

1 INTRODUCTION

1.1 Motivation for the study

One of the most critical challenges facing the modern world is the rapid environmental degradation (water and air pollution, ground water depletion, soil erosion etc.) in general and forest degradation and deforestation in particular. Of all environmental resources, forest resources are the most crucial links in the ecosystems (Reddy et al., 2001). Apart from providing direct use values, forests provide numerous environmental services such as watershed protection, nutrient cycling, pollution control, microclimatic regulation, and carbon sequestration, among others (Reddy et al., 2001; Bulte and Engel, 2004). Thus, degradation of these precious resources affects the economy and environment both globally and locally. Over the last few decades there has been a widespread concern about the destruction of forest resources at the global, national and regional level. This has in turn led to a growing debate among various development experts on the issue of how to manage and protect forest resources that will not only halt rapid forest degradation and deforestation but also contribute to the improvements of livelihoods of the millions of people dependent on forests in developing countries.

One important reason 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). It is now clear that technological solutions alone will not be sufficient, but that institutional and governance issues play a fundamental role in forest protection and management (World Bank, 2002). Institutions are the formal and informal rules of a society that set the limits of individual action, which, in turn, are the crucial determinants of the incentives faced by individuals for the sustainable use of forest resources. However, these institutions change in parallel with the changes in government policies and social structure. Over time, two main institutional trends for forest management could be observed: (1) formal state-controlled forest management institutions and (2) formal and informal community forest management institutions. Under the state-controlled forest management regime the governments of most developing countries nationalized their forests, wildlife, and national parks, in the belief

that forest-dependent people were the main agents responsible for forest degradation and deforestation, and that the state-controlled top-down forest management approach is the only solution to the problems.

In general public administrations such as state forest agencies in developing countries are highly bureaucratized and centralized based on an authoritarian legal system (Kumar and Kant, 2005). The state forest agencies had implemented state-centered forest management policies for many decades, based on the principle that local people are enemies of forests. As a consequence, an exclusionary forest policy has been implemented for many decades (e.g. about 100 years in India) that resulted in violent conflicts and severe distrust between forest dwellers and forest bureaucrats. The state agencies had adopted forest policies based on the assumption that government is capable of enforcing its property rights over forests as the rule of law will be respected by the people; that the law can be enforced with punitive provision against rule breakers; and a few forest staff are sufficient to deter potential law breakers (Saxena, 1997). However, these assumptions did not hold in the majority of developing countries including India, due to ineffective law enforcement, slow legal systems, in combination with a prevalence of a large forest-dependent population and resulting social unrest. The violation of forests law in the form of grazing and firewood collection was so widespread that it was a difficult task for the authorities to prevent (ibid). Thus central authorities were forced to ignore many incidences of such illegal forest use which resulted in unabated forest degradation.

In recent years, devolution of forest 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 forest resource management, with countries at least partially devolving rights and responsibilities over their forests to the users (Edmonds, 2002; Ribot and Larson, 2004). The apparent change in policy from the traditional state-managed top-down approach to the community level is fueled by the recognition of the limitations of government agencies in managing forest 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 forest resources, or decentralization within government institutions that ensures more power for local communities.

The main aim of devolution of forest management to local users is to remove the information gap between the state forest department and local forest conditions and users living therein, which was believed to be the principal cause of government failure in the management of forest resources (Bardhan, 1996) and build a social fence in order to protect the forests from grazing, fire and illegal logging (Kolavalli, 1995). In principle, devolution of forest management responsibilities from the government agencies to the local communities implies transfer of some important decision-making authorities and powers in order to promote active involvement of local users in the management of forests. Theoretically, local users have some comparative advantages over the state in the management of local level forest resources (Bulte and Engel, 2004), specifically with respect to monitoring, enforcement, and adoption to local conditions. In fact, a large number of studies have documented the theoretical advantages of resource management by users (e.g., Bromley, 1992; Ostrom, 1992; Bardhan, 1993; Baland and Platteau, 1996), and show optimism in the potential of user groups for solving forest resource management problems. Experience with the growing promotion of community forest management suggest that these institutions may be successful not only in promoting effective management of forests, but also in contributing to an equitable distribution of benefits derived from the managed forests.

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 local people's 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 state governments to implement 'Joint Forest Management Systems' by transferring everyday forest use and management rights to the community, while keeping the *de jure* rights over forests in the hands of state (FD). Accordingly, all Indian states have formally resolved to implement

JFM, making it one of the largest programs in the world¹ (Kumar, 2002). More than 50 million people partner with forest departments to regenerate and manage around 17 million hectares of forests (GoI, 2004). The main feature of the JFM policy is the mutual acceptance of responsibilities, rights, and accountability of forest management between the state (FD) and local communities (Kolavalli, 1995).

In such a joint institutional arrangement collective action at the community level cannot be treated in isolation, as the state policies and legal system greatly influence the incentives communities face to extend their cooperation towards protection and management of forests. Under the co-management system the state plays an important role in ensuring legal backing to the local users and enforcement of rules for resource extraction (Rangan, 1997). However, despite a number of attempts to investigate the complexities of state-community relationships in respect to common resource management (Richards, 1997; Gibson, 1999; Ribot, 1999), a clear understanding of the relationship and how it affects outcomes of common pool resource management is still lacking.

Several theoretical attempts have been made in order to understand the potential of state-initiated community forest institutions for sustainable forest management. However, the majority of them are not clear about the effectiveness of the co-management resource regime (Benhabib and Radner, 1992; Dutta and Sundaram, 1993; Seabright 1997). Sethi and Somanathan (1996) showed in their game-theoretic model that government interference in the local resource management regime could destroy the norms that constrain local use. Few theoretical studies show optimism in the outcomes of co-management systems (Ligon and Narain, 1999; Baland and Platteau, 1996). The empirical literature on government-initiated community institutions is limited to case studies of small numbers of communities (Kumar, 2002; Agarwal, 2001; Ballabh et al., 2002). Most of these case studies emphasize the crucial role of the structural relationship between the state and the local community in determining the success of co-management.

The overall empirical evidence on the outcomes of JFM in India show mixed results. Some studies have shown improvements in outcomes such as increased yields of

¹ According to the Annual Report 2004 of the Indian Ministry of Environment and Forests, a total of 84632 JFM committees have been formed protecting 17.33 million ha (27%) of forested areas.

timber and non-timber forest products (NTFPs), firewood, and fodder (Joshi, 1999; Khare et al., 2000; Ballabh et al., 2002). Others indicate a lack of effective control and management of forests by communities (Behera and Engel, forthcoming; Sundar, 2001). 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 (Agrawal and Ostrom, 2002; Ballabh et al., 2002; Sarin, 2002; Damodaran and Engel, 2003).

It is generally argued that the performance of JFM depends crucially on the active participation by the local community in forest management and protection (Larson and Ribot, 2004). Effective participation in the JFM program is expected to be achieved by devolving more power to local users for planning and execution of forest management activities. Moreover, one of the important objectives of JFM program is the empowerment of poor and marginalized forest-dependent tribal as well as other vulnerable groups by providing them an opportunity to participate in the decision-making processes of forest use and management and obtain benefits from it. Like most devolution and decentralized development programs, JFM has implicitly assumed that participatory and transparent processes in decision-making are automatically ensured with devolution of power. However, several studies have highlighted the fact that devolution and decentralization of power and related participatory approaches to natural resource management do not automatically imply participation by all the people who are affected by it (Engel, 2004). Hence it is imperative to assess the extent to which people are involved in the whole process of forest management and to what extent the state forest department has transferred power to local forest communities for the management and use of forests.

It is generally argued that promoting people's participation is easier in a small and homogeneous society compared to a society that is large and socially heterogeneous, as free riding problems can easily be overcome in a small group because its members can easily interact and monitor each other's action (Olson, 1965). However, in reality it is very rare to find a socially homogeneous society. Social hierarchies in the form of religion and caste are strong factors which most of the studies have found to be critical in determining the level of participation (Shackleton et al., 2002, Deshingkar et al., 2005).

For instance, Indian society is characterized by highly unequal distribution of wealth and is largely divided on the basis of the ancient caste system (Borooah, 2002). Hence, empowering the poor in a largely divided society is a major challenge to both policy makers and donor agencies. It needs careful attention on the part of agencies tasked with implementing projects to design institutions that are tailored to benefit the targeted group.

Findings of several empirical studies on institutional outcomes of decentralization and devolution programs in natural resource management have shown that households within a community differ widely in their actual use of resources, and participation in collective management activities and decision-making processes (Baland and Platteau, 1996; Sarin, 1996, 1999; Agarwal, 2001; Shackleton et al., 2002; Engel et al., 2003). Most of the recent empirical studies on the determinants of individual participation in decentralized development programs have mainly found that socio-economic indicators of participant households are the chief factors that decide the level in which a household participates in the decision making processes within local institutions (Lise, 2000; Weinberger and Juetting, 2002; Engel et al., 2003; and Maskey et al., 2003). However, for forest institutions, high dependency on forests and good forest quality are also likely to play an important role in enhancing local participation (Lise, 2000). It is argued that when people's dependency on forests is high their stake on forests is likely to be more, which can induce them to participate in forest management and protection.

Although several studies have documented local user participation under the JFM regime, they are either based on a single or a few case studies (Sarin, 1996, 2001; Agarwal, 2001) or a comparative study between a JFM institution and other similar local forest institutions initiated by NGOs or local communities (Lise, 2000). However, to our knowledge not one study has attempted to explain the factors that are likely to influence people's participation under a co-management system such as JFM in a systematic way using a large sample of households. There is also a need for an empirical study that formulates systematic indicators to measure participation using econometric analysis in order to identify the relative importance of factors that explain the differences in household participation in JFM. Moreover, the current studies on the determinants of participation focus largely on meeting attendance as a measure of participation (Weinberger and Juetting, 2002; Engel et al., 2003), but mere attendance of meetings

does not automatically imply a real participation in decision making. Hence, the question should be raised as to who attends the meetings where crucial decisions on the rules are taken and who actually influences the decisions in the meetings.

Equity in the distribution of benefits from the JFM forests between different sections of participant households within a community is another important issue that is likely to affect household participation in the JFM program as well as the sustainability of JFM institutions. Which people within communities actually benefit most from the JFM program? Are forest dependent and marginalized people, who should benefit from the JFM program, actually better off than before JFM was introduced? Often, it is found that given a share in total benefits from the final harvest of timber, community rules favor long-term increased timber benefits through forest closure and plantation of slower growing high-value species. As a consequence, poor forest-dependent households are marginalized as they suffer from the reduced availability of and access to NTFPs (Kumar, 2002). Similar observations are also 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).

While the empirical studies on JFM suggest wide variations in outcome, generalization of findings is difficult without a systematic and comprehensive study to explain the factors responsible for differential outcomes across JFM communities taking a large sample of communities from a geo-political state in India. Moreover, despite the increasing number of studies on these issues it can be said that there is still a lack of understanding of the causes of the variability in the performance of JFM institutions. In particular, the following research questions have emerged from the literature, and need to be analyzed in detail. Are local JFM communities able to exercise their rights over forests that are formally devolved to them under the JFM agreements? What are the factors that explain the differential outcomes of JFM across local communities in terms of forest management and growth and which policy instruments would help contribute to promote improved forest outcomes and long-term sustainability? To what extent has the JFM program been successful in securing people's participation in order to regenerate and manage forests? How are the forest benefits distributed among the users within the