

Examining Institutional Change: Social Conflict in Nepal's Leasehold Forestry Programme

Harini Nagendra, Birendra Karna and Mukunda Karmacharya

Abstract: *Among developing countries, Nepal has been an enthusiastic leader in experimenting with participatory systems of forest governance. This article evaluates the state-initiated implementation of the leasehold forestry programme in Nepal, aimed at providing better livelihoods to the poorest sections of society by leasing patches of degraded forest land for a 40-year period. Using case studies in the middle hills, we studied the interaction between leasehold forestry users and forest dependent communities that were excluded from the programme. Our evaluation of local institutions and forest condition before and after implementation of the programme revealed that there is a high degree of social conflict between users and non-users, with an increase in forest degradation. Nevertheless, in some situations, user groups have developed innovative approaches to conflict resolution, leading to significant improvements in forest biodiversity and biomass levels. We conclude that it is not enough to simply change existing legislation and put a new institution in place. The degree to which such institutions can survive and succeed in achieving their objectives will depend crucially on how well they interface with existing institutions, and the manner in which this interface evolves over time in response to the needs and expectations of local communities.*

Keywords: leasehold forestry, biodiversity, forest management, land tenure, local institutions, policy change, Nepal

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INTRODUCTION

THERE IS INCREASING RECOGNITION of the significant role played by local communities in the management of natural resources (Schwartzman et al. 2000; Sundar 2000; Bray et al. 2003). The promotion of decentralisation as the new panacea for all ills that plague natural resource management can be traced to awareness of the numerous problems associated with state-centric institutions of natural resource management. Recognition of the disenfranchisement of already dispossessed communities has led to the promotion of new incentives aimed at poverty alleviation and community involvement. Since power still vests with the state in most situations, most such programmes tend to emanate from state initiatives (but see Bray et al. 2003).

Managing institutional change from the top downwards is not an easy task (Poffenberger and McGean 1996; Sundar 2000; Prasad and Kant 2003). To facilitate integration of new policies at the ground level, their interface with existing policies requires careful consideration. Little, if any, attention is however paid to this crucial factor. It is necessary to understand the conditions required for successful institutional change to manage future impacts on the environment. Social institutions are defined by complex sets of rules, and constrained by human actors, each with their set of pre-defined expectations (Ostrom 1990, 2000; Curran and Agardy 2002; Paciotti and Mulder 2004). When a new state policy is put in place, it does not make its way into a vacuum but is instead transplanted into a pre-existing social context of norms, customs and rules. In other words, when states create a new institution, which they usually do from the top downwards and without consultation with local communities, the success of this new institution will be determined by how well it integrates with (or faces opposition from) the myriad pre-existing institutions (Scoones 1999; Agrawal and Sivaramakrishnan 2000; Kellert et al. 2000).

Although forest policies can be changed on paper, the acceptance and enforcement of these changes depends on their achieving wide legitimacy at the ground level (Ostrom 1990; Klooster 2002). State-enforced institutions are relatively inflexible and unable, or unwilling, to adapt to changing social or biophysical conditions that require modifications to appropriate management practices (Berkes et al. 1998). Achieving piece-meal change in a desired direction is not easy, especially if this is towards increasing social justice and achieving equity, as there will be strong tensions with existing institutions that want to maintain *status quo*. Problems of exclusion (when certain interest groups are excluded from a valuable forest resource) become especially important in such a context (Lamont and Molnár 2002; Lobe and Berkes 2004). When there is a conflict of interest between various interest groups and the state is unable to enforce institutional change (as often happens), then the group which holds power will do its best to determine the direction of change in its favour (Acemoglu and Robinson 2000; Paciotti and Mulder 2004; Roland 2004).

Among developing countries, Nepal has proved an enthusiastic leader in experimenting with participatory systems of forest governance (Agrawal et al. 1999; Agrawal and Ostrom 2001). Major changes in Nepalese forest policy can be traced to the early 1970s. Since then, forest management policies in Nepal have gone through a variety of transformations, including the establishment of large protected

area networks, and the initiation of community forestry, leasehold forestry, and park buffer zone management programmes in the mid-1990s (Agrawal et al. 1999). With a majority of Nepal's population in rural areas, there is a high level of dependence on forests for fuel, fodder, and timber (Malla 2000; Varughese and Ostrom 2001). Given the critical role that forests play in Nepalese rural livelihoods, it is becoming increasingly necessary to evaluate the impact of these management approaches over time.

The Hills Leasehold Forestry and Forage Development Project (henceforth referred to as leasehold forestry) is an innovative programme that is currently being implemented with the aim of providing better livelihoods to the poorest sections of society. Under this project, small groups of the poorest families (defined as those that own less than 0.5 ha of land) are leased patches of degraded forest land for a 40-year period in order to provide them with a more assured supply of fodder, fuelwood, and other forest products. Started in 1993, this programme is currently in operation in 10 districts in Nepal, and being extended to cover 16 additional districts with His Majesty's Government of Nepal funding. By July 2000, approximately 1500 leasehold forest groups had been formed, including about 10,000 families and covering about 7,000 ha of forest land (Malla 2000). Examining the development of this innovative project through this analysis will provide significant insights on the utility of such targeted approaches for poverty alleviation, and their implementation in developing countries.

Department of Forestry officials tend to argue that leasehold forestry is an effective complement to community forestry, especially in areas where the programmes have been implemented together (e.g. see Malla 2000; Chapagain 2001; *Kathmandu Post* 2003). International funding agencies have also tended to publish glowing reports of this programme's dramatic success in improving people's lives and livelihoods (for instance see Sterk 1997; Anonymous 2002). Nevertheless, previous research has indicated that there are significant conflicts between leasehold users and community forestry user groups, with community forest users often reluctant to acknowledge the exclusive rights of leasehold users over patches of forest (Thoms et al. 2003; Karmacharya et al. 2003). In contrast to the comparatively greater amount of information on community forestry, very little is known about the impact of the leasehold forestry programme on socio-economic conditions and forest conservation in Nepal (Baral and Thapa 2003). How do community forestry and leasehold forestry users achieve consensus about sharing scarce forest resources, especially in the context where the leasehold users belong to disadvantaged sections of society? In Nepal (as with most developing countries) where the state is unable to guarantee effective enforcement, it is essential to monitor the impact of the leasehold forestry programme over time, and empirically evaluate its impact on forest conservation. This study attempts to do so through an examination of the development of three leasehold forestry projects in Nepal.

Study Area

The leasehold forestry programme was initially started in 4 districts, and subsequently extended to cover 10 districts (currently being extended to cover an additional 16 districts). Much of the area under leasehold forestry is situated in the middle hills of Nepal, which have supported local populations for centuries. The leasehold forestry project seeks to alleviate the poverty prevailing in rural

households through restoration of the ecological balance of degraded forests in the hills. The project was designed to target small or marginal farmers who, with little or no cultivated land, and livestock as their major source of independent sustenance, are forced to encroach upon and exploit public forest lands for their essential fodder, fuelwood and leaf litter requirements. The project focuses on the integration of forestry and horticulture/livestock development. Two eligibility criteria were used by the state to define the families included in this project: (a) ownership of less than 0.5 ha land, and (b) per capita income of Rs 3,035.

This research was conducted in three of the 4 districts where the programme was initiated: Makhwanpur, Kabrepalanchowk, and Sindhupalchowk. In all three sites, subsistence agriculture is the main livelihood, but almost all the households have to depend on off-farm activities outside the settlement to supplement their income. The leasehold forestry users are heavily dependent on livestock, including cattle, buffaloes, goats and poultry, as an additional source of food and income.

The first site (henceforth referred to as Baramchi) is located in the Baramchi Village Development Committee (VDC) of Sindhupalchowk district. It is relatively isolated, and can only be reached walking three to four hours uphill from the nearest market centre of Jalbire. There are 78 families in six settlements in the study area. An initial visit was conducted in May 1994, when the national forests were being surveyed in preparation for being handed over to the user groups (Table 1). A patch covering 14.6 ha in Eprepakha forest, was handed over in July 1994 to 17 households belonging to two separate user groups: Eprepakha Shreshtha and Eprepakha Lama. Each of the user groups has its own area of leasehold forest, managed on a collective basis by the member households. The users practise subsistence farming, and earn a substantial proportion of their annual income from livestock rearing. A second visit was conducted for field data collection in January 1998.

The second site, Charpipla, is located in the Sathighar Bhagawatisthan Village Development Committee (VDC) in Kabrepalanchowk district. The site is situated at a distance of 25 km from Dhulikhel, the nearest large city which is also the district headquarters of Kavrepalanchowk. The study area is a food-deficit one, with the period for which most of the households have sufficient food varying from 7 to 10 months of the year. In order to cope with this situation, almost all the households have to depend on off-farm activities outside the settlement. Seven leasehold forest user groups were formed in December 1994, and blocks of degraded forest land dominated by *Pinus roxburghii* and *Pinus patula* species were identified and leased to them in April 1995. An eighth leasehold group was constituted in June 1995, bringing the total area under leasehold forestry to 78.1 ha. An initial visit was made to the study area in June 1995, just after formation of the 8 leasehold forestry user groups. This was followed up by a re-visit to the same area in Jan-Feb 2000.

The third site, Chitrepani, is located in Churiyamai VDC of Makhawanpur district. It is accessible by all-weather roads to Hetauda, the nearest major town which is located 8 km away. There is one leasehold forest patch in this area, situated in Shikharpani, which is the only settlement in the site which experiences food insufficiency during the year. Shikharpani has 142 households with a total population of 1001. A 9-hectare patch of degraded *Shorea robusta* (*sal*) forest, formerly managed as a national forest, was brought under the Hills Leasehold Forestry and Forage

Development Project in April 1994. The leasehold forest user group consists of 9 households, eight of whom own less than 0.5 hectare of private land, and one who is landless. The study site was initially visited in March 1994 for conducting a baseline survey, just prior to formation of the leasehold forestry user group. A subsequent re-visit was conducted in March 2000.

Table 1
Description of study sites: in terms of location, forest size, number of leasehold forestry user groups and member families, and the dates of notification of the first study and the subsequent re-visit survey

Study site	Baramchi	Charpiple	Chitrepani
District	Sindhupalchowk	Kabrepalanchowk	Makhwanpur
Total forest size (ha)	14.6	78.1	9.0
Number of lease hold forestry groups	2	8	1
Number of member families	17	80	9
Date of user group notification	July 1994	April-June 1995	April 1994
Date of first visit	May 1994	June 1995	March 1994
Date of second visit	January 1998	January 1998	March 2000
Social conflicts	Between leasehold members and non-members	Between leasehold members and non-members	Within leasehold forestry group members
External support	Initial support from forest department for planting tree seedlings and grass seeds, but no support for maintenance	Provision of seedlings from the Forest Department	Provision of seedlings, grass seeds, technical assistance and financial support from the Forest Department, District Live-stock Services Office, and the Asian Development Bank
Enforcement of forest use rules	Rule infractions are not penalised, and exclusion of non-members is not effective	Effective enforcement of rules, and exclusion of non-members	Effective enforcement of rules, and exclusion of non-members
Interaction with community forestry user group members	Widespread conflict, with illegal harvest of forest products by community forestry groups	Initial conflict, resolved by providing access rights to adjacent community forestry member households	Initial lack of conflict, with leasehold forestry users provided access to community forests; subsequently, initial signs of conflict

METHODS

The data used for this study come from part of a larger set of studies in Nepal, conducted using common research protocols developed by the International Forestry Resources and Institutions (IFRI) research programme (Ostrom 1998; Varughese 2000; Varughese and Ostrom 2001). This is a multi-country, over-time research programme, which examines relationships among the physical, biological, and cultural worlds in a particular location and the *de facto* rules that are locally used to determine the access to and use of forest. The major objectives are to look into linkages and interrelationships between and among (a) institutional arrangements, (b) condition of the forest or other resource bases, (c) activities of human groups, (d) rules-in-use, and (e) impact over time on the resource base. Research forms were developed by an interdisciplinary team of scientists using a combination of forest mensuration techniques and social survey techniques (Ostrom 1998). Given the inherent difficulties involved with creating and collecting standardised data sets for monitoring forest conditions in developing countries (Nagendra 2002), a data set of this kind provides a valuable basis for analysis.

For each site in Nepal, an initial baseline visit was made between 1994-1995, prior to the implementation of the leasehold forestry programme. This was followed by a re-visit between 1998 and 2000, where similar data collection techniques were used to obtain information on institutional arrangements and forest condition a few years after the implementation of leasehold forestry. Given the high degree of altitudinal variation in Nepal, and the impact of altitude on vegetation, it is difficult to conduct a comparative analysis of vegetation across sites located in different environmental regimes. The availability of baseline data on forest condition before implementation of the leasehold forestry programme provides a unique and valuable opportunity to evaluate the impact of leasehold forestry on forest condition in Nepal across multiple sites.

A four-to-eight week period of investigation in each site was used to conduct interviews with local residents, especially with elders in the village, to document oral accounts of forest history. Data were collected using multiple survey instruments. The Site Overview Form described the site overview map, local wage rates, local units of measurement, exchanges rates, recent policy changes, and information on the mode and extent of interview. The Forest Form included information on forest size, ownership, internal differentiation, products harvested, uses of products, master species lists, changes in forest area, appraisal of forest condition. The Settlement Form contained basic socio-demographic information, distance from and to markets and administrative centres, and any additional relevant geographic information about the settlement.

For each user group, information was collected at a further level of detail. The User Group Form, collected at the level of each user group, described the size, socio-economic status, and attributes of specific forest user groups. The Forest Association Form, collected for each leasehold forest, contained institutional information about the forest association including details of the association's

activities, rules, structure, membership, and record keeping. The Forest-User Group Relationship Form, relating to a leasehold user group and its forest, described the products harvested by user groups from specific forests and their uses. The Forest Products Form, which also relates to each leasehold forestry group and its forest patch, contained details on the three most important forest products (as defined by the user group), temporary harvesting patterns, alternative sources and substitutes, harvesting tools and techniques, and harvesting rules. The Non-Harvesting Organisation Form, recorded for each leasehold forest, contained information about organisations that make rules regarding a forest (such as the forest department) but do not use the forest itself, including structure, personnel, resource mobilisation, and record keeping. Finally, the Organisational Inventory and Inter-organisational Arrangements Form, also recorded for each leasehold forest, contained information about all organisations (harvesting or not) that relate to a forest, including harvesting and governance activities.

We drew on this extensive socio-institutional data for our research, and supplemented this primary information collected from the field with secondary sources such as project progress reports, household surveys, and other reports compiled by the Hills Leasehold Forestry and Forage Development Project. Along a second dimension of evaluating forest quality, analysis included assessment of forest condition through the use of forest plots, evaluation by a professional forester, and interviews with the local communities that use these forests, to establish their perceptions of forest change.

Biophysical information on forest condition was also collected for all leasehold forests. Within individual forests, quadrats were randomly placed for forest mensuration. Nested circular plots were laid, with the outermost plot being 10 metres in radius. Within this, the species, diameter at breast height (dbh), and height were recorded for all trees with dbh greater than 10 cm. A nested sub-plot of 3 metres radius was used to record species, dbh, and height for all saplings with dbh less than 10 cm, but greater than 1 cm. A further nested sub-plot of 1 metre radius was used to record the percentage of ground area covered by each herb-layer species. As the species found in the herb layer are highly season-dependent (Peet et al. 1999), and sampling was done during different seasons of the year, only tree and sapling data were used in this analysis for comparative purposes.

RESULTS

Baramchi

Use Rights and Conflict Resolution

There are 78 households which are leasehold forestry user group members in Baramchi, drawn from six settlements. The area of a leasehold forest ranges from 2.5 to 9 hectares, and each user group is composed of 5 to 10 member households. The groups have not developed an effective internal structure to manage the area, and

there is lack of adequate monitoring, sanctioning, and conflict resolution. Our respondents indicated that there are widespread conflicts between group members and non-members over the utilisation of forest products from the leasehold sites. Illegal harvest of forest products by non-members is a major problem. The leasehold operational plans are well written but the group members' efforts to implement them are very weak. The leasehold groups appear to have been constituted to maintain tenurial rights over the land rather than to manage them.

This has naturally led to much insecurity and frustration among the user group members. The problem is aggravated by the fact that most of the members in one group are not aware of the contents of the leasehold forestry user group operational plan, or the rules and sanctions described in the plan. Substantial social conflict between the user group members and non-members has culminated in the destruction of pipelines conducting drinking water between Wards 3 and 4. Added to this, although the user group members have attempted to plant some seedlings and grasses, the technical assistance and extension support promised from governmental agencies is lacking. Although a forest range office is located in Jalbire, the ranger explicitly mentioned that his responsibility was to implement community forestry and not the leasehold forestry programme. A forest ranger is supposed to have been designated to provide extension support and monitor the implementation of the leasehold forestry programme in the area, but the users and the local villagers state that no forestry officials have visited the area for an entire year preceding our second visit.

Forest Condition

The users have planted trees and forage seeds to increase the productivity of the area. However, except for one leasehold group, the production of forage grass from these areas is negligible due to widespread grazing in the forest by non-members. As Table 2 indicates, the forest was in an extremely degraded condition in 1994. Over 3000 indigenous and exotic seedlings were planted in the Eprepakha leasehold forest. However, by the time of the second field visit in 1998, the only planted species that appear to have survived successfully are *Pinus roxburghii* (Salla) and *Choerospondias axillaris* (Lapsi).

Exotic forage grass seeds were planted, and gave very good production of grass, which is very useful to supplement the chronic shortage of livestock feed in this area. However, a large group of non-members who reside in the nearby wards harvested most of the ground grass. The user group members were unable to enforce their rights over their forest due to their being in a minority. Livestock owned by non-members were also grazed in the leasehold forests, and planted seedlings were taken away by non-members. A one-tailed Mann Whitney U test of differences in tree and sapling vegetation over time indicated that there is no significant difference in tree species richness, Shannon diversity, or tree density per plot. There is also no significant difference in tree diameter or tree heights over time. Nevertheless, there appears to be some natural regeneration in the forest as a

result of the decrease in grazing and harvest of firewood. As a consequence, sapling richness and Shannon diversity as well sapling density have significantly increased between 1994 and 1998. Sapling diameter was significantly lower in 1998 as compared to 1994, possibly due to the increase in regeneration of young, slender sapling individuals.

Table 2
Forest composition in the Baramchi site

	1994	1998	Mann Whitney test of differences over time
Number of plots	18	20	—
Mean tree species richness per plot	0.06	0.25	1994 < 1998
Mean tree Shannon diversity per plot	0.00	0.00	No difference
Mean tree density per plot	0.06	0.35	1994 < 1998
Mean tree diameter per plot (cm)	9.00	7.00	1994 > 1998
Mean tree height per plot (m)	12.00	13.86	1994 < 1998
Mean sapling species richness per plot	0.83	2.30	1994 < 1998 *
Mean sapling Shannon diversity per plot	0.11	0.70	1994 < 1998 *
Mean sapling density per plot	0.94	4.75	1994 < 1998 *
Mean sapling diameter per plot (cm)	2.68	1.31	1994 > 1998 *
Mean sapling height per plot (m)	3.46	3.73	1994 > 1998

Notes: For the Baramchi site, differences between forest condition between the first and second visit in terms of tree and sapling species richness, species diversity, density, dbh, and height. The last column describes results of one-tailed Mann-Whitney U-test of the significance of differences in forest condition between the two time periods (* significant at $p < 0.05$).

Charpiple

Use Rights and Conflict Resolution

In 1995, there were a total of 70 households distributed within 5 settlements in the study site. Of these, 49 households were leasehold forestry members, organised into 8 leasehold forestry user groups, with each group managing a separate patch of forest. However, residents of two adjacent settlements that had been traditionally using the same forest were excluded from the programme since they were located in a neighbouring VDC. This exacerbated the conflict between user group members and other non-member families, who refused to recognise the rights of the user group members and disrupted the functioning of the programme by grazing their livestock in the leasehold forest, harvesting products from this forest, and uprooting seedlings. After four years of conflict, and much discussion, in 1999 these two settlements were incorporated in the programme, taking the total number of households to 90, distributed amongst 7 settlements. In addition, the programme

was expanded to include all households who wished to get involved, irrespective of land-holding size. Thus 80 households (including those owning land greater than 0.5 ha, and above the leasehold membership criteria cut-off) became members of the leasehold forestry user groups, an unusually high proportion of participants given that the focus of the leasehold forestry programme is on participation of selected poor families.

In March 1999, the 11 user groups also organised themselves to form a federation, which they term as the “Inter-User Group”. This group of 11 members comprises the chairpersons of the user groups. The need for such a federation was felt as there were increasing conflicts between individual user groups, leading to a situation where there was a lack of responsible governance structure for enforcement of the rules regarding protection and management of the forests. None of the user groups had been able to approve rules against violations of group norms in the meetings held. Consequently, these groups had not been able to effectively impose the rules upon violators.

The Inter-User Group has come up with certain rules-in-use regarding imposition of fines for grazing of livestock and violations of use rights for harvesting of forest products from the leasehold forests. With the introduction of the rules-in-use, only user group members have access to the forests, whereas previously even non-members had been granted de facto use rights to forest products. Since then, except for one instance of grazing livestock that occurred last year, no other violation of rules has been reported yet. In this incident, the violator was penalised for breaking the rule. This is the first case of enforcement in the history of leasehold forestry in the site. With the establishment of the Inter-User Group, the users feel that the forest condition as well as the cohesiveness and effectiveness of the user groups has improved.

Forest Condition

The forest is now strictly protected with a total ban on grazing and burning. Following this, the survival rate of planted seedlings as well as grass production have increased dramatically. Our respondents indicated that their economic status had improved since the establishment of the user group, through the planting and sale of grass and some forest products. The planting of seedlings has been conducted intermittently over the past five years. Initially, the users maintained their own nursery of seedlings, but this proved unsustainable due to lack of water for irrigation. Since then, the District Forest Office has been providing the user group with seedlings, although our respondents indicated that the seedlings were often provided much after the rains, leading to a failure in seedling establishment in many instances. The forest is managed by weeding, cleaning, pruning, and thinning every year. The pruned twigs are used as firewood.

The main forest products harvested from the leasehold forest in the site include ground fodder, fuelwood, leaf litter (dried fallen leaves) and foliage. Leaf litter and foliage are used as bedding material for livestock, and eventually converted into farmyard manure. The user groups have not yet harvested trees for timber, as they are not yet ready for harvest. Usually, the user groups harvest all these products

collectively, and share the product among them in equal proportion. The user group members indicate that the quantity of products being harvested over time is on the increase.

As can be seen from Table 3, there has been a significant increase in tree species richness, diversity, and density, as well as sapling richness, diversity, density, and diameter over time. Interestingly however, tree diameter and height have actually significantly *decreased* over time. This is in the main due to an increase in number of new saplings and young trees, which have thinner stems and are of lower height. The increase in species richness of trees, saplings, shrubs, herbs and grasses as compared to the previous study indicates that the forest community that existed in the area was highly disturbed, and through protection, has now been substantially improved through the establishment of new plant species such as *Schima wallichii* and *Swida oblonga*, as well as selective plantation of useful species such as *Mangifera indica* (mango).

Table 3
Forest composition in the Charpile site

	1995	1998	Mann Whitney test of differences over time
Number of plots	27	120	—
Mean tree species richness per plot	0.44	1.13	1994 < 1998 *
Mean tree Shannon diversity per plot	0.08	0.27	1994 < 1998 *
Mean tree density per plot	1.15	2.23	1994 < 1998 *
Mean tree diameter per plot (cm)	7.77	6.37	1994 > 1998 *
Mean tree height per plot (m)	18.39	13.68	1994 > 1998 *
Mean sapling species richness per plot	2.33	3.68	1994 < 1998 *
Mean sapling Shannon diversity per plot	0.63	1.07	1994 < 1998 *
Mean sapling density per plot	6.74	8.65	1994 < 1998 *
Mean sapling diameter per plot (cm)	1.51	1.70	1994 < 1998 *
Mean sapling height per plot (m)	4.65	4.10	1994 < 1998

Notes: For the Charpile site, differences between forest condition between the first and second visit in terms of tree and sapling species richness, species diversity, density, dbh and height. The last column describes results of one-tailed Mann-Whitney U-tests of the significance of differences in forest condition between the two time periods (* significant at $p < 0.05$).

Chitrepani

Use Rights and Conflict Resolution

There is a single leasehold forestry user group in Chitrepani, which was formed in 1994. There are nine member households in the user group, of which eight households own less than 0.5 ha of land, and one is landless. This user group has adopted an altogether different mode of management, wherein the forest has been divided into

nine blocks, which are allotted to individual member households. Each household is responsible for the protection and management of the block allocated to it. Thus, there is no effective collective management of the forest. Since the initial distribution of vegetation in the forest patch was not uniform, with some blocks being richer in vegetation, members were randomly allotted these forest patches to avoid preferential allocation. With this type of institutional arrangement, some members whose blocks are richer in certain forest products have preferentially benefited from the project, while others have experienced dissatisfaction due to disparity in the distribution of benefits. There are some members of the leasehold forest who have protected the vegetation in their respective blocks and planted tree seedlings supplied by the District Forest Office, while other users have not done so.

In addition to the 9 ha patch of leasehold forest, there is a community forest and a national forest at this site. The leasehold forestry users have been provided membership in the community forest, although the converse is not true, i.e., community forest users are not allowed to harvest products from the leasehold forest. Although there was no conflict between users of the community forest and the leasehold forestry user group members, during the time of our second survey some community forest members were beginning to question the special provisions made for leasehold forestry user group members, and had indicated that they wanted reciprocal membership in the leasehold forest association.

Forest Condition

Since the establishment of the leasehold forestry user group in 1994, the District Forest Office, District Livestock Services Office, and the Asian Development Bank have been providing saplings, forage seeds, technical assistance, and loans to the members for afforestation and livestock farming activities. The user group members practise forest management activities including plantation, weeding/cleaning, and pruning. Livestock grazing and burning have been completely controlled, as is evident from the establishment of planted seedlings and natural regeneration of *sal* (*Shorea robusta*).

The forest is highly degraded, with only two tree species present. *Shorea robusta* is the dominant species, with a single individual tree of *Cleistocalyx operculatus*. The sapling layer shows much greater diversity, with ten species including *Dalbergia sissoo*, *Eucalyptus camaldulensis*, and *Leucaena leucocephala*, which were introduced into the forest by the user group members. As is evident from Table 4, there has been a significant increase in tree and sapling species richness, sapling Shannon diversity, tree and sapling density, tree and sapling diameter, and sapling height over time. The species richness of saplings has doubled during the past five years, along with an increase in sapling density.

The major products harvested from the leasehold include ground fodder (grass), fuel- wood, leaf litter and grass seeds. It is interesting to note that while some members have harvested only ground fodder, others have received only fuelwood or leaf litter. This is mainly because different blocks of leasehold forest

are rich in different forest products. Enrichment planting has been conducted in some blocks, introducing exotic and indigenous timber, fodder and fruit-giving seedlings, and exotic grass species. Plant materials obtained from weeding and pruning have been used as firewood and leaf litter. Seeds of exotic grass species like *Melinis minutiflora* and *Stylosanthes sp.* were sown twice or thrice in the first 2 to 3 years. In the northeast portion of the forest, where tree cover is sparse, these grasses have established successfully. These users have benefited from the sale of grass, seedlings, and goats raised on the fodder provided by their leasehold plots, while other users have not benefited at all. This discrepancy in benefit sharing has led to the development of two groups of users with different opinions about how to manage the forest. The users who have not benefited from the project are of the opinion that the forest should be managed collectively, and the responsibilities as well as benefits shared equally. In contrast, the users who have benefited from the project would naturally like to maintain *status quo*.

Table 4
Forest composition in the Chitrepani site

	1994	2000	Mann Whitney test of differences over time
Number of plots	62	18	—
Mean tree species richness per plot	0.11	0.56	1994 < 1998 *
Mean tree Shannon diversity per plot	0.00	0.00	No difference
Mean tree density per plot	0.15	0.72	1994 < 1998 *
Mean tree diameter per plot (cm)	15.33	18.34	1994 < 1998 *
Mean tree height per plot (m)	60.52	47.16	1994 > 1998
Mean sapling species richness per plot	0.45	2.22	1994 < 1998 *
Mean sapling Shannon diversity per plot	0.11	0.61	1994 < 1998 *
Mean sapling density per plot	2.29	6.17	1994 < 1998 *
Mean sapling diameter per plot (cm)	0.91	2.18	1994 < 1998 *
Mean sapling height per plot (m)	2.82	4.98	1994 < 1998 *

Notes: For the Chitrepani site, differences between forest condition between the first and second visit in terms of tree and sapling species richness, species diversity, density, dbh, and height. The last column describes results of one-tailed Mann-Whitney U-test of the significance of differences in forest condition between the two time periods (* significant at $p < 0.05$).

DISCUSSION

In a country like Nepal, where a majority of the population is highly dependent on forests for their survival and sustenance, providing access to quality forests is essential to counter the problems faced by the rural poor. While multiple studies have reported that community forestry has been successful in improving socio-

economic and forest conditions, there has also been recognition of the fact that the poorest and most disadvantaged households do not always benefit from such programmes (Agrawal et al. 1999; Kellert et al. 2000). The poorest and most marginalised households are sometimes not identified as users, or even if identified, do not have a voice in community forums, leading to their exclusion from active participation in management decisions as well as from benefits (Baral and Thapa 2003). In response to concerns by senior government officials and by the international donor community, a special amendment was made to the Forest regulation in 1989 for leasing degraded forests to poorer families (Baral and Thapa 2003; Karmacharya et al. 2003). At this time, a decade after the implementation of the first leasehold forestry projects, it is essential to conduct a careful empirical assessment of the impact that this programme has had on local institutions, people, and forests.

Although the forest management rules may themselves be well crafted, and the idea of providing separately for disadvantaged families seems well intentioned, this programme appears to have been implemented by the state without extensive consultation with local communities, and appears difficult to enforce in the absence of local commitment and support. In our study areas, this is clearly demonstrated by the fact that the leasehold forest users' organisations faced extensive opposition from excluded households, who did not want to give up their customary use-rights over the forest. In a context where all local users are highly dependent on the forest, excluding some households selectively without providing them with effective alternatives, and without ensuring that the member households are provided with effective mechanisms to enforce this exclusion, leads to a de facto open access situation that is ineffective for conservation.

Although forested land officially belongs to the state, people consider the forests to be a common resource pool and claim customary rights to the use of much of these resources. Rich and poor households are not geographically segregated, but located together, and dependent on the same resource. Thus, households belonging to adjacent community forest user groups resent exclusion from the leasehold forests, and often actively hinder the effectiveness of this programme by trespassing onto leasehold lands and removing timber and other products (Baral and Thapa 2003; Karmacharya et al. 2003). The leasehold user groups, being economically and socially disadvantaged, as well as smaller in number, lack the capacity to enforce restrictions on use of their forests, and were often powerless when faced with situations of social conflict (Karmacharya et al. 2003). Often, the only way out has been for them to include other adjacent non-member households in the management of these forests and provide them with a share of the benefits (Sterk 1997), which defeats the very purpose of the programme. This is only exacerbated by the fact that, while leasehold forestry receives priority over other kinds of leases to individuals, industries, or corporations, community forestry is accorded the highest priority both by forestry policy and by forestry law (Baral and Thapa 2003). Thus, only those areas that have not been claimed by community forestry user groups (consequently, usually the most degraded lands) are available for leasehold forestry.

Although leasehold forestry user groups are supposed to be constituted in a particular manner, with only “poor” member households as defined according to the criteria of annual income and landholding size, we found three different approaches to forest management in place in our three case studies. In Baramchi, which is the only site which has followed the system associated with leasehold forestry, there is a lot of social conflict with non-members refusing to recognise the rights of leasehold forestry members. This is the site with least regeneration and the only site with no significant improvement in vegetation condition and quality. In Charpipe, there was a lot of initial conflict but the users have sorted this problem out by expanding the programme and including anyone who wants to become a member, irrespective of the technical definition of leasehold forestry member households. This finally led to a decrease in conflict, and the users are now able to protect their forest—this forest showing a considerable amount of improvement in vegetation condition (apart from what appears to be the initial harvest of a few large-standing high-value trees). In the third site, Chitrepani, a *de jure* group-managed leasehold forestry user group has been converted into *de facto* private management. Although the community forest users nearby have not protested so far about the loss of their rights to use this forest, possibly because this patch is rather small and only covers 9 hectares, our surveys indicate that they are beginning to question this. There is however quite some conflict *within* the user group, with some users gaining more because their blocks happened to be in areas where grass has regenerated, while others who were allotted blocks in poorer initial condition have not benefited.

Thus, we find that users have dealt with this problem in innovative ways. The management and protection of the forest was more effective when the excluded users were also involved in the management, and when the community as a whole crafted the institutions by themselves, relevant to their requirements, rather than working with a policy that was imposed from the top by the state. Thus, the most effective management of forests was observed in Charpipe, where all resident households were included in the leasehold forestry membership, irrespective of landholding size. Similar arrangements have been reported by Sterk (1997) and Baral and Thapa (2003), where leasehold user groups deal with conflict by including adjacent community forestry users in the leasehold groups. These are *de facto* arrangements, not officially recognised by the Forest Department, but often receiving tacit approval by the forest ranger, who sees this as a means to manage social conflict (Baral and Thapa 2003). This however does not result in the stated objectives of the leasehold programme, since all households now receive the benefits of the agroforestry activities in the leasehold forest, and the selected poor households, now in the minority, access only a limited portion of the benefits that accrue. This is still, nevertheless, a better situation than in the Baramchi and Chitrepani forests, where there is a sense of growing social conflict between members and non-members, and indeed between user group members themselves, about the perceived unfairness of partitioning of benefits from the programme.

The Baramchi user groups have come up with an alternate, innovative way of managing conflict. In addition to the two leasehold forestry groups surveyed in this study, there are several other groups located in the same region. These groups

have formed a 11-member 'Inter-User Group' in March 1999, comprised of the chairpersons of all the leasehold forest user groups. The members of the Inter-User Group have developed commonly accepted approaches to monitoring and enforcement of rules, and have selected one among them to serve as their chairperson. With the establishment of this Inter-User Group, the forest users feel that the condition of the forest as well as the functioning of the leasehold user groups has improved. Prior to the formation of this higher-level committee, none of the leasehold groups were able to effectively impose sanctions upon violators. Since the formation of this committee, only one instance of rule infraction has been reported, and this was effectively punished. This demonstrates the capacity of even the most powerless and disadvantaged households to organise and protect their forests, if they are able to federate at larger scales as has been the case for community forestry with the Federation of Community Forestry Users in Nepal (FECOFUN, Shrestha and Britt 1997).

There are a number of agencies involved with the project. The programme is coordinated by the Hills Leasehold Forestry and Forage Development Project, Kathmandu, and financed by the International Fund for Agriculture Development. The Netherlands government provides technical assistance through the Food and Agriculture Organisation. The project is implemented jointly by the Department of Forest, the Department of Livestock Services, the Agricultural Development Bank, and the Nepal Agricultural Research Council. The leasing of public land is made through the respective District Forest Offices. Various non-governmental organisations help in the formation of leasehold groups. The district offices of the Livestock Services Department provide livestock improvement and animal treatment services, and the Agriculture Development Bank provides loans to these households to purchase livestock and develop the leased forestland. Similarly, the Nepal Agricultural Research Council is entrusted with conducting action-oriented applied research on forage crops and grassland improvement.

We find that, in the absence of strong local institutions, the extent of technical assistance provided by this almost bewildering array of supporting agencies plays a crucial role in determining forest condition. Thus, although there is practically no collective action for forest management in Chitrepani, the extensive assistance received from outside agencies has clearly played a major role in the improvement of forest condition. In contrast, in Baramchi, supporting agencies have been almost totally unhelpful, further worsening the helplessness of the community to combat forest degradation. This clearly shows how dependent the entire project is on outside support, creating conditions that are unfavourable for the survival of effective local institutions (Ostrom 2000).

Another factor that underlines the difference between community forestry and leasehold forestry is the difference in the time horizon of the two programmes. Under leasehold forestry, forests are leased to the user group for a forty-year time period (which can be later extended by another forty years). While only a decade has passed since the formation of the first leasehold forestry user groups and it is still too early to tell, this can potentially impact the time horizon of these families and thus affect the degree of protection they provide to the forests under their control. Further, as pointed out by Baral and Thapa (2003), this assumes a static

vision of poverty. Richer households that are currently outside the provision of the programme may (and sometimes do) become poorer over time, and similarly, poorer households which benefit from the programme over the next couple of decades may become among the richer in the region. Continuing to exclude households several decades from now simply because of their previous economic status is shortsighted, and can generate conflicts in the future.

The Nepalese forest department and international aid agencies have often stated that the leasehold forestry programme has been very successful in terms of poverty alleviation and in arresting degradation (Sterk 1997; Malla 2000; Chapagain 2001; Anonymous 2002; *Kathmandu Post* 2003). The programme is now in the process of expansion to cover 16 districts. However, in contrast to the extensive research on community forestry programmes in Nepal, there is limited research examining the impact of leasehold forestry on social conditions (but see Baral and Thapa 2003; Karmacharya et al. 2003; and Thoms et al. 2003), and almost no research that examines the impact of leasehold forestry on forest conditions. This paper represents a valuable first step in this direction. We can generate findings that are relevant at a larger scale by a) combining biophysical and institutional information to get a comprehensive picture of the impact of leasehold forestry policy changes; and b) conducting such research on multiple cases using a standardised methodology applied across multiple time points. We demonstrate the significant social conflict involved in implementation of the leasehold forestry programme, and the consequent negative impacts on the forest. At the next level, it will be crucial to compare the impact of community forestry and leasehold forestry in terms of their impact on equity, economic status, livestock holdings, market interactions, and other socio-economic parameters that enable us to evaluate the impact of these programmes on their other stated objective, of providing secure, improved livelihoods for the poorest and most disadvantaged households.

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