The sustainability of traditional community forest management systems: lessons from India

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Traditional forest institutions work, but their restitution requires fundamental reform through decentralization.

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Since the dawn of the nineteenth century, the ecological and cultural landscapes of forest-fringe societies have transformed dramatically. Growing populations, top-down policies and market forces have led to the rapid depletion of natural wealth and the abandonment of many traditional systems. In rural India, communities are threatened by, among other things, abject poverty, a lack of economic opportunities, and the looming consequences of climate change. Changing global market dynamics and associated development patterns have also brought about changes in community values, attitudes and livelihoods that affect the need, ability and willingness of local people to work collectively in forests.

Reporting on recent studies in India, this article examines traditional systems for managing local natural renewable resources and the contributions they have made to the concept of sustainable

Forest-dependent women participate in a survey. The effective engagement of women, including recognition of their needs, is critical to the sustainability of any community-based forest management system

The field setting for a behavioural experiment described in case study 1

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resource management. The article explores the question of whether community values remain strong enough to catalyse sustainable forest management, and examines factors that could enable or constrain village societies in their forestry efforts today.

SUSTAINABILITY AND TRADITIONAL NATURAL RENEWABLE RESOURCE MANAGEMENT IN INDIA

Long before the modern world coined the words sustainability and sustainable resource management, these concepts were already deeply ingrained in traditional customs and cultural practices in India. Ancient scriptures emphasized the importance of ecological preservation and moderation in the use of natural resources. Many traditions of Indian worship consider that all nature, be it rivers, mountains, lakes, forests, stars or sky, is pervaded by a divine presence, and even today there is great reverence and respect for nature.

Over the years, social customs and religious beliefs and rituals influenced the attitude of communities towards forests and resulted in the evolution of distinct systems of management. Although not without instances of conflict, these systems were widely adhered to, within and outside communities, and were monitored closely locally. Some of the common traits of traditional systems are: a holistic view of ecosystems; a deep attachment to culture and traditions (e.g. cultural festivals reinforcing belief in the preservation of nature); resource ownership attributed to communities; and restricting the use of natural resources to the meeting of basic needs.

In contemporary India, the term "indigenous people" is synonymous with the word "tribal", indicating these communities to be *vanvasi* (forest dwellers) or *adivasi* (original inhabitants). Etymologically and spatially, the lives and livelihoods of these tribal communities are linked intrinsically

with forests (Mitra and Gupta, 2009). Their lifestyles are usually defined by the absence of exploitive classes and organized state structures; the complex ways and means by which they relate to each other and cooperate within and between kinship bonds; the all-pervasiveness of religion; frequent cooperation among members towards common goals; a low level of technology; the segmented character of the socio-economic unit[1]; distinct taboos, customs and moral codes; and common territories, descent, language and culture (Pathy, as cited in Xaxa, 1999). Although there are many tribes in India and a wide range of linguistic and cultural differences among them, their attitudes to forest protection are commonly determined by religious dictates (e.g. the dos and don'ts in sacred groves), belief systems and social norms (Gadgil and Guha, 1992). Tribal traditions generally exhibit pro-social behaviour towards forests (Gurven and Winking, 2008). The following case studies illustrate that traditional systems remain strong in many communities in India.

CASE STUDY 1: COOPERATION FOR SUSTAINABLE HARVESTING

Two studies were conducted between January 2009 and April 2011 in eight tribal villages in the state of Maharashtra that differed in their locations, dialects, state of

adjoining forests, and the capacity of local forest management institutions.[2] The studies were designed to capture attitudinal aspects underpinning individual behaviour expressed through privately taken decisions on forest use. Such decisions related to the harvesting of trees; the non-wood forest products collected; the level of dependence on forests; the establishment of forest plantations in degraded forest; and responses to increases in payments from forest-related activities.

The studies involved experiments using games concerning common-pool resources designed to be relevant to participants, so that participants' behaviour in the experiments correlated with their behaviour in real-world situations. At the start of each game, 100 small paper cut-outs in the shape of trees were stuck on a board placed prominently in a room. The five players in each game were informed that these trees represented the forest about

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[1] Indigenous communities in India mostly participate in a low-skilled agricultural sector that generates low income and offers little opportunity to upskill, which tends to be self-perpetuating. The occupational distribution is also often fixed (segmented), increasing the difficulty of transitioning to higher-skilled occupations.

[2] The methodologies and results of these studies are published in full in Ghate, Ghate and Ostrom (2011) and Ghate *et al.* (2012).

which they were to make decisions. They were also told that they would individually "harvest" these trees, and that there would be a group discussion prior to the harvesting "operation" to set the harvesting rules. A number of paper trees (determined to be the total allowed maximum harvest size for that round in the game) were placed next to an empty box on a table in another room. Players entered this room in turn and dropped into the box the number of trees they wished to harvest in that round. A player could refrain from dropping anything into the box to indicate that he did not wish to harvest at all in that round. The organizer recorded the number of trees harvested by each participant, removed the trees from the box and placed them back on the table. Thus, the next player in the same round had the same number of trees available for harvesting and did not know the number of trees harvested by the previous player. Each player kept track of the number of trees he had harvested in all rounds. At the end of each round, the total number of trees harvested by the five players was disclosed to the group.

The results confirmed the prevalence of systems of mutual trust and cooperation in the communities. Participants discussed harvesting decisions, mainly in the initial rounds. Once decisions were taken, they were followed in the remaining rounds, with few infractions – even though infractions would have increased individual earnings – and there was no need for explicit verbal sanctions. There were four instances in which *fewer* than the allowed number of trees were harvested, one of which is described below.

The prisoner's dilemma

The prisoner's dilemma is the term given to an element of game theory related to cooperation between two (or more) parties. The idea is that each player in a given game (or life situation) gains when both cooperate, but if only one cooperates, the other, who defects, will gain more. If both defect, both lose (or gain very little), but not as much as the "cheated" party whose

cooperation is not returned (Heylighen, 1995). Extending this to a natural resource, one might expect that individuals will take more than their agreed share – trees, in this instance – because of the risk that others will do so, hence depriving individuals who stuck to the agreement. In this study, however, the president of the forest management committee harvested fewer than his permitted individual share of trees (the number having been agreed in advance, in group discussions). When asked why this was the case, he responded that he did so in case other members harvested more than their permitted share – that is, to protect the forest from the possibility of degradation. This precaution on the part of the president, although admirable, turned out to be unnecessary, because none of the other participants harvested more than their agreed share.

Arguably, this behaviour contradicts the theory of the prisoner's dilemma. The absence of infractions and the need for the exchange of only a few words – and even then only in initial rounds of the game – indicate the prevalence of mutual trust. In one series of four experiments, the payoffs were doubled in one of the experiments, yet it made no difference to harvesting decisions (Ghate, Ghate and Ostrom, 2013).

An important observation of the Maharashtra studies is that "harvesting" in the communities was conservative in that it did not over-use the resources. In some sense the simulated harvesting could be termed suboptimal – that is, the communities could have harvested more trees sustainably without adversely affecting the sustainability of the resource. Ostrom (1998) called this "better than rational" behaviour. In many laboratory experiments featuring the prisoner's dilemma, it has been observed that if players are told the number of rounds to be played there will be overkill in the final rounds, with heavy and unsustainable rates of harvesting. Yet in the Maharashtra studies the behaviour – at or below the maximum allowable harvesting – was consistent throughout the various

rounds of the game. The harvesting rules determined in advance by the group were followed, with no infractions.

The players in these games understood that overharvesting would eventually deplete the resource and preferred long-term benefits over quick gains, even though this meant sacrifices on their part. The studies also revealed the communities' extensive knowledge of growth potential and their willingness to follow appropriate management practices. They indicated that, given a proper platform for participatory decision-making, indigenous communities are likely to adopt norms of conservation, often also addressing issues of equity and making conscious efforts to promote moderate harvesting. The take-home message here is that even after many decades of a centralized forest management regime, the essence of cooperative, non-exploitative behaviour still exists in the indigenous communities that can be relied on and encouraged through decentralization policies.

CASE STUDY 2: COMMITMENT TO CONSERVATION IN THE FACE OF EXTREME CHALLENGES

Located in the central Indian dry forest belt in an area rich in biodiversity, the Tadoba Andhari Tiger Reserve is one of India's best-known tiger conservation areas. Like many national parks and wildlife sanctuaries in India, however, it is surrounded by communities of extremely poor people – mainly ethnic indigenous tribes, in this case largely from the Gond community – who are highly dependent on forests (Nagendra, Pareeth and Ghate, 2006). With the formation and expansion of the tiger reserve, many tribes faced severe restrictions on their traditional rights to access forest products and conduct livelihood activities inside the area (Ghate, 2003). Their settlements in the forest close to the tiger reserve has become both a blessing and a curse: while they continue to meet many of their needs from forests, such as timber, fuelwood, medicine, livestock grazing, honey and

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other non-wood forest products, they are also subject to crop and livestock losses from wildlife, as well as to direct attack by tigers. The communities are rarely compensated for such losses or attacks and, in cases where they are, it is usually insufficient. The communities also lack access to basic facilities due to their remote locations and the restrictions placed on their traditional activities in the protected area.

Despite these challenges, a recent study (Nagendra, Rocchini and Ghate, 2010) in six villages in the Tadoba Andhari Tiger Reserve indicated that a majority of people identified forest conservation as an important goal and were keen to be involved in forest protection and monitoring, reinforcing the communities' historical and symbiotic association with forests. For them, forests are an important common-pool resource; social norms for their sustainable management evolve naturally, given an opportunity. These norms strongly influence resource-use patterns and discourage overexploitation for short-term benefit, while also helping to minimize the negative impacts of wildlife conservation on local livelihoods.

CONTEMPORARY CHALLENGES AND THE POTENTIAL FOR REVIVAL
In highly productive forest areas with small human populations, the needs and interests of local stakeholders can often be met with few compromises on forest quality: past studies have indicated positive associations between local collective action and good forest condition (Lise, 2000). In such situations, the introduction of incentives for local participation, such as shares of the proceeds from wood and non-wood forest products and ecotourism, could be reasonably simple and sustainable, although it may face typical collective-action challenges (Vira, 1999).[3]

The involvement of local people and sustaining their interest in resource management is more difficult when the benefits are not high, immediate or widely distributed (Kerr, 2002). Given that most forests in India available for community management are degraded, they may often be insufficiently productive to inspire enthusiasm for management among local people. In general, users living at a subsistence level will have an incentive to conserve their resource base because they

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[3] "Collective action" describes a situation in which multiple individuals would all benefit from a certain action, but the action has an associated cost that makes it implausible that any one individual can or will undertake the action alone. In addition to the transaction costs, challenges include, for example, "free riding" and ensuring fairness and justice.

Women weave baskets in a women's self-help group in Tamil Nadu. Establishing women's self-help groups and promoting skills in the processing of, and value-adding to, forest products are key components of JFM in many Indian states

have limited alternative income options, but if the resource is degraded, such users may be unable to restore it to a level where it will provide good, sustainable livelihood opportunities. In such circumstances, there are good grounds for external interventions that assist poor users to overcome barriers to local investment in sustainable management.

Continued reform is needed

The Indian Government's approach to forest management began to evolve towards greater participation in the 1980s with programmes such as joint forest management (JFM). The Forest Rights Act, 2006, moved the process a step further, promising a significant transfer of rights to tribal groups despite some apprehensions. Concerns about the Act were expressed particularly by conservation groups, some of which took the issue to the courts because they were worried by the possible dilution of biodiversity protection and conservation efforts.

In some cases, practices such as JFM have helped restore local environments (Sreedharan and Matta, 2010). In many others, however, such practices have been unable to ensure sustainability due to a lack of involvement of local communities in decision-making; a lack of tenure and access rights, particularly given the long-term nature of forestry; and a heavy dependence on external agencies (Matta, 2006). Overall, an explicit linkage was lacking between the devolution of local responsibilities for forest conservation and the right to devise locally suitable, adaptive and flexible rules for forest management at a community level (Ostrom, 2005; Ostrom and Nagendra, 2006). Such a linkage requires the strong involvement of local people in planning and management processes, which, in turn, requires appropriate institutional arrangements and support.

Early investment is needed

It is in this context that the role of incentives and secure resource access rights are particularly important if local management traditions are to be revived and placed on a strong footing. Some indigenous institutions such as sacred forests function effectively to safeguard biodiversity through traditional rules, without any external inputs in terms of money or forest interventions (e.g. Nagendra and Gokhale, 2008). In many larger, contested or especially degraded forest patches, however, monetary investments may be required in initial years, not only to increase forest productivity but also to strengthen local institutional capacities (Ghate, Mehra and Nagendra, 2009).

People value and use forests for many purposes other than social and economic; the psychological benefits – such as an increased sense of satisfaction and reduced stress – are often also important (Sundar, 2000). Thus, incentives must go beyond the financial to include wider social issues such as tenure, community development, social recognition and institution-building. Effective and sustainable local natural resource management requires the presence of appropriate mechanisms to generate financial returns, legal empowerment to enforce institutional obligations, and accountability for allocated responsibilities. The effective engagement of women, including recognition of their needs and their participation in decision-making, is also critical. The ultimate objective should be to progress from the current emphasis on the participation of local communities in government programmes to the promotion of decentralized governance where

local people have greater power and ability to make informed decisions in managing their resources and institutions (Matta and Kerr, 2007).

MOVING FORWARD

Traditional management systems in India worked well for as long as communities held together and were not disrupted by external forces. Restoring such systems to meet wider needs for forest goods and services, however, requires the genuine and committed transfer of power, resources and responsibility from central authorities to lower levels of governance (Nagendra and Ostrom, 2012).

Effective and sustainable local resource management also entails active community participation, appropriate legal measures to enforce institutional obligations by communities, mechanisms to generate needed financial resources, and accountability to deliver the responsibilities entrusted

(Matta and Kerr, 2007). Thus, rather than providing project-based external assistance, decentralized governance should be the main approach to restoring local forms of natural resource management. Those to whom responsibilities are devolved should be allowed to set objectives themselves, rather than being expected to meet the objectives set by others.

There is also a need for various ministries and departments engaged in tribal areas to statutorily recognize local forest management institutions. In the absence of such affirmative action at the top policy level, it is unrealistic to expect local villagers to bring about fundamental changes in the way forests are governed or to ensure their sustainable management. More importantly, maintaining the *status quo* could lead to further environmental degradation and could further entrench rural poverty and staggering social and economic inequities. ◆

Villagers stand near a sacred grove in Maharashtra. Sacred groves are maintained by local communities and are generally associated with a presiding deity; they often act as reservoirs of rare flora and fauna, and hunting and logging are strictly prohibited in them

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