Environment and Development Economics 9 (4), 2004: 1-15. © Cambridge University Press
DOI:10.1017/S1355770X04001548. Printed in the United Kingdom

ATTITUDES AND INSTITUTIONS
CONTRASTING EXPERIENCES OF JFM IN INDIA

Zakir Husain
Dept. of Economics, Rabindra Bharati University, Kolkata, India
zakir@vsnl.net
&
Dr. Rabindra N. Bhattacharya
Dept. of Economics, Kalyani University, India.

Co-management refers to devolution of the power to manage natural resources from the State to the resource community. The implicit assumption underlying such programmes has been that resource users want to conserve natural resource, but are unable to do so because of the absence of a suitable collective choice arena. This refers to an institutional structure that enables stakeholders to create resource appropriation rules.

This assumption has led policy makers to focus on designing and providing institutions that will provide a suitable collective choice arena to stakeholders with the anticipation that this will provoke a synergistic response from them. However, policy makers often overlook the fact that failure to undertake collective action may indicate not an inability to undertake the collective action, but an unwillingness to do so. In many Third World Countries resource users are so constrained by poverty that they have a time preference biased in favour of short run income flows. The provisioning of a resource management regime to curb resource use, without providing an alternative means of livelihood, fails to evoke any corresponding response from the resource community, as the objectives of the resource regime are unacceptable to them.

We have illustrated this problem by referring to two contrasting studies of Joint Forest Management in the villages of Matha and Belemath in India. Despite similarities in socio-economic setting and resource use patterns between the two cases studied, the introduction of JFM led to success only in Belemath. The reason is that institutional provisioning was accompanied by deliberate attempts to change resource use pattern in only one site. This minimised the conflict between the target of the resource regime and the preferences of the resource users. In the other site, in the absence of similar attempts, the resource regime was viewed as an instrument to curb resource use without providing any other suitable alternative. This leads us to suggest that policy makers should focus on changing preferences of resource users by providing them with sustainable alternatives.

ATTITUDES AND INSTITUTIONS

CONTRASTING EXPERIENCES OF JFM IN INDIA

Zakir Husain

Dept. of Economics, Rabindra Bharati University, Kolkata, India

zakir@vsnl.net

&

Dr. Rabindra N. Bhattacharya

Dept. of Economics, Kalyani University, India.

Abstract

The growing disenchantment with State management of natural resources has led to increasing reliance on co-management. This involves devolution of the rights to manage and control access to the resource from the State to the resource appropriators. Co-management has been introduced in many Third World Countries with varying success.

Co-management programmes have typically assumed that the resource community wants to conserve the resource and is prevented from doing so by their inability to form a collective choice arena. Hence such programmes have attempted to provide a collective choice arena. However, these attempts overlook the need to change the attitudes of resource users and create a demand for the resource regime. In this paper we have presented two case studies of Joint Forest Management in India to illustrate this point.

Key Words: Co-management, Co-production, Design Principle, Forests, Joint Forest Management, India.

1. Introduction

The gradual recognition of the limitations of State intervention in ensuring sustainable resource management (Lawrie, 1989; Balland & Platteau, 1995) led to the discovery of the benefits of a community-based approach during the 1980s. This discovery was fuelled by documentation of successful management of common property resources (Wade, 1988; Berkes, 1989; Ostrom, 1990; Hannah & Munasinghe, 1995). It found its echo in 'official' pronouncements (WCED, 1987; The World Bank, 1992; UNCED, 1992) and in applied literature (Cernea, 1985; Holloway, 1989; Ghai & Vivian, 1992; Adams et al, 1997; Klooster, 2000; McCarthy, 2000). It was realised that organisational units smaller than the State apparatus – villages, for instance – are better equipped to manage their environmental resource base than are larger

external State authorities. They possess greater information about the resource base and behaviour of resource appropriators, and can ensure greater participation of stakeholders by integrating customary social structures into the resource regime. As a result there was a shift away from direct State management of natural resources to a greater reliance on community-based management.

At the same time, initial experiments to ensure grass root management of the rural resource base showed that such attempts had to be supported by the State. For instance, "*Governments can give advice on accounting legal rights and technology and provide a legal framework for the creation, recognition and dissolution of co-operatives*" (The World Bank, 1992; p. 143). In other words, the State should retain ownership of the natural resources, while devolving the power to manage and control the resource to the stakeholders. This is referred to as co-management (Berkes et al, 1991; Pinkerton, 1989, 1994).

Co-management can be interpreted as a form of co-production (Ostrom, 1996). The State utilises inputs from the resource community (labour for monitoring, sanctioning, felling, replanting, and other activities related to use and conservation of forests) in conjunction with other inputs from the State (institutional vehicle, legal recognition of local management regimes, etc.) to co-produce an outcome (resource management).

In recent times, however, co-management is sometimes being hastily implemented. This is affecting the success of such programmes, as the resource users are not responding to the creation of a collective choice arena where they can introduce or change rules governing access to and use of resources. One reason for the absence of any complementary response from resource users is that they may not be aware of the need for conservation of the concerned resource. This is reducing incentives to conservation, affecting credible commitment of inputs from stakeholders.

To illustrate this proposition, we have presented two case studies of Joint Forest Management (JFM) in similar socio-economic settings in India. In the village where such attempts were preceded by attempts to generate awareness about the need to manage the environmental resource base, Joint Forest Management has been successful. In the other village, where there have been no such attempts, the devolution of power to resource appropriators has created de facto open access conditions leading to resource degradation. We shall argue that successful co-management programmes have to be preceded by changing their attitudes to create an awareness of the need for conservation within the stakeholders.

2: History of Forest Management in Matha and Belemath

The two villages studied in this section - Matha (in the district of Purulia) and Belemath (in the district of Burdwan) - have similar socio-economic characteristics; conditions favorable to co-production exist in both villages; the formal structure of the institutional regime also corresponds to the design principles laid down by Ostrom. But provisioning of an 'appropriate' institution fails to ensure a synergistic response from the community in Matha. In Belemath, on the other hand, a change in the attitudes of the villagers created a local demand for the planned outcome (viz. conservation). This ensured the success of the regime.

2.a: A Brief History of Forest Use

The early history of forest conservation in Purulia and Burdwan are similar[1]. Forests were initially owned by *zamindars* (landlords) who restricted access to forests. Poaching was the main form by which the common people could access adjacent forest areas. In some cases open access forests existed in neighbouring areas. Villagers also exploited these areas. For instance, in Belemath, villagers accessed

forest areas in nearby Jalikunda and Bhatkunda. On the other hand, the absence of such open access resources close to Matha resulted in the villagers totally relying on poaching to obtain forest products.

In 1956, forests were nationalised. The limited number of forest guards, however, ruled out effective monitoring. This resulted in virtually open access conditions, so that the villagers started to exploit forests recklessly. Officially, the Government permitted licensed contractors to undertake limited felling in designated areas of the forest. Since this was far below the commercial demand for timber, over-exploitation started in two ways. Firstly, licensed contractors started felling outside designated areas. Secondly, trespassing of forests by villagers and outsiders started on a small scale. The failure of the forest guards to prevent such illegal felling increased the confidence of trespassers. In Purulia, for instance, matters escalated to such an extent that by 1980-84 looting of forests by bands of 200-300 persons started occurring.

The frustration of administrative officials to protect forests led to suggestions of involving the people in forest management. Individual attempts in this direction occurred sporadically. In the late 1980s, such practices were institutionalised based on the concept of Joint Forest Management (JFM). Policy makers decided to involve Panchayats (village-level elected units of local self-government) in forest conservation and accordingly set up Forest Protection Committees (FPC) in the villages.

2.b: Features of Joint Forest Management

The basic principle of JFM is that villages should be given the responsibility of conserving designated forest areas through the signing of 'Green Bonds'. Villagers form FPCs, which is responsible for monitoring forest use by villagers and punishing any violations of rules. The Committee makes decisions regarding forest use. Periodically, villagers are allowed to fell from designated areas. Villagers engaged in felling get a daily wage. The revenue from the sales of this timber is shared between the Government and the FPC[2]. The FPC, in turn, distributes its share equally between the members. The Forest Department recognises FPCs, which enjoy local autonomy. Further, they are integrated into the broad legal framework concerning forests. For instance, violations of the rule can invite formal criminal proceedings if the FPC so decides.

Now, the objective of this institutional innovation was to involve the local community in the process of conservation. So we have to analyse whether, JFM satisfies the conditions for co-production, and whether it provide scope to incorporate aspirations and needs of resource users as a factor influencing operational rules of the regime.

Ostrom (1996) argues that co-production is viable under the following circumstances:

(a) The technologies in use must generate a quasi-concave production function.
(b) Legal options must be available to both parties.
(c) Participants have to commit themselves to supply inputs credibly.
(d) Incentives must be provided to both parties.

It can be seen that JFM satisfies these requirements:

(a) It was not possible for the State to monitor resource use by different villages over the entire area under forest cover. The administrative costs of this

process were immense. On the other hand, legally accepted local bodies to control resource use were absent. This implied that the technical form of the production function required inputs supplied by both the resource community and the State.

(b) Legislative changes were effected to ensure legal rights of both parties. Nesting of the organisations with various State organs (e.g. police, judiciary, and executive) was of particular importance in this context.

(c) Since State provisioning of the institution (FPC) initiated the program, resource users were assured of State commitment to co-management.

(d) The State tried to ensure a complimentary response from the villagers through incentives like providing a sense of ownership through the Green Bonds, allowing villages who had adopted conservation practices to fell trees periodically from designated areas, etc.

In addition, our survey found that resource users in both sites are aware of the process of degradation – in the sense that they had observed the number of trees and density of forests to decrease over the years (Table 1). Resource users also acknowledge the following facts:

(a) Forests are an important part of their lives;

(b) Degradation is due to over exploitation by the villagers;

(c) Degradation has serious consequences especially in the long run;

(d) Degradation has reached a stage where conservation is necessary to protect the forest;

(e) Resource conservation might require a reduction of income in the short run;

(f) The problem is collective in nature.

INSERT TABLE 1 HERE

Further, the formal characteristics of this institutional structure appears to correspond to the design principles characterising robust self-governing institutions (Ostrom, 1990):

(a) *Presence of boundaries:* The Forest Department defines the area under the jurisdiction of each Forest Protection Committee based on traditional boundaries.

(b) *Congruence between rules and local conditions:* The Forest Department has defined general rules. In each locality the Forest Protection Committee members (formed by the users themselves) monitor and implement the rules. This provides scope for adapting formal rules to local conditions.

(c) *Collective choice arrangements:* Operational rules are set within a broad framework. The absence of overseeing or interference by the Government allows leeway to introduce local variations of rules and ensuring a convergence between rules-in-form and rules-in-use.

(d) *Monitoring:* Constant social interaction provides scope for peer monitoring to be undertaken by other members of the community, especially by the members of the Committee.

(e) *Graduated sanctions:* The Committee punishes offenders according to severity of offence and reputation. Punishment ranges from warnings, to public humiliation and fines. Criminal cases can be filed – but is rarely resorted to.

(f) *Conflict resolution mechanism:* Committee meetings provide a potential arena to resolve conflicts between resource users.

(g) *Recognition of rights to organise:* the Forest Department recognises Forest Protection Committees as legitimate organisations of resource users.

(h) *Nested enterprises:* The Committee operates within a broad framework comprising of superior executive (Forest Department) and legal (police and courts) components.

The presence of these features implies that the community has enough autonomy in the collective choice arena to incorporate their aspirations and needs in the operational aspects of the management regime[3].

3. Contrasting Experiences of Joint Forest Management

At first sight, therefore, all the pre-conditions necessary for the success of JFM seem to be present in both Matha and Belemath. However, the actual performances in these two villages were different.

3.a: Socio-economic Characteristics of Matha

Matha is a typical village in the arid and economically backward district of Purulia, in West Bengal, India. There are about 90 households in Matha. In view of the small size of the population, we attempted a complete enumeration of the sample. We obtained data about the socio-economic characteristic of the household, extent of dependence on the resource, specific aspects relating to the resource and perceptions about the state of the resource, etc. using a questionnaire. We interviewed only male heads of each household. In about 14 cases, male heads were absent for various reasons. In such cases, we had to omit the household[4]. In addition, we adopted some PRA techniques – group discussions with about 7-8 randomly chosen members (including females), Thematic Appreciation Tests, constructing seasonal calendars, resource- mapping, etc.

Our sample comprises of 76 households, with 342 members. The average family size is 4.5. The number of males is 197. The population is mixed, though the tribal section dominates.

INSERT TABLE 2 HERE

The level of education is low – 128 persons (42.11%) are illiterate, and 61 persons (20.01%) can sign their names. Of the literate section of the population, 54 (17.76%) have studied up to Class V, and 53 (17.43%) up to Class X.

The average yearly income is Rs.22683 (including imputed income from forests) and Rs.16665 (excluding imputed income from forests), while expenditure is Rs.16031.[5] (The distribution of households by income classes is provided in Table 4). Agriculture is the main source of income, either in the form of wage income, or from cultivation of owned or leased land. The incidence of unemployment is also high – about 40% of the population are unemployed. However, this does not mean that they do not engage in any type of economic activity. It is possible that most of them are engaged in illegal felling of trees.

Quite a few households are landless. Only 52 households own land. Both land holdings and cultivable plots are mainly in the small and medium categories (2-5 and 5.1-20 bighas[6], respectively). Cultivation is generally ownership-based, so that the lease market is not important.

INSERT TABLE 3 HERE

Our survey respondents are dependent to a significant extent on the forests (refer to Table 4 given later). On an average about 32.56% of income comes from the forest

in various ways. This dependence is especially high for persons with income below Rs.15000 (over 40%). Dependence is also high for those in the income bracket Rs.30000 - 35000. This bears out the hypothesis that poor households depend significantly on common pool resources. Forests provide different resources to the community – fruits, animals, birds, materials to make houses and tools, leaf (used as fuel), etc. The dominant use of the forest, however, is to obtain timber for domestic energy consumption (12.46%) and for sale (17.29%). Literature suggests that such a resource community will be highly conscious of their environmental responsibilities, and will manage the resource in a sustainable manner (Dasgupta & Maler, in Dasgupta & Maler, 1997). We therefore expected, *a priori*, that the Forest Protection Committee (FPC), backed up by social norms, would play a strong role in conservation. The reality was quite different.

3.b: Joint Forest Management in Matha

Let us start with the historical attitudes of villagers towards forests. This attitude is highly possessive. But possessiveness in Matha is not associated with any sense of stewardship, but implies a right to exploit the forest. Poverty-stricken villagers have traditionally used this right for staying above the poverty line. The attempt to impose limits to forest use in recent times is seen as an attempt to curtail traditional rights. This makes poaching morally justifiable to the villagers.

The pattern of exploitation of forests is also important in this context. In Matha the basic pattern of resource use is unsustainable – as it is mainly stem-wood based (currently 96.04% of income from forests is stem-wood-based). This is because of two reasons. Firstly, it takes less time to collect branches. Secondly, the economic

value of branches is high, as they can be sold in Bihar. These two factors have combined to increase costs of conservation.

We carried out Thematic Appreciation Tests in Matha. This involves showing respondents a picture and eliciting responses to the picture. The picture showed a tree, with leaves scattered around. A man was standing nearby with an axe and bag. Respondents ignored the leaves and said that the villager had come to cut down the tree.[7] Thus, there appears to be a cultural predisposition to behave in an unsustainable manner. Unless resource use patterns are modified, reducing costs of conservation, there will be resistance to attempts at conserving the resource.

Another important factor influencing the relation between forests and the resource community is the biophysical features of the zone. The arid nature of Purulia, the red laterite soil and the sloping topography (leading to water run-off) have combined to create an agriculturally backward area. The narrow entitlement and capability set defines a preference pattern biased in favour of current income flows. In fact, it can be argued, poverty is such a serious problem that all considerations of the future are totally absent in calculations of resource users.

The operation of all these forces creates an attitude biased against conservation and simultaneously leads the resource community along a path of self-destruction. Consequently, even though the villagers are aware that degradation is occurring, and perceive the seriousness of its nature, they are not interested in utilising the collective choice arena provided through the introduction of FPCs to co-produce conservation. Their focus is, for reasons stated above, on current income flows. We estimated that complete curtailing of illegal felling would reduce present income by

25%; this percent would be even higher for villagers with annual income of below Rs.15000 (See Table 4 below)[8]. They are aware that the current rate of exploitation is not sustainable and such a sacrifice will protect their long run income. But, their time preference[9] (biased in favour of current income flows) implies that conservation (which will reduce short run income) is unacceptable.

INSERT TABLE 4 HERE

To lead the community out of such a trap, the focus of the individuals has to be changed from the short run to long run concerns by providing a suitable alternative means of livelihood to them. This will reduce the costs of conservation and lead to acceptance of the outcome (i.e. conservation) at the individual-level. A synergistic response to the introduction of FPCs will follow from the community.

In its absence, villagers are maintaining their traditional exploitative life style - despite the availability of a collective choice arena. As a result, the rules-*in-use* and hence the de facto form of the institution are not characterised by design principles. In general, the villagers do not follow resource conservation rules. We saw a large number of villagers cutting down branches, though they were quick to hide their faces when we approached them. There are no social norm or institutional constraint to defection; only the fear of the Forest officers appears to operate as a check. During our field survey, several villagers (including some of our respondents) were arrested in a police raid.

The villagers reported a high incidence of rule breaking. This is mainly to meet subsistence requirements. The villagers carry the timber over 10-15 miles to markets in the East Singbhum district of Bihar. All villagers know that others are engaged in illegal felling. Similarly, they know that their own activities are common knowledge.

Collective defection by the community gives the villagers confidence that they will *not* be punished by their peers[10]. Hence, resource users do not feel any shame when detected breaking rules. They openly admit to rule breaking even in normal circumstances[11]. In the absence of monitoring, the incidence of detection and punishment is very low. Out of an average monthly incidence of rule violation of 33.80, the sanctioning authorities on an average detected only 0.39 cases. Even the decision of the Forest Department to postpone felling of designated trees, as a punishment for illegal felling, did not deter villagers from further violations of rules.

INSERT TABLE 5 HERE

The villagers are totally unconcerned with the FPC. They do not meet regularly; members do not undertake peer monitoring (nor is it necessary, since the identity of persons engaged in illegal felling is common knowledge); neither is there any sanctioning. Members are as prone to break rules as other villagers. The villagers do not use the Committee to promote environmental consciousness, resource conservation practices, or undertake monitoring, sanctioning, etc.

In brief, institutional provisioning by the Forest Department did not evoke a complementary commitment from the resource community in Matha due to absence of an attitude favouring conservation. Consequently, a divergence emerged between rules-in-use and rules-in-form. On the other hand, when an identical institution was introduced in Belemath (in the district of Burdwan, West Bengal), a village characterised by similar socio-economic conditions, the villagers responded by utilising the institutional structure as a vehicle for collective action. By modifying and adapting both the formal regime and local rules-in-use, the villagers of Belemath managed to conserve their adjacent forest area successfully.

3.c: Socio-Economic Characteristics of Belemath

Belemath is a village in the Birbhum-Bankura border in the Jungal Mahal area. There are 223 households in the village. Of these, we surveyed 212 households[12]. The total members of the household surveyed were 862, of which 423 were males. The average family size is 4.07. The majority of the population is Muslims; a sizeable section belongs to Scheduled Tribes. There are also some upper caste Hindus (see Table 2, earlier). Belemath is a much larger village than Matha; its religious composition is different. Other socio-economic characteristics, however, are similar to that of Matha.

The level of education is not very high – 35.83% of the population are illiterate. Among the literate section, 19.50% can sign, while 33.33% have studied up to Class Five. The average income of the population is Rs.17694 annually. If one excludes value of benefits derived from forests, average annual income falls to Rs.14634. This figure appears to be an underestimate of actual income, since average expenditure is Rs.20299 per annum. This income mainly stems from agriculture; most of the people are either agricultural workers or cultivators. Among other major occupations are forest-related works, like manufacturing *sal* plates, mattresses, etc.

A large proportion of the households are landless. Only 56.60% of the households own land. Among the land owning class small farmers, with land holdings of 2 – 5 bighas, are in the majority (65.45% of land-owning population). The average land holding is about 2.5 bighas. The lease market is underdeveloped in Belemath. Hence, the pattern of cultivation corresponds to the distribution of ownership. Cultivation is mainly carried out in small plots of 2 – 5 bighas. The average size of cultivated plot is slightly above 2.5 bighas (see Table 2, earlier).

Villagers are dependent to a significant extent on the forest for their income or consumption. On an average, about 23.58% of their income is derived from forests. As can be expected, the poorer income classes depend to a significant extent upon the forest for their income. The dependence is mainly for energy purposes – especially on fallen leaves and dead branches. Women and children generally collect these during the months of *Chaitra* and *Falgun* (February and March). Tribal households, however, collected leaves through out the year. They also sell leaves to the richer households. In addition, *sal* leaves are used to prepare plates, which are then marketed. Tribals also prepared mattresses and brooms from leaves. Timber is used during house building (beams, frames of doors and windows, furniture) and to make ploughs. In addition, some trees are illegally felled and sold for their timber value.

3. d: Joint Forest Management in Belemath

In Belemath, too, the initial pattern of forest was unsustainable. Villagers satisfied their demand for fuel through loping of branches. Felling of trees was also common. The villagers practised this to obtain timber for agricultural tools, etc. They also supplied labour to contractors for illegal felling of trees outside the designated areas. These practices were a result of attaching greater weight to short run income flows. It was caused by the poverty of the people and the lack of alternative sources of fuel, and led the community into a 'social trap' (Platt, 1973).

So long as the resource community was in this trap, they were not interested in conservation and would have ignored opportunities to co-produce conservation. It

was only when showing that forests could be sustainably used changed preferences of resource users that they emerged from the trap and a willingness to conserve forest resources was generated. This led the villagers to respond in a synergistic manner to the formation of FPCs.

This raises the question as to how this demand was created in Belemath. In the case of Belemath, local (internal) agents acted as a catalyst in the process of creating demand for institutions. The Communist Party of India (Marxists), which is the dominant political party in West Bengal, felt that they could increase their clout in local micro-politics through FPCs. This led them to take an interest in changing attitudes and creating demand for co-production. However, this is not the only way of creating demand. There are other forces with the potential for changing attitudes: for instance, external agents (NGOs) or even events like political or natural disasters.

In Belemath, public campaigns and meetings created an interest in conservation. The problem of degradation and the benefits of conservation were discussed in terms comprehensible at the individual level. Villagers realised that degradation through felling of trees for fuel and commercial purposes would add to current income, but in the long- run it would remove the only source of fuel available to the community. On the other hand, if there were a reduction in felling for commercial purposes, shift to foliage as the source of fuel, and replanting of trees, this would protect the long run supply of fuel. Such a course would reduce income (from sale of timber in nearby markets) in the short run, but villagers accepted this as a better alternative to the long run consequences of degradation. During our survey, villagers repeatedly emphasised that the change in their attitudes played an important role in the process of conservation. The change in the time preference of the individuals changed the subjective evaluation of the pay-off in different periods and enabled the community to

emerge from the social trap. Once out of this trap, they were eager to use the arena of the FPC to serve their new concern, namely protecting future income flows and fuel supply.

We found villagers to be conversant with the operational rules concerning forest use. The pattern of forest use is presently sustainable, with greater reliance on foliage. Dependence on timber has declined (Table 4). Replanting is also undertaken to maintain forest cover.

Though no institutional constraint to illegal felling operates, social norms are present. Villagers look down upon those who violate rules for commercial purposes. On the other hand, villagers excuse individuals violating rules due to the pressure of poverty. Owing to constant interaction between themselves, villagers are aware of any rule violation and its reason (whether for commercial purpose or subsistence purpose). This curbs tendencies to break rules.

Of course, illegal felling is not completely eliminated. We personally observed villagers cutting down trees; villagers showed us trees marked for felling, and areas where illegal felling had already occurred. Such felling is of three forms:

1. Villagers occasionally cut down branches for fuel.
2. FPC members also tacitly give permission to villagers to cut down a few trees. The timber is used to build agricultural and household implements.
3. Some villagers also cut down trees at nights using saws. These trees are then transported by lorries and sold in Guskura, the nearest rail station. Generally, members who have political connections, or are rich, indulge in

such activities. It is difficult to curb this type of violations. Fortunately, however, violations of this type are rare.

In general, villagers tolerate the first two types of rule violations. The reason is that such violation is generally due to poverty and lack of fuel or ability to purchase ploughs and house building materials. Any efforts to curb the first two type of violations will create resentment, while the gains is unlikely to be much (about 1.57% of current income is obtained from illegal felling; see Table 4 for details). However, if violation crosses a threshold level then sanctioning occurs. First time offenders are warned; if they persist they are beaten, or fined increasing amounts. Cases may also be filed against the offender. This is a rare occurrence. Villagers reported only one such incident; but this appears to have political overtones. Criminal proceedings were started against a political opponent, Majid Mollah. Although the villagers dread cases, it had little effect on Majid Mollah who used his political influence to obtain a certificate that the trees cut down were from his own land. In another incident, a relative of a forest guard was apprehended illegally felling trees. He was tarred and feathered.

Such incidents are not common. Overall, forest protection is successful in Belemath. The area under forest cover in the area near Belemath has been maintained, while density has increased[13]. The role of the resource community in monitoring access to the forests and replanting is crucial in the process. However, the community is not resting on its laurels but is attempting to increase their autonomy. The villagers are preparing a scheme for sustainable exploitation of the forest based on greater autonomy of the resource community. They are also experimenting with leasing small plots of land to private owners to augment income.

5. Some Policy Lessons

To sum up, commercialisation leading to the integration of the local communities to regional, national and even global markets is creating opportunities for people to stand back, critically examine, and loose faith in the traditional order of beliefs and way of life. This is leading to what sociologists call *detraditionalisation* (Heelas et al, 1996). The balance of authority shifts from the society (or community) to the individual. Individualistic exercises - rational, or utilitarian - becomes the driving force behind action. This weakens the authoritative power of traditional social institutions that are responsible for ensuring participation and controlling appropriation behaviour.

The role of the State becomes critical in this context. The loss in social authority will have to be compensated by the granting of political legitimacy through co-management programmes. The State will have to guarantee security of tenure to the local resource community by strengthening indigenous and customary rights to the resource through legal definitions and enforcement of the rights through formal mechanisms.

The thrust of co-management programmes is on inducing supply side changes – designing and introducing 'appropriate institutions' to involve stakeholders in the management process. Such co-production activities are based on the assumption that the community is willing to undertake collective action, but is unable to do so owing to the absence of a suitable collective choice arena. Therefore, the provisioning of such an arena will evoke a complementary response from the community.

However, as pointed out by Singleton (2000), socio-cultural and economic factors may create a situation where resource appropriators persist with their pattern of over-

exploitation *not because of their inability to adopt new resource use strategies, but from an unwillingness to do so*. In such cases provision of a collective choice arena to manage the resource base will fail to evoke a complementary response from the community members. The reason is that the community does not have a demand for the co-produced outcome, conservation. Attempting to seek 'appropriate' institutional forms that reflect the aspirations of the community will not be effective in such situations. The solution is to change the attitude of the community members through provision of alternatives. Provisioning of a collective choice arena after such an attitude change has occurred will reduce the perceived costs of conservation and stimulate a complementary response from the community, thereby ensuring institutional success. This implies that a shift in policy orientation away from institutional design and seeking ways of creating demand for conservation is necessary to ensure success of co-management programmes. This is neither an easy task, nor one that produces 'visible' results in a short time. Not surprisingly, therefore, executive bodies involved in resource management have tended to de-emphasise this component of co-management strategies.

ACKNOWLEDGEMENTS

The field surveys were part of a World Bank funded Ministry of Environment & Forests-Indira Gandhi Institute of Development Research Project. The authors wish to thank Sarmila Banerjee for her help in formulating the argument of the paper.

REFERENCES

Adams, W.M., E.E. Watson & R.S. Mutiso (1997) "Water, Rules and Gender: Water Rights in an Indigenous Irrigation System, Marakwet, Kenya". *Development and Change*, 28 (4) October; pp. 707-731.

Aggarwal, B. (1990), "Social Security and the Family: Coping with Seasonality and Calamity in Rural India". *Journal of Peasant Studies,* 17 (3): 341-412.

Balland, J.M. & J.P. Plateau (1996) Halting Degradation of Natural resources: Is there a role for rural communities? Oxford: FAO/Clarendon Press.

Berkes, F. ed. (1989), *Common Property Resources: Ecology and Community-based Sustainable Development*. London: Belhaven Press.

Berkes, F., P. George & R.J. Preston (1991) “Co-management: The Evolution in Theory and Practice of the Joint Administration of Living Resources”. *Alternatives*, 18 (2): 12-18.

Bromley, D.W. (1989) *Economic Interests and Institutions: The Conceptual Foundations of Public Policy*. Oxford: Basil Blackwell.

Campbell, B., A. Mandondo, N. Nemarundwe, W. de Jong, M. Luckert & F. Matose (2001) "Challenges to Proponents of Common Property Resource Systems: Despairing Voices from the Social Forests of Zimbabwe". *World Development*, 29 (4); pp. 589-600.

Cernea, M. ed. (1985) Putting Peoples First - Sociological Variables in Rural Development. New York: TheWorld Bank/Oxford University Press.

Dasgupta, Partha & Karl-Göran Mäler (1997), *The Environment and Emerging Development Issues, Volume 1*. Oxford: Clarendon Press.

Ghai, D. & J.M. Vivian (1992) Grass Roots Environmental Action: People’s Part in Sustainable Development. London: Routledge.

Hanna, S. & Mohan Munasinghe ed. (1995), *Property Rights and the Environment: Social and Ecological Issues*. Wahington D.C.: Beijer International Institute of Ecological Economics, and The World Bank.

Heelas, P., S. Lash & P. Morris (1996) Detraditionalization: Critical Reflections on Authority and Identity. Blackwell Publishers, Oxford.

Hobley, M. & K. Shah (1996) What Makes A Local Organization Robust? Evidence from India and Nepal. London: Overseas Development Institute.

Holloway, R. ed. (1989) Doing Development – Governments, NGOs and the Rural Poor in Asia. Earthscan Publication Ltd. /CUSO, London.

Klooster, D. (2000) “Community Forestry and Tree Theft in Mexico: Resistance or Complicity in Conservation”. *Development and Change*, 31 (1), March; pp. 281-305.

Lawrie, S.W. (1989) Tenure Policy and Natural Resource Management in Sahelian West Africa. Research Paper No. 130, Land Tenure Centre, Un. of Wisconcin-Madison.

McCarthy, J. (2000) “The Changing Regime: Forest Property and *Reformasi* in Indonesia”. *Development and Change*, 31 (1), March; pp. 91-129.

Murphree, M.W. (1999) Communities as Resource Management Institutions. Gatekeeper Sereies No. 36. International Institute for Environment & Development, London.

Ostrom, E. (1990), Governing the Commons. Cambridge: Cambridge University Press.

Ostrom, E. (1996) “Crossing the Great Divide: Co-production, Synergy and Development”. *World Development*, 24 (6); pp. 1073-1087.

Pinkerton, E. (1989) “Introduction: Attaining Better Fisheries Management through Co-Management – Problems and Prospects”, in Pinkerton ed. *Co-operative Management of Local Fisheries: New Directions for Improved Management and Community Development*. University of British Columbia Press, Vancouver.

Pinkerton, E. (1994) “Local Fisheries Co-Management: A Review of International Experiences and their Implications for salmon Management in British Columbia”. *Canadian Journal of Fisheries and Aquatic Sciences,* 51: 2363-2378.

Platt, J. (1973), “Social Traps”. *American Psychologist*, 28 (August): 641-651.

Shah, T. & S. Bhattacharya (1993) Farmer’s Organization for Lift Irrigation: Irrigation Companies and Tubewell Co-operatives of Gujarat. London: Overseas Development Institute.

Singleton, S. (2000), “A Response to Steins, Edwards, and Rolling”. *CPR Digest*, No. 53: 5-6.

UNCED (1992) Agenda 21 - Programme of Action for Sustainable Development: Rio Declaration on Environment and Development. New York: United Nations.

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

Wade, R. (1988), *Village Republics: Economic Conditions for Collective Action in South India*. Cambridge: Cambridge University Press.

The World Bank (1992) World Development Report: Development and the Environment. Oxford: Oxford University Press.

World Commission on Environment and Development (1987), *Our Common Future*. Oxford: Clarendon Press.

Table 1: Observation of Resource Degradation by Villagers (%)

Grass Root Indicators of Degradation	Matha		Belemath	
	Increase	Decrease	Increase	Decrease
Number of Trees	-	70.13	-	75.71
Area under forests	-	36.36	-	74.76
Time taken to collect leaves	51.17	-	57.14	-

Table 2: Religious Composition of Sample

Religion and Caste	Matha	Belemath
Muslim	28	716
Upper Caste Hindus	58	34
Scheduled Caste	36	0
Tribal	220	112
Total	**342**	**862**

Table 3: Distribution of Households by Land Holdings

Land Ownership (in bighas)	Matha		Belemath	
	Ownership	Cultivation	Ownership	Cultivation
0 –0.99	29	29	21	29
1-1.99	5	4	8	11
2-4.99	22	25	6	40
5 –19.99	18	16	9	40
20 <	2	2	80	1

Table 4: Income Level, Dependence on Forests and Impact of Conservation

Village	Income Class	Number of Households	Average Income	% of Income from Forests	Reduction in Income
Matha	0-10000	7	7226	43.14	43.14
	10001-15000	20	12528	42.27	39.37
	15001-30000	34	19473	28.31	27.20
	30001-35000	6	32743	40.36	40.36
	35001+	9	62686	13.58	12.58
	Sample	***76***	***22683***	***32.56***	***31.18***
Belemath	0-10000	33	6798	26.96	0.52
	10001-15000	66	12441	29.94	0.99
	15001-20000	54	16872	23.92	2.43
	20001-25000	14	22154	15.25	0.69
	25001-30000	25	26912	19.03	3.62
	30001+	20	40581	7.62	0.94
	Sample	**212**	**17694**	**23.58**	**1.57**

Table 5: Estimates of Violations, Pardoning and Sanctioning (% of Households)

Activities (Average per month)	Matha	Belemath
Incidence of violations of rules	44.47	9.63
Incidence of undetected rule violations	-	5.74
Incidence of sanctioning of rule violations	0.42	0.93
Incidence of pardoning of rule violations	0.09	0.66
Incidence of pardoning violations through manipulation	0.00	2.30

[1] Our information regarding the history of forest conservation in Purulia is based on discussions with Susthir Kumar Sarkar, Range Officer, Barabazar.

[2] The Forest Department sells the timber. The FPC gets 25% of the revenue from such sales from the Department. Delays in such sales, inadequate storage facilities, etc. are reducing the potential revenue from such sales. In Belemath, the FPC is trying to obtain get the right to sell the timber directly and give the Forest Department the residuary revenue.

[3] Pinkerton (1994) has identified a variant of these components as "key to the success of locally based regimes" (p. 2376).

[4] We did not interview females, as they were not vocal and quite apprehensive of appearing before strangers. Besides, in the daytime, they were engaged in household duties, collecting branches and transporting them to Bihar. However, we succeeded in involving women in group discussions in both sites.

[5] Income is stated in Rupees. One US dollar is equal to about 48 Rupees.

[6] In West Bengal, land is measured in bighas. One bigha is equal to 0.678 hectares.

[7] This is not uniformly true for entire Purulia; for instance, in Puijhangha, in Barabazar Block, villagers used both leaves and timber. These Tests also indicated a strong fear of officials of the Forest Department.

[8] A warning is necessary before we interpret Table 4. By comparing the percentage loss in income due to conservation in Matha and Belemath, one may argue that costs of conservation are lower in Belemath. Institutional success can be attributed to this factor. This is not a valid comparison as individual resource use pattern has already been modified in Belemath, reducing illegal felling. For a valid comparison of costs of conservation to individuals, we should compare between Belemath in 1995 (when the FPC was about to be introduced) and Matha now. Unfortunately, these figures are not available.

[9] Time preference reflects attitude of resource users towards inter-temporal choices.

[10] The resultant situation corresponds to a Nash equilibrium.

[11] 54 respondents confessed that they broke branches in normal circumstances, while 64 respondents admitted to felling during crisis periods.

[12] We could not survey the remaining households, as their male heads of families were absent. The survey methodology was the same in both villages.

[13] Data on forest cover is available only for the entire Jungal Mahal area. Our statement that forest cover has improved is based on interviews with the respondents and various officials. Our visual impression also supported this claim. There were obviously some people who claimed that area under forest cover has shrunk. But they were politically biased opinions; on further questioning they could not identify the areas where this shrinkage has occurred. On the other hand, the over-exploitation of forests in surrounding areas is visible. During our journey to Belemath, we saw large tracts of barren forestland.