Khare et al 2000). The new way of governing forests is mainly concerned with achieving both forest conservation and meeting the livelihood needs of those who dependent on forests through engaging them in protection and scientific management of forests.

The introduction of the JFM approach has brought about numerous changes with regard to roles, responsibilities and property rights of the FD and FPC as shown in

Table 2. JFM led to reconfiguration of local level relationships and through integrating local villagers, who used to be informal local actors, into a formal, regulatory forest governance system (Agrawal 2005).

Table 2 Roles, responsibilities, property rights in the case of Andhra Pradesh state under JFM (based on Government t Order 2002)

		Forest Department	Forest Protection Committees (FPCs)	Others
Roles		<ul style="list-style-type: none"> • Co-manager • Facilitator for the FPC 	<ul style="list-style-type: none"> • Co-manager of forests 	No
Responsibilities		<ul style="list-style-type: none"> • Forest protection • Forest improvement 	<ul style="list-style-type: none"> • Forest protection • Forest improvement 	No
Property rights	Forest resources	<ul style="list-style-type: none"> • Forest lands 	<ul style="list-style-type: none"> • Usefructory rights of NTFPs, fuelwood etc • Rights to sell some products to an open market • Rights to sell incremental volume of timber in their territories 	No
	Revenue from forest related activities		<ul style="list-style-type: none"> • 50 % of fines collected from forest offenders • Wages from forest improvement • Other revenues generated from forest related activities 	No

The role of local villagers changed to co-manager of forests with the Forest Department (FD) officers as a facilitator. In general, JFM facilitates institutional recognition, which refers to a choice of institutions by government or internal agencies to serve specific purposes (Ribot 2007).

The process of institutional recognition involves demarcation of forest boundary, grouping of villagers, to constitute Forest Protection Committees (FPCs) and selection of Management Committee and a chairperson. FPC members are assigned responsibilities to protect forests against encroachment, grazing, fires and thefts of forest produce, and to engage in forest improvement activities such as soil moisture conservation, scientific forest management and plantation,. In order to facilitate such FPC activities, a micro plan was introduced as a planning tool for each FPC. Each FPC has to prepare a micro plan in order to make decisions and rules for how to govern demarcated forests and to implement these decisions in collaboration with the FD officers. Management Committee and its chairperson/vice chairperson have responsibilities to monitor and implement the works according to the micro plan. The facilitation of FPCs also involves meetings to prepare and review implementation progress of the micro-plan, recording of minutes and management of accounts accruing from JFM related activities. In return for these responsibilities, villagers who participate in the FPC gain property rights to some forest resources within the demarcated forests for domestic use and sale. While benefit sharing arrangements for forest resources vary from state to state, in the case of the Andhra Pradesh state, all the households in the FPC gain usufruct rights over forest resources such as fuelwood and Non Timber Forest Products, and 100 % of the incremental volume of timber and bamboo harvested from the FPCs' forest. In addition, FPC members are entitled to receive wages if they participate in forest improvement works, and to receive 50 % of fines if they hand over forest offenders to the FD.

Since inception, the number of JFM FPCs has shown an exponential growth supported with donor support from the World Bank, the Japanese Bank for International Cooperation and DFID. As of 2006, 27 percent of Indian forests (17.3 million hectares of forest land) are reserved for 85,000 JFM FPCs (World Bank 2006). Despite such proliferation of the JFM approaches across India, increasing concerns have been raised over whether the introduction of JFM contributes to equitable distribution of benefits among local actors at several levels.

First of all, it is not clear to what extent such institutionally defined FPC may benefit from JFM. It is not certain to what extent previously existed asymmetric power relationship between villagers and the FD may change after JFM, or to what extent villagers in FPCs can influence and share control over the processes vis-à-vis the FD. Despite all the rhetoric of sharing power between the government and local people through “partnership”, however, many empirical examples suggest that local

villagers have been used as a tool for protecting and conserving forests rather than a partner (Khare et al 2000; Poffenberger 2000; Hildyard et al, 2001, Sarin et al 2003,).

Secondly, it is not clear whether and to what extent FPCs are in effect facilitating equitable distribution of benefits from JFM. The size of local units varies from location to location and they are often highly heterogeneous comprised of multiple actors with different interests and norms (Agrawal and Gibson 1999, Campbell et al, 2001). This variability and complexity may have different consequences for both processes and consequences of JFM. Particular concern has been the issue of “elite capture” which refers to situations where members of elite groups dominate decision making processes, and improve their access to benefits from forest related activities while marginalizing the socially disadvantaged groups (e.g. the poor, women) (Agrawal 2001, Kumar 2002).

Finally, it is not clear what consequences the process of formalizing local institutional units and defining their forest boundaries may have at the local level. This may increase power to those officially included in the units and result in the exclusion of other unauthorized users and disable their access to forest resources for subsistence use and income (Carter and Gronow 2005). Defining boundaries may have adverse impacts particularly in the forest resource scarce area where many forest users may contest their access to scarce forest resources.

This paper aims to investigate effects of JFM on distribution of benefits from forest related activities at the local level based on a detailed empirical investigation and to highlight underlining mechanisms for benefit distribution. The main focus will be on how the introduction of JFM changes ways in which local actors such as forest department officials, Forest Protections Committees, its members, and other local level forest users, gain or lose benefits from forest related activities.

Analytic framework and approaches

In order to analyze changes in benefit distribution at various levels, the paper will apply the concept of “access” as defined by Ribot and Peluso (2003). According to their definition, access refers to the ability to derive benefits from things while they view property as the right to benefits. In other words, whereas property lays out rules for how local actors may obtain and make use of benefits from particular resources and activities, access shows actual consequence of how rules are translated into practice through local level processes where various local actors interact with one another.

The paper aims to make visible actual effects of the JFM on the ability of local actors to benefit from forest related activities through focus on changes in accesses based on a case study. But also it attempts to highlight mechanisms for how such effects came about through analyzing local level processes involved in forest management. The empirical case study analysis consists of two main parts. The first part focuses on local level processes, which include processes of institutional recognition of forest boundary and constitution of the FPC, and making and implementation of decisions and rules for how to protect, and improve their designated forests. The second part of the case study analysis will describe changes in access at three different levels, between the FD and FPCs, within FPC members and within villages. Main local actors in question include the Forest Department officials, Forest Protection Committee (FPC), individual members of the FPCs with different castes and gender and other local forest users in close vicinity such as neighboring villagers and illegal loggers. Benefits include direct benefits from forest resources such as fuelwood, timber and key Non Timber Forest Products (NTFPs) and indirect benefits which accrue from forest related activities such as bribes, wage employment, fines and user fees.

Introducing the case study area

The study area, the Andhra Pradesh (AP) state, is the fifth largest state which has a population of 76.2 million (Census 2001). It has 6.4 million hectares of forestland, which constitutes 23% of the state's geographical area and 8.24 % of the total Indian forest area (Andhra Pradesh Forest Department 2006). Since 1992, the Andhra Pradesh Forest Department have implemented the JFM program, which has also been financially supported with the World Bank funding for JFM Project from 1994 to 2000 (USD77,4 million) and Community Forestry Management Project from 2002 onwards (USD 108 million). The number of FPCs in Andhra Pradesh amounts to 8,343 in total as of May, 2006 (Andhra Pradesh Forest Department 2006). About 1.5 million ha of forests (25% of total forests in AP) is managed by the FPCs under JFM (ibid).

Within the AP state, the author purposefully selected the Khammam district, which is a forest dense area, with 52.6 % of forest area, and the Medak district, which is a forest scarce area with 9.4 % of forests. Furthermore, two villages (Venkampalem and Buruguwada villages), from the Khammam district, and two villages (Mahmad Nagar and Thimmapur villages) from the Medak district were selected. The two case study areas differ in terms of degree of forest abundance, size of villages, and caste

composition (see Table 3). The selection was based on the assumption that such differences may have different impacts on accesses of concerned local actors to benefits from forest related activities.

The Venkampalem and Buruguwada villages in the Khammam district are relatively small with 38 and 41 households, respectively, homogenous with only one caste group (Koya tribe) and endowed with larger forest areas per household with 13.2 ha and 5.5 ha of forests per household respectively. The villages are located in a tribal belt within forest dense area, where Koya tribe is a dominant population. This area has been also susceptible to high incidents of illegal logging, as there are many high valued timbers such as teak and rosewood.

Table 3 Characteristics of selected villages for a case study

District	Khammam	Khammam	Medak	Medak
Name of village	Venkampalem	Buruguwada	Mahmad Nagar	Thimmapur
Year of establishment	1998	1998	1997	1998
Allotted forest lands (ha)	500	225	574	372
Number of households	38	41	325	344
Forest ha per household (ha)	13.2	5.5	1.8	1.1
Other Caste			10%	4%
Backward Caste			37%	39%
Scheduled Caste			17%	14%
Scheduled Tribe	100 % (Koya tribe)	100 % (Koya tribe)	36 % (Lambada tribe)	43 % (Lambada tribe)

In contrast, the Mahmad Nagar and Thimmapur villages are relatively large with 325 and 344 households respectively, heterogeneous with four caste groups, and endowed with small forest area, 1.8 ha and 1.1 ha of forest per household respectively. The villages are located within scattered forests. These villages are heterogeneous consisted of four caste groups, namely, the highest ranked, Other Castes, the second highest ranked, Backward Caste, Schedule Caste, and Scheduled Tribe. They are commonly used categories in the rural parts of Andhra Pradesh state and Scheduled Caste and Scheduled Tribe are generally known to be socially disadvantaged groups.

Methods

The field research in the study areas was conducted for four months during the period between May, 2005 and January, 2008. The first phase field work concentrated on qualitative methods. The author conducted semi structured interviews and focus group discussions with around 100 villagers from the Khammam and Medak districts to gain in-depth understanding of their perspectives on changes in access to forest derived benefits. The informants included chairpersons, Management Committee and general members of FPCs as well as a village political representative, making sure to include those with different socio economic background such as caste groups, main livelihood occupation (e.g. agriculturist, NTFP collectors, livestock holders, and wage labor) and gender (male and female). Based on the results of qualitative interview, questionnaire surveys were conducted with 330 villagers to gain quantifiable indicators. In addition, semi-structured interviews were conducted with Additional Principal Chief Conservator of Forests, District Forest Officers (DFO), Forest Range Officers, Forest Section Officers, Forest Beat Officers (FBO) in study areas and both state and grass root level NGOs.

Case study 1

In the case of Venkampalem and Buruguwada FPCs in the Khammam district, the local level processes were characterized with both the FD's domination as well as FPC's low interest in FPC activities. The FD dominated in most of the local level processes, from institutional recognition, to making and implementation decisions with minimal involvement of FPCs as shown in Table 4.

Table 4. Level of involvement of Forest Department (FD), Forest Protection Committee (FPC)s, and NGOs in local level processes in the Khammam district study area

	FD	FPC	NGOs
1. Institutional recognition			
1.1. Boundary demarcation	⊙		
1.2. FPC constitution	⊙	○	○
1.3. Selection of representatives	⊙	○	○
2. Making decisions and rules			
2.1. Micro plan (forest improvement)	⊙	△	○
2.2. Forest protection	N.A	N.A	N.A
2.3. Internal rules over use of forests	N.A	N.A	N.A
3. Implementation of decisions and rules			

3.1. Micro plan (forest improvement)	⊙	△	○
3.2. Forest protection	N.A	N.A	N.A
3.3. Internal rules over use of forests	N.A	N.A	N.A
3.4. Facilitation of FPC activities			
<i>3.4.1. FPC meetings</i>	⊙	△	
<i>3.4.2. Recording of minutes</i>	⊙		○
<i>3.4.3. Account management</i>	⊙	△	
<i>3.4.4. Sanction of violators</i>	⊙		
<i>3.4.5. Re-election of representative</i>	○	⊙	

⊙----high level of involvement

○----some level of involvement

△----minimal level of involvement

The FD demarcated forest boundary for both FPCs and designed a micro plan. The FD officer's also controlled FPC minutes and accounts which was supposed to be under the FPC's responsibility according to official rules. The processes of implementation of decisions and rules were characterized with low level of interest of FPC members. Except for several key elite members, general members and women showed little interest in participating in the FPC activities. Few attended meetings, and were engaged in forest protection activities.

There are several possible reasons for the FD's domination as well as FPC's low level of interest in FPC activities. First of all, since forest resources are abundant in the study area with little competition among local actors for forests, there was less incentive for FPC members to exclude others from accessing forests through forest protection which was promoted by JFM. Another reason is related to the FD's reluctance or resistance to let go power to FPCs or to actively support FPC activities. In both FPCs, neither FD nor NGOs have provided trainings to raise FPC's members' awareness about roles, responsibilities, and rights or to build or enhance FPC's capacity to prepare micro plans, manage minutes and accounts. The FD officers also showed lack of accountability towards the FPC members. The FD made a micro plan without incorporating needs of the FPC members. The FD field level officers obscured wage payment processes for forest improvement activities by taking some portion of wages into FD's pockets with the result that only minimal wage payments were made to FPCs. The FD did not either provide any backup enforcement for FPC's forest protection activities: the FD never paid to the FPCs, share of fines collected from forest offenders which FPC apprehended to the FD even though FPCs are entitled to such fines according to official rules. This lack of support from and accountability of the FD towards FPCs resulted in a

failure in building genuine “partnership” between the FD and FPCs and further discouraged FPC members to actively engage in FPC activities. Because no payment of fines is made to FPC, FPC also stopped protecting forests against others at the beginning stage. At the same time, the FD’s domination may also be due to characteristics of FPCs. Both FPCs are relatively small with approximately 40 households with only a few educated. The small sizes of villages with only a few educated posed practical obstacles for FPCs to claim their rights and to prepare a technically complex lengthy micro plan, to write minutes and to manage accounts.

With regard to who benefits or who loses from JFM in the Khammam study area, Table 5 summarizes changes in accesses of local actors to benefits derived forest related activities.

As for access of the Forest Department (FD) to forest derived benefits, whereas the FD lost their access to bribes from villagers, they gained access to new kinds of indirect benefits from forest improvement activities through taking some portion of claimed wages supposed to be paid for the FPC into their own benefits.

On the other hand, the domination of the FD and little participation of FPCs resulted in limited benefits for the FPC. No mechanisms have been in place to regulate access to forests in the area due to no forest protection activities, which led to constant decline of forest resources. Revenue from plantation is yet to come as they have not matured. Benefits that FPC gained from JFM area were therefore limited to reduction of bribe amounts to the FD, and minimal wage payment which the FPC gained through forest improvement activities. This raised a question whether FPCs in this study area benefit from JFM, which gives a rise to high transaction costs through making micro plans, execution of forest improvement activities, conducting of numerous meetings, and recording of minutes and accounts. This situation also poses a question for sustainability of the JFM activities in the long run in particular when the wage payment runs out after the completion of the World Bank project.

Table 5 Changes in access of local actors to forest derived benefits in the Khammam district study area

		FD	2 FPCs	Neighboring villagers	Illegal loggers
Forest resources	Fuelwood	-	Little change	Little change	-

	Timber	-	Little change but additional profits may come from plantation	Little change	Little change
	Bamboo	-	Little change but profits may come from plantation in the future	Little change	-
	Fodder	-	Little change	Little change	-
	Beedi leaf	-	Little change	Little change	-
	Bloom stick	-	Little change	Little change	-
Revenue generated from forest related activities	Bribes	Decreased	Reduction of bribes to FD	-	-
	Wages for forest improvement	Some portions go back to the FD	Minimal wage payment (apx. USD1)	-	-
	Fines	Little change	No payment	-	-
	Collection fees	-	-	-	-

With regard to impacts over other local actors, due to lack of forest protection activities by FPCs, little impacts on accesses were observed for neighboring villagers or illegal loggers, who neither lost nor gained from JFM as a result. Illegal logging thus remains to be a serious problem in the region.

Case study 2

In contrast to the Khammam district study area, the Medak district study area showed significantly different processes, characterized with the FPC's high sense of ownership in the FPC activities by taking an active role in many of local level processes related to forest management as shown in Table 6

Table 6. Level of involvement of Forest Department (FD), Forest Protection Committee (FPC)s, and NGOs in local level processes in the Medak district study area

	FD	FPC	NGOs
1. Institutional recognition			
1.1. Boundary demarcation	⊙		

1.2. FPC constitution	⊙	⊙	○
1.3. Selection of representatives	⊙	⊙	○
2. Making decisions and rules			
2.1. Micro plan (forest improvement)	⊙	△	△
2.2. Forest protection		⊙	
2.3. Internal rules over use of forests		⊙	
3. Implementation of decisions and rules			
3.1. Micro plan (forest improvement)	⊙	○	△
3.2. Forest protection		⊙	
3.3. Internal rules over use of forests		⊙	
3.4. Facilitation of FPC activities			
<i>3.4.1. FPC meetings</i>	△	⊙	△
<i>3.4.2. Recording of minutes</i>		⊙	
<i>3.4.3. Account management</i>		⊙	
<i>3.4.4. Sanction of violators</i>		⊙	
<i>3.4.5. Re-election of representative</i>	△	⊙	△

⊙----high level of involvement

○----some level of roles

△----minimal level of involvement

Both FPCs organized themselves to develop and implement their own rules, which also show FPC's high sense of ownership in FPC activities. One of possible reasons is the scarcity of and high competition among local actors for forest resources. This has given significant incentives for villagers to constitute FPCs to monopolize benefits from forest resource by excluding others' access to forests. In addition, a larger number of the educated in the village who can read and write, enabled FPCs to take control over processes of decision making and implementation of FPC activities. The larger sizes of the villages with approximately 200 to 300 households than in the Khammam study area may form another factor which could enable them to challenge the FD authority. It is also worth noting that a local NGO has provided an active support for FPCs to sensitize them about their roles, responsibilities and rights.

Nevertheless, the case shows significant differences between these two FPCs in terms of the processes of making and implementation of decisions and rules. The Mahmad Nagar FPC showed higher level of transparency and accountability towards general members than Thimmpur FPC except for women members in both cases. While Mahmad Nagar FPC included all the castes in decision making and information sharing,

Thimmapur FPC included only a small group of members in the processes. The chairperson of the Thimmapur FPC withheld most of information such as minutes and account book without disclosing them to general members. Another difference between two FPCs is the degrees of effectiveness in the enforcement and sanctions of decisions and rules in accordance to agreed principles. The Mahmad Nagar FPC made sure that rules for forest protection and internal use of forests be properly enforced: they employed 2 forest watchers and involved own villagers for forest protection by providing 25 % of fines collected by forest offenders to those who catch them. They also made sure that violators of rules be sanctioned according to rules regardless of castes, wealth, gender, or political affiliation. On the other hand, Thimmapur FPC employed solely 2 forest watchers without involving other villagers in forest protection. The chairperson also gave partiality to those who belong to the political party which he belonged to: he applied loose control over and sanction against those who belong to the same party as him and applied stricter control over and severe sanctions against those who belong to an opposing party. This non uniform enforcement and sanctions caused a serious conflict among those two parties, which led to collapse of the FPC management and the Thimmapur FPC has stopped since 2002.

With regard to who benefits or who loses from JFM in the Medak district study area,

Table 7 summarizes changes in accesses of local actors to benefits derived forest related activities.

Table 7. Changes in access of local actors to forest derived benefits in the Medak district study area

		FD	Mahmad nagar FPC	Thimmapur FPC	Neighboring villagers without FPC	Goat herders
Forest resources	Fuelwood	-	Increased	Decreased	Decreased	-
	Timber	Little	Increased	Decreased	Decreased	-

		change				
	Fodder	-	Little change	Decreased	Decreased	Decreased
	Adda leaf	-	Increased	Little change	Little change	-
	Beedi leaf	-	Increased	Little change	-	-
	Bloom stick	-	Increased	Little change	-	-
Revenue generated from forest related activities	Bribes	Decreased	Reduction in bribes to the FD	Reduction in bribes to the FD	-	-
	Wages for forest improvement	Some portions go back to the FD	Minimal wage payment	Minimal wage payment	-	-
	Collection fees	Decreased	Some amounts from own villagers	-	-	-
	Fines	Decreased	Large amount of fines collected	No fines collected as of 2008	Payment of large amounts of fine	Payment of large amounts of fine

As for the FD, the way they benefit or lose from JFM is similar to the Khammam study area.

Regarding FPCs, the case showed a difference in these processes in making and implementation of decisions and rules between the two FPCs produced different effects in the way each FPC benefits or loses from JFM. The Mahmad Nagar's effective enforcement and sanctions of their decisions and rules resulted in regeneration of their forests. The FPC started to benefit from their exclusive and increased access to these resources. The FPC also gained new access to indirect benefits from forest related activities through collection of permission fee from own villagers and fines from violators both from inside and outside villagers. In the case of Thimmapur FPC, the loose enforcement and sanction of rules as well as collapse of the Thimmapur FPC caused a more or less open access situation in their forests: without control mechanisms over forest use, both own and outside villagers started to access to forest resources freely without any limits over collection amounts, which led to a rapid decline of available forest resources in their forests. As a result, the villagers did not gain either direct or indirect benefits from JFM.

With regard to benefit distribution among FPC members, while the Mahmad Nagar FPC as a whole gain from increase access to direct benefits from forest resources, indirect benefits which accrued to the FPC were not distributed in an equitable manner. For example, during the period between 1997 and 2002, the FPC collected a total of INR 164,861. This revenue was used to construct four Hindu temples in the main village. This excluded two types of caste groups in benefit distribution. Scheduled Castes (SCs) who used to be considered to be untouchable are not allowed to enter in these Hindu temples. Schedule Tribes (STs) who live in small hamlets outside the main village also feel excluded from accessing to these temples because of the distance to temples. Furthermore, while the same rules and restrictions on access to forest resources have been applied to everybody, these rules and restrictions were felt more among those who depend more on forests for their livelihoods. STs, for instance, consume more fuelwood than other castes and some groups of STs depend on wood cutting business, which require tree poles. Now that they have to pay permission fees beyond permitted amounts, it is difficult for them to sustain livelihood as before. As for gender impacts, while women are principal collectors of all forest resource, in both villages, women's participation in meetings is almost none due to social barriers. While a half of posts in the management committee is to be occupied by women according to official rules, their participation is nominal in practice as their husbands come to meetings instead. As a result, women's opinions are not fully reflected into decisions makings.

Furthermore, the case of the Medak study area also shows potential detrimental effects of boundary demarcation of forests over equitable distribution of benefits in particular in a resource scarce area. In the Medak study area where forests are scarce, some villages received official recognition of their forests by the FD while others did not. This formalization of boundary and allocation of forests for particular villages has caused serious problems for some groups of villagers such as villagers without any official recognition of forests and herders of goats. Villagers without official recognition of forests started to lose from JFM because their access is blocked by other neighboring FPC villages and they are forced to pay a large amount of fines when caught. Many of herders of goats also lost from JFM as the boundary demarcation adversely impacted their livelihood. As they need to go beyond boundaries to feed their animals, they are frequently caught by neighboring FPCs and are forced to pay fines.

Discussion

The case study results showed firstly that whether FPC as a whole benefit from JFM depends on numerous inter-related factors such as degree of villagers' interest in Forest Protection Committee (FPC) activities; degree of actual benefits which FPC gain as opposed to degree of transaction costs; degree of FPC's power that FPC can exercise making and implementation of decisions and rules; the FD's willingness to let go power to and to collaborate with FPCs, the degree of accountability and transparency of the FD in FPC management; degree of effectiveness of implementation by FPCs; the degree of accountability and transparency of Management Committees and chairperson of FPCs; and degree of support from a third party such as NGOs.

The two cases demonstrated the forest scarcity is one of key factors which trigger villager's interest to engage in FPC activities. Potential gains from excluding others are larger in the forest scarce area where resource competition is high, which may give significant incentives for villagers to organize themselves into FPCs. On the other hand, potential gains are likely to be smaller in resources abundant area. In this case, the degree of FPCs interest in FPC activities is likely to depend more on the degree of benefits which FPC gain from FPC activities in practice as opposed to transaction costs. In this regard, how much FPC can access to potentially large sources of revenues such as timber, plantation, wages from forest improvement activities, fines collected from forest offenders may become important factors. The degree of actual benefits that FPC gain also depends on several factors such as the degree to which FPCs can exercise their power in making of and implementation of these decisions and rules, the degree of FD's willingness to let go power to and to collaborate with FPCs, the degree of accountability and transparency of FD in designing plans and managing minutes and accounts, and proper enforcement of forest law through swift payment of fines to the FPC, the degree of effectiveness of implementation by the FPC. The effectiveness of internal enforcement and sanction depends on the quality and degree of accountability of chairpersons and management committee of the FPC towards the general members in sharing information and promoting transparency in account management. The presence of support from the third party such as NGOs to FPCs may also bring additional benefits to FPCs.

Secondly, the case study showed that whether JFM promotes equitable distribution of benefits among FPC members also depends on several inter linked factors such as degree of representation of management committee; degree of accountability of the chairperson and management committee towards general members; degree of involvement of different

actors within FPCs in making and implementation of decisions and rules; the way in which rules affect different actors; and the way in which revenue is distributed.

Degree of representation in management committee will depend on whether chairpersons and management committees are democratically elected and whether the participation of the elected representatives is actually promoted in practice. Degree of accountability of chairpersons and management committee of the FPC towards the general members also affect benefit distribution among members. Degree of accountability can be measured in sharing information such as implementation progress and accounts to general publics, degree of enforcement of rules and sanctions which is in accordance to agreed principles without any partiality given to particular interest groups such as political parties. How affect different people rules is also an important factor which influences benefit distribution. Certain rules may adversely affect those who depend more on forests for their livelihood. For example, restrictions on collection of timber and fuelwood were felt more by wood cutters, and those who collect relatively more wood for their livelihoods. How benefits which accrued for FPCs is distributed also affect benefit distribution.

Finally, regarding who benefits or loses from JFM at the inter village level, the impacts on benefit distribution at the level depends on a combination of the factors such as degree of forest scarcity; the way in which forest boundary is demarcated and degree of forest protection measures applied by FPCs.

Whether JFM impacts access of neighboring villagers or illegal loggers largely depends on how strictly forest protection measures are enforced by a FPC. If forests are divided among certain groups of people, and if forest protection is well enforced in forest scarce area, the JFM may divide winners who can enjoy their access within the allotted forests and losers who lose access to benefits from forest resources as seen in the Medak case.

Conclusion

Results of the case study have demonstrated that the same policies (property rights) under JFM have produced significantly different and diverse processes and effects at the local level. In other words, who benefits or who loses from JFM depends largely on both property rights as well as local level contexts such as characteristics of forest resources (e.g. scarcity, and value of forest resources) and characteristics and social and political

relationships of local actors (e.g. FD, FPCs, NGOs, and other local actors). The presence of diverse impacts also highlights the critical need for policy implementers such as government, the forest department and donor agencies to carefully assess local contexts and to design implementation strategies which may better fit in local contexts to maximize positive effects and to mitigate negative effects.

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