

Local attitudes toward community-based conservation policy and programmes in Nepal: a case study in the Makalu-Barun Conservation Area

JAI N. MEHTA* AND STEPHEN R. KELLERT

School of Forestry and Environmental Studies, Yale University, 205 Prospect St, New Haven, Connecticut 06511, USA

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Summary

Community-based conservation (CBC) has been projected as the most practical approach to stem biodiversity loss in developing countries. Since CBC is 'people-centred' and experience with it is relatively new, it is important to know the views of local communities regarding implemented policies and programmes. This paper examines the attitudes of local communities toward policy and programmes implemented by a project under the CBC approach in the Makalu-Barun National Park and Conservation Area of Nepal, based on a 1996 survey of 400 people living in it.

Overall, respondents did not have a particularly favourable perception of the community development programmes implemented. Strong support existed for ecotourism development in the Conservation Area. Respondents overwhelmingly endorsed community forestry. Wildlife protection remained a low priority amongst a significant majority of respondents. Some demographic and socio-economic factors exerted important influences on the attitudes of respondents. This study suggests that the project should continue addressing local development needs, encourage women's participation in community forestry, work toward dispute settlement of community forest-user groups, and allow hunting of pest wild animals, if it wants to win the support of local communities for long-term biodiversity conservation goals.

Keywords: community-based conservation, community forestry, ecotourism, Nepal, policies, wildlife conservation

Introduction

Several countries have passed conservation laws, established institutions and created protected areas to address the problem of biodiversity loss. Until the 1970s, most conservation laws and designations of protected areas as national parks and wildlife sanctuaries in developing countries followed the 'preservation-oriented' approach, which advocated centralized-regulatory control and the exclusion of local people and

their subsistence forest-based activities in order to protect biodiversity (Marks 1984; Machlis & Tichnell 1985; Colchester 1996). The creation of parks and sanctuaries has indeed helped save some endangered wildlife from extinction (Harmon 1987; McNeely 1989; Heinen & Yonzon 1994). It has, however, often alienated subsistence-level, agriculture-based local people as their access to park resources, which they had traditionally depended on to meet basic needs, has been either denied or restricted (Hough 1988; Sharma 1990; Ghimire & Pimbert 1997).

This situation is further compounded by the fact that local people frequently face wildlife depredation without due compensation, and usually cannot legally kill many wild animals which cause damage, because of conservation rules enacted by their governments (Mishra 1984; Saberwal *et al.* 1994). Park officials, on the other hand, often face the wrath of local people in the form of encroachment, poaching, and wildlife habitat alteration caused by agricultural expansion and excessive collection of forest products (Thacher 1984; Hough & Sherpa 1989). All these factors have led to park/people conflicts which undermine long-term biodiversity conservation efforts.

It is clear that developing countries have neither the technical nor financial resources to rely solely on a model of centralized-regulatory control to protect biodiversity from increasing human populations and concomitant resource needs of peoples living in and around protected areas (Wells & Brandon 1992; Keiter 1995). Furthermore, there has been increasing recognition that local communities must be actively involved, and their needs and aspirations considered, if biodiversity is to be conserved (Kellert 1985; Fletcher 1990; West 1991; Gadgil 1992; McNeely 1993; Lewis 1996). The 1974 UNESCO Man and Biosphere Programme (Batisse 1986), the 1980 World Conservation Strategy (IUCN 1980), the IIIrd (1982) and IVth (1992) World National Parks Congresses (McNeely 1993), the 1985 Wildlands and Human Needs programme of the World Wide Fund for Nature (Wells & Brandon 1992), the 1987 World Commission on Environmental Development (WCED 1987), and the emergence of 'ecosystem-based management' (Grumbine 1994) all emphasize the importance of integrating human dimensions into biodiversity conservation policies and programmes.

These trends have encouraged the development of a new conservation paradigm of 'community-based conservation'

* Correspondence: Mr Jai N. Mehta Fax: +1 203 432 3817 e-mail: jai.mehta@yale.edu

(CBC), emphasizing management of biodiversity by, for, and with local communities (Gibbs & Bromely 1990; Rao & Geisler 1990; Western *et al.* 1994; Gibson & Marks 1995). All policies and programmes implemented under the CBC paradigm share a key assumption that biodiversity conservation will succeed only if local communities receive sufficient benefits, participate in management, and, therefore, have a stake in conserving the resource (Gibson & Marks 1995). Accordingly, implementing organizations are encouraged to deliver community development programmes, promote income generating activities, and empower local communities so they have greater leverage in decision-making and the management of local resources. It follows that the CBC paradigm considers 'conservation' and 'development' to be compatible.

The Nepalese case

These trends are illustrated by the biodiversity conservation policy in Nepal. In recent years, Nepal has been shifting from a centralized, 'preservation-oriented' approach to that of a decentralized, 'people-oriented', CBC paradigm. Nepal initially adopted a centralized-regulatory control model to protect biodiversity as reflected in its first National Parks and Wildlife Conservation Act in 1973. The Act created and empowered the Department of National Parks and Wildlife Conservation (DNPWC) to establish and manage national parks and wildlife reserves (HMG 1973). Local people were denied their customary, usufruct rights to exploit natural resources in these protected areas. Moreover, the military was deployed in parks and reserves for law enforcement purposes. This management approach fostered park-people conflicts, ironically undermining long-term biodiversity conservation goals (Mishra 1984; Sharma 1990; Heinen 1993).

In 1979, the government legalized the removal of natural produce from parks and reserves (HMG 1979) to ameliorate park-people conflicts. The creation of Annapurna Conservation Area (ACA) in 1986 and its relative success especially influenced policymakers in adopting a CBC management approach, and this has been reflected by recent legislative and regulatory changes. For the first time in Nepal, the management of a protected area (i.e. ACA) was handed over to a national, non-governmental organization (NGO). The underlying concept of ACA was different from the traditional park-reserve model in that, instead of deploying the military to enforce protection, the active involvement and cooperation of local communities, as well as accommodation of local peoples' needs, were sought to achieve long-term biodiversity conservation goals (Sherpa *et al.* 1986).

In 1989, the government amended the Conservation Act to provide a legal basis for establishing conservation areas. Under the amended statute, 'Conservation Areas' are defined as 'areas to be managed according to the integrated plan for the conservation of the natural environment and the balanced

use of natural resources' (HMG 1989). In 1991, Makalu-Barun National Park and Conservation Area (MBNPCA), the focus of this paper, was created drawing on lessons from the Annapurna model. The MBNPCA is managed by the Makalu-Barun Conservation Project (hereafter 'the project'), a joint undertaking of the DNPWC and The Mountain Institute (an international, non-governmental organization based in the USA). The project represents a new institutional arrangement, drawing on the financial and technical resources of a foreign NGO working directly with a government agency.

The project has formulated a number of policies and implemented programmes using a CBC approach. A major policy objective is assisting community-initiated development (especially infrastructural improvements such as trail improvement, drinking water, and small-scale irrigation) with tangible benefits intended to generate local support for long-term biodiversity conservation goals (Shrestha *et al.* 1990, p. 42). Another objective is developing local institutional capacity by offering training and educational opportunities for local people intended to help sustain livelihoods in ways more compatible with biodiversity protection (DNPWC/TMI 1995, p. 22).

Ecotourism development represents yet another major policy of the project. Ecotourism, which is defined as 'responsible travel to natural areas which conserves the environment and improves the welfare of local people' (Lindberg & Hawkins 1993, p. 8), is viewed as an ecologically, economically and culturally sustainable alternative to traditional natural resource extraction (Whelan 1991). Given its philosophy of 'conservation for development', the project promotes ecotourism as a way of expanding off-farm employment opportunities for local people while at the same time minimizing negative environmental impact (DNPWC/TMI 1995, p. 18).

Another key policy objective of the project is to develop local user group institutions with authority and responsibility for jointly managing community forests and pastures (Shrestha *et al.* 1990, p. 43). Local Community Forest User Group Committees (CFUGCs) have been created with legal rights to use designated forested areas in accordance with an operation plan prepared by the committees following standard guidelines provided by the project. The guidelines seek to ensure that local people extract forest products on a sustainable basis. Inevitably, some restrictions of the operation plan regulate user behaviour.

The project's wildlife policy involves issuing hunting licenses for selected species in community forests as well as allowing local farmers to hunt and trap pest animals within the confines of farms and using approved traditional methods (Sherpa *et al.* 1990, p. 53). The project's philosophy is to manage wildlife rather than preserve it. However, the hunting and trapping of rare and endangered wild animals is strictly prohibited in the MBNPCA, except in extreme cases of threat to human life. There is also a provision for compensating farmers for crop and livestock

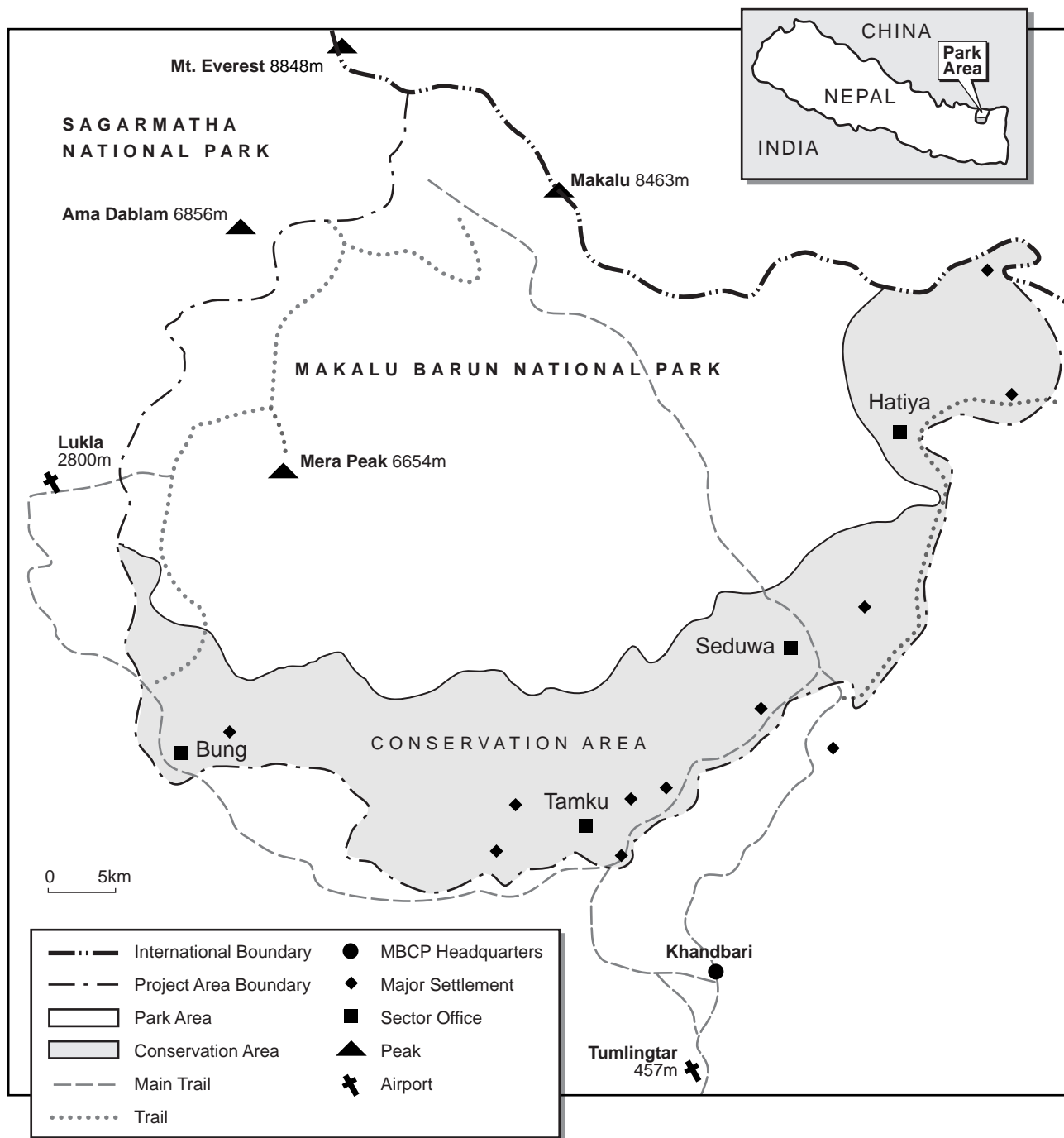


Figure 1 Geographical location of Makalu-Barun National Park and Conservation Area, Nepal.

depreation caused by endangered species (Sherpa *et al.* 1990, p. 53).

Objectives of the present study

Because CBC can be considered a ‘people-centred’ approach to biodiversity conservation, it is important to examine the attitudes of local communities toward the policies and pro-

grammes of implementing agencies. In a heterogenous society like Nepal, local communities vary along demographic and socio-economic characteristics such as caste/ethnicity, education and income. People of different demographic and socio-economic characteristics are likely to have varying needs and aspirations, and possess differing attitudes toward CBC policies and programmes. We therefore aimed to assess local communities’ attitudes toward policies and programmes

implemented by the MBNP. A specific objective included examining local attitudes toward community development, ecotourism, community forestry, and wildlife conservation policies and programmes. Another objective was to determine if demographic and socio-economic variables influence these attitudes.

Methods

The study area

Though the MBNP was officially gazetted in 1991, the idea of preserving its unique biological and cultural features was initially conceived in the mid-1980s, and a two-year Task Force was commissioned in 1988 to prepare management plans. The proposed, but later abandoned, Arun III Hydroelectric Project played a major role in the establishment of the MBNP. The dam site, intended for construction on the Arun River, would have been at the southeastern edge of the MBNP. The establishment of the MBNP was envisaged as an adequate protection to the upper watershed of the Arun River (Shrestha *et al.* 1990, p. 12), thereby extending the dam's working life. It was also feared the proposed dam access road would encourage large numbers of migrant workers, entrepreneurs, and tourists to come to the area, all these people increasing economic opportunities for local communities, but also creating environmental problems (Nepali *et al.* 1990, pp. 26–30). The MBNP was supposed to address these issues.

The MBNP encompasses an area of 2330 km² situated in parts of the Solukhumbu and Sankhuwasabha districts of the eastern Nepal Himalaya and adjoining Sagarmatha (Mt Everest) National Park (Fig. 1). As the name suggests, this protected area has two distinct management zones, the National Park and the Conservation Area, the latter acting as a buffer to the former. Large altitudinal variations (435–8463 m) and a variety of associated ecological zones have produced a diverse biota in the MBNP. An estimated 3000 flowering plant species, 400 birds, 30 reptiles, 16 amphibians and 80 species of mammals are reported in this area (HMG/UNDP 1993). Some of these mammals, such as the clouded leopard (*Neofelis nebulosa*), red panda (*Ailurus fulgens*) and musk deer (*Moschus moschiferus*), are listed as protected species in Nepal and in the Convention on International Trade in Endangered Species (CITES) appendices.

The Conservation Area (CA) (see Fig. 1) encompasses 830 km² and is home to 32 000 people. In contrast, only 40 permanent residents inhabit the National Park component (1500 km²) of the MBNP. Local communities of the CA reside in various hamlets under 12 Village Development Committees (VDCs), which are further placed within the jurisdiction of four sectoral office areas of the project. VDCs are the smallest political and administrative units in rural areas of the country. The four sectoral office areas include: Bung (with 2 VDCs), Tamku (4 VDCs), Seduwa (3 VDCs) and Hatiya (3 VDCs). Of all these sectoral office areas, Hatiya

is the remotest, inhabited by relatively poor Bhotas, an ethnic group of Tibetan origin. The mean population density for the MBNP is 23 people/km², which is quite low compared to the national average of 102 people/km² (Khanal 1992, p. 37). The local communities represent a number of ethnic/caste groups, the major ethnic groups being Rais (64%), Bhotas (18%) and Sherpas (8%) (Nepali *et al.* 1990, p. 2). Sherpas live on high ridges of the CA, while Rais inhabit the lower valleys. Bhotas are found in the high, northeastern corner of the Hatiya sector.

Most resident peoples depend on subsistence agriculture and pastoralism. Slash-and-burn agriculture is practised throughout the CA, but more extensively in the Hatiya sector. Food deficit is a chronic problem for most households, forcing them to supplement their income with military service, seasonal labour and trade. Local people depend on the forests for firewood, fodder, timber, grazing and other products. They produce various products from forest resources including textiles from *allo* (*Girardinia diversifolia*), paper from *lokta* (*Daphne* spp.), and baskets, sleeping mats, bridges, roofs, water pipes and household utensils from bamboo. Some medicinal plants (such as *Swertia chirayita* and *Lycopodium calratum*), *allo* and *lokta* are collected mainly for trade, although most forest products are used for subsistence purposes. The Rais primarily use *allo* and bamboo, while Bhotas are the principal gatherers of medicinal plants.

Women comprise half the population of Makalu-Barun and are involved in income-generating occupations such as weaving woollen blankets or *allo* cloth, trading and portering, as well as carrying out household chores and subsistence agricultural activities. Despite their crucial economic role, the economic and social status of women lags behind males (Shrestha *et al.* 1990, p. 20).

Compared with other mountaineering and trekking destinations in Nepal, the MBNP receives few visitors (about 1000 annually), but the number of tourists is growing annually by more than 30% (Lama & Sherpa 1995, p. 1). Tourism in the MBNP is concentrated mainly in the Bung and Seduwa sectors. The Tamku sector has few visitors, while the Hatiya sector, to date, is restricted to foreign visitors. In the 1970s, the Nepalese government declared most of its northern areas, bordering Tibet, a restricted zone, under pressure from the Chinese government, which alleged these areas were used as Tibetan guerilla bases (Avedon 1984, p. 126). Hatiya adjoins Tibet, and villages across the border are easily accessible.

Data collection and sources

The research was conducted during September–December 1996, and three data collection methods were employed, namely surveys, open-ended interviews and review of project records and other published literature. Local communities under the jurisdiction of the 12 VDCs formed the survey population for the study.

A structured survey was conducted with a sample of 400

randomly-selected households. Stratified sampling was employed to ensure a representative proportion of major ethnic groups. Current voter lists of the 12 VDCs formed the sampling frame. A list of household names was arranged according to ethnicity, and then a systematic sample selected using a random start. This procedure produced 100 households from each of four sectors (of differing sizes), resulting in an overall sample of 400. One adult person (≥ 18 years) in each selected household was personally interviewed at his or her residence. Twenty-seven selected households (ranging from 4–9 cases in each sectoral area) could not be interviewed, because adult household members were absent at the time of the study. In these cases, neighbouring households were selected to produce the sample sizes required in the respective sectors.

Four local research assistants, representing major ethnic groups in the CA and conversant in local dialects, were hired and trained to administer the survey. All research assistants were males and high school graduates. Hiring local research assistants minimized cross-cultural bias and non-sampling error. Each research assistant administered the survey to 100 households in one sectoral area. Research assistants were instructed to avoid gatherings of neighbours and kin when an individual was interviewed.

Survey questions were written in Nepali. Local words were used wherever possible and technical jargon avoided. Questions covered attitudes toward community development, ecotourism, community forestry, biodiversity conservation and demography (e.g. ethnicity, education, income, age). Most attitude questions were close-ended, respondents selecting from a predetermined list of response categories. Three open-ended questions were included at the end of the questionnaire.

The questionnaire was pre-tested with the four local research assistants, as well as a sample of local people in three villages. As a result, some questions were deleted and some modified to improve their clarity. Qualitative data were also obtained through informal, unstructured and open-ended interviews with key informants including local leaders, elderly community members and school teachers. Qualitative data helped verify and enrich the quantitative data obtained from the survey. Finally, published and unpublished records were reviewed for information on the project's past and current policies, programmes and other management issues. Project staff members were interviewed, both individually and in groups, to obtain their perspectives on important issues raised by local people during the informal interviews.

Statistical analyses

Data were analysed using the Statistical Package for the Social Sciences (SPSS) Version 6.1. Attitudes toward community development, ecotourism and community forestry were measured by 3–5 related items (questions). Responses to these items followed a Likert scaling format (Babbie 1990). Items in each of the aforementioned attitude categories were combined to form three scales, namely community develop-

ment, ecotourism and community forestry scales. Responses to each of the related items were graded and summed, resulting in an overall score for each respondent on a particular scale. These scales were treated as dependent variables during logistic regression (discussed later). The internal consistency of the scales was measured by the reliability coefficient, Cronbach's alpha (Cronbach 1951), which ranges from 0 to 1; the larger the value, the greater the reliability of the scale.

Logistic regression was used to determine whether such demographic variables as gender, age, education, income and ethnicity helped explain why some respondents held more favourable attitudes than others toward community development, ecotourism and community forestry. Logistic regression is a multivariate technique which assumes non-linearity and is used to predict a binary dependent variable from a set of independent variables (Norušis 1994). Following the convention of logistic regression, each attitude scale was dichotomized into a dummy (indicator) variable by using the median score of the scale. A respondent was assigned a code of 1 if he/she held a more favourable attitude and 0 if otherwise (i.e. less or no favourable attitude). All independent, demographic variables were also recoded as dummy variables. For example, the respondent was coded 1 if female and 0 if male; 1 if older (≥ 39 years) and 0 if not; 1 if wealthier and 0 if not; and 1 if literate and 0 if not. The median age 38 was used to dichotomize the age category. The original 'ethnicity' variables (i.e. Rai, Bhote and Sherpa) were recoded into two dummy variables by an 'indicator' coding scheme. Sherpa respondents formed a reference category for both of these dummy variables.

For bivariate data, categorical responses were analysed using Pearson's χ^2 tests to discern if two variables were independent of each other (Johnson & Bhattacharya 1992). If the two variables were not independent ($p < 0.05$), Cramer's V was employed as a measure of association (Bishop *et al.* 1975). The value of Cramer's V ranges from 0 (no association) to 1 (perfect association).

Results

Demographic variables

Three hundred and eighteen men (79.5%) and eighty-two women (20.5%) were interviewed. The age of respondents ranged from 18–80 years, with the median age being 38 years. Sixty-two per cent of the respondents belonged to the Rai ethnic group, 20% were Bhotas, 11% Sherpas and 7% from other ethnic groups. Forty-seven per cent of the respondents were illiterate, while 23% had received some form of adult education, 20% had completed primary school, 9% had graduated from high school and 1% had attended college. The majority of respondents (76%) were poor (respondents who reported insufficient annual income to support basic household expenditures such as for food and clothing), while 23% were classified as wealthier.

Table 1 People's perception of community development programmes implemented by the project, based on responses to the statement: 'Please tell us whether or not the actions of the project have resulted in the improvement of the following items in your community. We do realize that improvements of some of these items may have resulted from the actions taken by other government and non-government institutions. However, here we are only interested in whether or not, in your opinion, the improvements of these items have resulted from the actions of the project.' For calculating the mean scores for items, 'very much' was assigned a score of 3, 'much' 2, 'somewhat' 1 and 'no' 0. Therefore, a high mean score on a three-point scale represents more favourable perceptions. The categories 'very much', 'much' and 'somewhat' were collapsed to allow each item to be dichotomized into two major categories – 'improvement' and 'no improvement'. A non-parametric, one-sample χ^2 test was run to see if any association existed between these categories. p = statistical significance of perceptual differences between 'improvement' and 'no improvement', ns = non significant.

Items	Per cent responding:				Mean	n	p
	'Very much'	'Much'	'Somewhat'	'No'			
School facilities	4.2	23.3	63.5	9.0	1.22	189	<0.0001
Drinking-water facilities	2.6	15.6	36.0	45.8	0.69	192	ns
Trails	1.6	8.0	22.9	67.5	0.41	188	<0.0001
Bridges	1.6	5.8	12.1	80.5	0.26	190	<0.0001
Training opportunities	6.8	26.0	60.4	6.8	1.30	207	<0.0001

Attitudes toward Conservation Area policies and programmes

Community development

Local perceptions of major community development programmes were examined by five items (Table 1). We introduced a filter question to exclude respondents who were entirely unfamiliar with the project development activities to reduce response bias. A significantly larger percentage of respondents perceived the project as resulting in some improvement in training opportunities and school facilities, but having achieved little success in basic infrastructural development, through bridge construction and trail improvement. A substantial, but statistically insignificant, number of respondents perceived little progress toward improving community drinking-water facilities.

The five community development items were combined into a single development scale. Cronbach's alpha on this scale was 0.63. The average scale score (on a 15-point scale), and the average item score (on a three-point scale) were 3.87 and 0.77, respectively. Logistic regression indicated that no demographic variable explained why some respondents perceived greater improvement in the development of their communities than others (Table 2). In other words, no significant association existed between the perception of community development and respondents' demographic characteristics.

Informal discussions with key informants revealed a lack of transparency and accountability on the part of the project when implementing community-approved development projects. The sectoral offices each year prioritize community development programmes, after consulting with community leaders, but only a few of these programmes are actually implemented. Moreover, no equitable distribution of development programmes occurs across the sectoral areas. For example, the Hاتيya sector, and to some extent the Seduwa sector, appear to have received less development projects than the other two sectors. The Hاتيya

and Seduwa community leaders were especially critical of this neglect.

In terms of their actual development needs, local communities indicated that they want more than anything else basic infrastructural developments such as trail and bridge improvement or construction and drinking-water facilities. In response to the open-ended question 'What kind of help do you expect from the project for your community in the future?', 76% of respondents mentioned that they wanted more infrastructural development; only 28% mentioned training opportunities, and 15% indicated job opportunities. (These percentages total more than 100% because respondents could give multiple answers.)

Though no explicit policy exists, the project usually seeks commitment from local communities to provide physical labour for infrastructural development projects (Babu R. Yadav [Assistant Warden, MBNPACA], personal communication 1996). We attempted to determine how willing local communities were to contribute labour; an overwhelming majority (96%) either strongly agreed or merely agreed with the statement, 'Local people should contribute physical labour toward development programmes in the CA.'

Ecotourism

We measured respondent attitudes toward tourism using four scaled items (Table 3). Since the scale categories and

Table 2 Logistic regression of relationship between demographic variables and perception of community development (n = 191). B = Logistic regression coefficient, SE = Standard error, $Wald$ = Wald statistic (which has a χ^2 distribution), p = significance.

Variable	B	SE	$Wald$	p
Gender (female)	-0.14	0.43	0.12	0.73
Age (older)	-0.07	0.32	0.04	0.84
Class (wealthier)	0.28	0.32	0.77	0.38
Education (literate)	0.01	0.33	0.00	0.99
Ethnicity (1) (Rai)	-0.24	0.49	0.23	0.63
Ethnicity (2) (Bhote)	1.63	1.26	1.66	0.20

Table 3 Factor analysis of items pertaining to attitude toward tourism ($n = 400$). On a 0–3 scale, a high score indicates a more positive attitude toward tourism. Respondents who disapproved or strongly disapproved were assigned a score of 0 as were respondents who said tourism development was not important, or said it had a negative impact. Respondents who refused to answer or held no opinion on these items were also assigned a score of 0 assuming that they did not have a positive attitude toward tourism. SD = Standard deviation.

<i>Items</i>	<i>Factor loading</i>	<i>Mean</i>	<i>SD</i>
To what extent do you think 'tourism development' is important for your community? Please rate it in the order of very important, important, somewhat important, or not important.	0.76	2.37	0.96
Do you approve or disapprove of tourists coming to your area?	0.87	2.33	0.93
How do you think tourism affects local culture and traditions? Please rate it in the order of positive impact, no impact or negative impact.	0.65	2.13	1.13
Would you approve or disapprove of a river dammed to create a lake for recreational use for tourists, even if this activity were to reduce forested areas, endanger wildlife or displace some people?	0.61	0.93	1.19

phrasing of items were not the same, factor analysis was employed to explore the underlying dimensionality of these items. The results produced a one-factor solution with all items loading highly on a common factor, indicating that the scale was both reliable and valid (see Tessler & Warriner 1997, p. 266).

An overwhelming majority of respondents reported tourism development was either very important (62%) or important (22%) for their community. In contrast, 6% responded it was somewhat important, while only 10% responded it was not important. Similarly, a significant proportion of respondents either strongly approved (53%) or approved (35%) of tourists visiting their areas. Only 11% disapproved or strongly disapproved of tourism in their community.

In response to a question regarding possible tourism effects on local traditions and culture, 51% viewed tourism as having a positive impact, 30% said it had no impact, and only 19% believed it had a negative impact. A significantly larger percentage of respondents (61%) either disapproved or strongly disapproved (in contrast to 39% who either approved or strongly approved, even if it caused some environmental and social damage) of creating a hypothetical lake to provide recreation for tourists.

The scores of the four items were summed to produce an overall scale score on attitudes toward tourism. Cronbach's

alpha for this scale was 0.68. The average scale score (on a 12-point scale), and item score (on a three-point scale) were 7.75 and 1.94, respectively. The tourism attitude scale was dichotomized into two categories for further analysis. The dichotomized scale was used to test the prediction that tourism benefits make people more supportive of tourism. This hypothesis was confirmed. A significantly larger percentage of respondents who economically benefited from ecotourism were more supportive of tourism than those who did not benefit ($p < 0.001$, $V = 0.18$) (Table 4).

However, few people actually receive economic benefit from ecotourism. For example, only 26% of respondents reported that their families had economically gained from ecotourism. A significantly larger proportion of poor respondents did not derive economic benefits from tourism, with 79% reporting they did not benefit from tourism, compared with 59% of wealthier respondents ($p < 0.001$, $V = 0.19$). Moreover, personal observation and informal discussions with project staff and community leaders revealed that visitors hire most porters, cooks and guides from outside the area. Amongst resident ethnic groups, male Rais and Sherpas obtain most of the economic benefits from tourism. Logistical regression revealed that respondents who held high support for tourism were likely to be males ($p < 0.01$), wealthier ($p < 0.05$) and Sherpas ($p < 0.01$) (Table 5).

Community forestry

Local communities overwhelmingly supported the project's policy of handing over management responsibility of community forests to them; 92% of respondents either agreed or strongly agreed with the statement, 'I approve of community forest management responsibility being given to local user group committees.' Informal discussions with members of six CFUGCs and project staff indicated three main reasons for strong local support for community forestry. First, by staking a claim to manage a nearby forest as a community forest, local

Table 4 Relationship between economic benefits and attitudes toward ecotourism based on responses to the question 'Have you or any member of your household benefited from tourism?'

<i>Tourism support</i>	<i>Per cent responding:</i>	
	<i>'Yes'</i>	<i>'No'</i>
More supportive	61	40
Less supportive	39	60
<i>n</i>	(102)	(292)

Table 5 Logistic regression of relationship between demographic variables and favourable attitudes toward tourism (n = 366). *B* = Logistic regression coefficient, *SE* = Standard error, *Wald* = Wald statistic (which has a χ^2 distribution), *p* = significance, and *R* = *R* statistic (indicating the relative contribution of each independent variable to the model in explaining the variance of the dependent variable).

<i>Variable</i>	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>p</i>	<i>R</i>
Gender (female)	-0.71	0.29	5.94	0.01	-0.09
Age (older)	-0.27	0.23	1.36	0.24	0.00
Class (wealthier)	0.64	0.28	5.39	0.02	0.08
Education (literate)	0.28	0.24	1.42	0.23	0.00
Ethnicity (1) (Rai)	-0.53	0.35	2.28	0.13	-0.02
Ethnicity (2) (Bhote)	-1.09	0.41	6.92	0.01	-0.10

Table 6 Attitudes of respondents toward community forestry. On a 0–2 scale, a high score indicates a positive attitude. Respondents were assigned a score of 2 for ‘a great deal’, 1 for ‘somewhat’ or 0 for ‘not satisfied’.

<i>Items</i>	<i>Per cent responding:</i>			<i>Mean</i>	<i>SD</i>	<i>n</i>
	<i>‘Satisfied a great deal’</i>	<i>‘Somewhat satisfied’</i>	<i>‘Not satisfied’</i>			
To what extent are you satisfied with the forest use rights provided to you through CFUGCs?	38.0	49.0	13.0	1.33	0.65	382
To what extent are you satisfied with the livestock grazing rights provided to you through CFUGCs?	60.0	33.0	7.0	1.55	0.61	326
To what extent are you satisfied with the functioning of CFUGCs?	11.0	75.0	14.0	1.02	0.49	371

people virtually become the owners of that forest with legal power and authority to use forest products. The entitlements for community forests, however, remain with the state, and the latter can intervene if CFUGCs do not work within the parameters of an operation plan. Second, local community support appears to have been influenced by the demonstration effects of existing community forests in nearby areas. Local communities find that CFUGCs generate revenue (by selling permits to collect economically valuable forest products), which can be spent on social development work. Third, local communities support community forestry because they seek to restrict forest use by neighbouring communities or outsiders, thus, avoiding an open access situation.

Attitudes of respondents toward community forestry management practices were examined using three scaled items (Table 6). Mean scores on survey items ranged from 1.02 to 1.55 on a 0–2 scale. A significantly larger percentage of females (26%) than males (15%) were not satisfied with forest product use rights granted by CFUGCs ($p < 0.05$, $V = 0.17$). Additionally, a significant proportion of the Hatiya sector respondents (30%) were not satisfied with the functioning of their CFUGCs, compared with 12% in Tamku, 9% in Seduwa and 2% in Bung ($p < 0.0001$, $V = 0.33$).

The scores of these three items were summed to create a community forestry attitude scale. Cronbach’s alpha on this scale was 0.69. The average scale score (on a 6-point scale) for

the community forestry attitude scale was 3.89. Logistic regression results revealed respondents holding more favourable attitudes toward community forestry were likely to be males ($p < 0.05$) and Sherpas ($p < 0.001$) (Table 7). Other demographic variables did not reveal a significant relationship with the community forestry scale.

Wildlife conservation

Informal discussions with project staff and community leaders indicated that wildlife depredation is a major divisive issue between Conservation Area management and local communities. Local communities are neither allowed to kill depredating wild animals nor compensated for wildlife damage. Yet, wildlife depredation is quite widespread in the CA; 97% of respondents reported wildlife depredation problems to some degree, and 78% indicated increased depredation in recent years. The most common depredating animals in the CA include rhesus monkey (*Macaca mulatta*), wild boar (*Sus scrofa*), barking deer (*Muntiacus muntjak*), Himalayan Black Bear (*Selenarcos thibetanus*), wild dog (*Cuon alpinus*), common leopard (*Panthera pardus*), wolf (*Canis lupus*), jackal (*Canis aureas*) and some birds.

Rais (the dominant ethnic group) are traditional hunters, and some Rai use meat and body parts of wild animals (such as barking deer and Goral, *Nemorhaedus goral*) for spiritual purposes. Many informants indicated that the spiritual need

Table 7 Logistic regression of the relationship between demographic variables and favourable attitudes toward community forestry (n = 355). *B* = Logistic regression coefficient, *SE* = Standard error, *Wald* = Wald statistic (which has a χ^2 distribution), *p* = significance and *R* = R statistic (indicating the relative contribution of each independent variable to the model in explaining the variance of the dependent variable).

<i>Variable</i>	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>p</i>	<i>R</i>
Gender (female)	-0.61	0.31	3.77	0.05	-0.06
Age (older)	-0.32	0.25	1.68	0.20	0.00
Class (wealthier)	0.10	0.29	0.12	0.72	0.00
Education (literate)	-0.18	0.25	0.49	0.48	0.00
Ethnicity (1) (Rai)	0.38	0.34	1.25	0.26	0.00
Ethnicity (2) (Bhote)	-1.87	0.45	17.37	0.001	-0.18

Table 8 Ranking of community needs, based on responses to the instruction: 'Rank the following needs that your community may have in the order of 1 (most important) to 3 (somewhat important).' (n = 398). The scores on a 1–3 point scale of most important, important and least important were reversed by recoding, so that a score of 3 represents the most important rank.

<i>Needs</i>	<i>Per cent responding:</i>			<i>Mean</i>	<i>SE</i>	<i>Rank</i>
	<i>'Most important'</i>	<i>'Important'</i>	<i>'Somewhat important'</i>			
1. Community development	71.0	6.0	22.0	2.5	0.04	1
2. Protection of forest	5.0	89.0	5.0	2.0	0.02	2
3. Protection of wildlife	23.0	4.0	72.0	1.5	0.04	3

for some wild animals is so great that Rais frequently kill these animals despite bans.

Wildlife protection appears to be a low priority amongst local communities. In response to the instruction, 'Rank the following needs that your community may have in the order of most important to least important', respondents ranked community development first and wildlife protection last; forest protection occupied the middle position (Table 8). Yet, 23% of respondents perceived wildlife protection as the most important priority as compared with 5% who placed the same importance on forest protection.

We also examined whether the importance people place on wildlife protection is independent of demographic variables. The three scaled categories of wildlife protection were dichotomized by merging 'most important' and 'important' categories into one category to ensure a sufficient number of cases for further analysis. Chi-square tests revealed perception of wildlife protection was independent of age ($p > 0.05$), education ($p > 0.05$) and gender ($p > 0.05$). Significant relationships occurred, however, with income ($p < 0.01$, $V = 0.15$) and ethnicity ($p < 0.001$, $V = 0.36$).

A significantly larger percentage of wealthier respondents (40%) regarded wildlife protection as important for their community, compared with 24% amongst poorer respondents ($p < 0.01$, $V = 0.15$). Amongst ethnic groups, not a single Bhote viewed wildlife protection as most important or important. In contrast, 40% of Rais and 19% of Sherpas thought it was either most important or important.

Discussion

Community development

Respondents' perception of some improvement in school facilities and training opportunities, but little improvement in infrastructural development (Table 1), are consistent with what we observed. For example, the project has provided financial assistance to schools in the CA to improve their physical facilities. The project's training unit has also provided training and educational opportunities to enhance income generating and management skills (C.P. Chapagain [Training Officer, MBNPCA] personal communication 1996). As of December 1996, 1158 local people had received some training, and six were undergoing long-term training. ÖKO HIMAL, an Austrian non-governmental organization affiliated with the project, additionally trained over 260 local people as of 1996. Thirty per cent of respondents in our survey reported that a member of their household had received training from the project.

In contrast, the project has neither a policy mandate nor sufficient economic resources to meet many infrastructural needs of local communities. It does allocate some funds to help meet the cost of infrastructure development projects of individual VDCs through its 'Village-initiated Projects' fund. This fund, however, does not amount to much in monetary terms at the individual village level.

Respondents' answers (Table 1) suggested the project has devoted more attention to 'training opportunities' and 'school facilities' than to other kinds of development. The project focus on 'training opportunities' appears somewhat inconsistent with the prevailing attitudes of local communities who are stressing a desire for more infrastructural development than training. Moreover, we observed that few

activities occurred after the initial training programmes, and the project rarely determined if the trained persons were using their newly-acquired skills in some productive way. Only in a few instances did the project assist trained persons with either equipment or credits to enable them to accomplish related goals and aspirations.

Low average scale and item scores revealed that the respondents did not have an overall favourable perception of the project's action in developing their communities. Insignificant association between the overall community development scale and demographic variables (Table 2) suggests the majority of respondents, regardless of personal attributes, hold similar 'not so favourable' attitudes toward the project's development activities. Local communities, on the other hand, want more development (especially infrastructural assistance), and they are willing to contribute physical labour toward this end.

As for the implementation of community-approved development programmes, informal discussions with field staff revealed that most decisions were made by higher MBNP/CA authorities, and that they had little influence over these decisions. Higher authorities, on the other hand, asserted that they are not a development agency, and, therefore, do not have a mandate to meet all development needs of local communities. They also noted that approval of development projects depends on many factors including budget availability, linking of development projects to conservation goals, total size of population served, and local commitment. Despite these claims, there certainly appears to be a gap in perspective between staff and local communities on these issues.

The lack of visible development in the Hatiya sector is especially discouraging; this is a sector inhabited by Bhotes, who are the poorest ethnic group and need the most economic assistance. Moreover, tourism is restricted in this area, constraining an alternative source of income.

Ecotourism

A widespread argument persists that although ecotourism can contribute to the local economy, it can also bring undesirable changes to local cultural traditions and lifestyles (Graburn 1984; Bachmann 1988; Goering 1990; Puntenney 1990; Allan 1992; and others). Despite this concern, local communities in the CA had a very positive attitude toward ecotourism. It is interesting to note that local people wanted tourism, but not at the cost of jeopardizing forests or wildlife and displacing people. The results indicate more support for tourism from people who economically benefit from it than from those who do not (Table 4). Less supportive attitudes amongst females and poorer respondents toward tourism (Table 5) can be attributed to comparatively few of these people deriving economic benefits from the activity, and thus, not seeing its relevance.

More favourable attitudes toward tourism amongst the Sherpas than the Bhotes is not surprising, as the former have

been in the tourist business since the 1950s when Nepalese mountains and peaks became approachable to mountaineers and trekkers (Jefferies 1991). In the CA, the tourist flow is concentrated in the Seduwa and Bung sectors where most Sherpas live. Personal observation, as well as a study conducted by Banskota and Upadhyay (1990), suggested that mountaineering expeditions tend to hire Sherpas both as *sirdar* (head guide) and porters in high altitude areas. Though not many in number, most lodges and tea shops are run by Sherpas, and you would therefore expect Sherpas to hold more positive attitudes toward tourism. In contrast, Bhotes are concentrated in the Hatiya sector which receives no foreign visitors. Since Bhotes do not economically benefit from tourism, they are not likely to support it.

Community forestry

Local communities strongly supported the community forestry approach of the project. Overall, they also seemed largely satisfied with their use rights. However, they were relatively less favourably disposed toward the functioning of the CFUGCs (Table 6). This may be attributed to the division of many CFUGCs along local and national political party lines and related power struggles. Informal discussion with key informants indicated that local elites with varying political affiliations held key posts (e.g. chairman, vice-chairman, secretary, treasurer) in the CFUGCs, and this often resulted in power struggles amongst committee members and between members and users. In her review article on community forestry in Nepal, Häusler (1993, p. 89) also noted that the formation of CFUGCs reinforced existing local power structures, frequently excluding marginalized users from decision-making.

Females' less favourable attitudes toward community forestry (Table 7) can be related to their being the primary users of forest products in Nepal and, therefore, they suffer most when restrictions are placed by CFUGCs on community forest utilization. A significant percentage of females were not satisfied with forest product use rights granted by CFUGCs. Moreover, females were not well-represented in CFUGCs. Only two of the members were female in five of the six CFUGCs examined in this study, and no female held a key post such as chair or vice-chair on any committee. Females are not apparently in a position to exert a strong impact on decision-making in the CFUGCs. Other studies in Nepal also report the marginalized roles of low caste people and women in community forestry decision-making (King *et al.* 1990; Häusler 1993).

The Sherpas' more favourable attitudes toward community forestry (Table 7) were not surprising, given that they live at higher elevations than either Bhotes or Rais, in places where population pressure is low and forests are relatively intact (Sherpa *et al.* 1990, p. 14). Sherpas may assume they will be more economically and politically secure if they can restrain use of their still-intact forests by outsiders and, thus, avoid an open access situation. Since community forestry

emphasizes a well-defined user group and a well-delineated community forest, along with rules and regulations on its use, it tends to avoid abuse by outsiders.

The less favourable attitudes of Bhotes toward community forestry can be partially attributed to two major management disputes in the Hatiya sector, where Bhotes mainly reside. In one instance, a dispute occurred amongst the people of two adjoining VDCs regarding the boundary delineation of a community forest. In the other situation, a CFUGC was paralyzed because of power struggles amongst members holding different political ideologies. This fostered vandalism, including fires and tree felling in the community forest. The less favourable attitudes of Bhotes toward community forestry may also be related to their prevailing agricultural practices. Bhotes practise extensive slash-and-burn cultivation (Sherpa *et al.* 1990, p. 11), and community forestry invariably places restrictions on this type of cultivation.

Wildlife conservation

Wildlife depredation was perceived as a major issue amongst local communities. A vicious cycle exists amongst local peoples, who must conserve forests to meet basic needs, but still bear the cost of depredation by wildlife which thrives in protected forests. The existing policy of allowing farmers to hunt and trap pest wild animals within the confines of their farms has yet to be implemented. Local communities are thus neither allowed to kill pests nor compensated for their losses. If local communities only see economic losses from the CA's wildlife programmes, they will be likely to be motivated to disregard rules and regulations and sabotage conservation efforts.

The prevailing pro-development attitude of the communities (Table 8) is not surprising, as most people in the CA are extremely poor. The prevalence of wildlife damage in the midst of widespread poverty is likely to foster an unfavourable attitude toward wildlife conservation amongst local communities. This attitude might change if the benefits of overall social intervention programmes become more visible in the course of time.

It is interesting to note that significantly more wealthier than poorer respondents viewed wildlife protection as important for their community. Perhaps, wealthier persons are in a financially better position to adjust to this loss than are poorer people. Unfavourable attitudes amongst Bhotes toward wildlife protection may be attributed to their slash-and-burn farming practices. Slash-and-burn fields are almost always located either at the edge of or inside forests and thus, are more prone to wildlife depredation. Also, Bhotes are the poorest of all ethnic groups in the CA and the current ban on hunting and trapping of depredating wild animals may cause a greater negative economic impact on them. The chairman of a VDC in the Hatiya sector remarked, 'an empty stomach will never respond to the slogan of wildlife protection.'

Conclusions and policy implications

The findings of this study indicate that local people held ambivalent attitudes toward the project's role in community development. Although most were favourably disposed toward the project's educational and training activities, they viewed infrastructural work as far less successful. Yet local communities desired infrastructural assistance above all else. Local communities could lose their confidence if this expectation is not fulfilled. Though the project is not a development agency, it can coordinate with other agencies to channel funds to community-initiated development projects.

Substantial local support certainly exists for ecotourism development in the CA. For most, tourists are not 'uninvited' guests, nor do they fear any possible negative impacts of ecotourism on their culture and local traditions. In Nepal, it has been argued that tourism has played a positive role in reviving lost art (Gurung 1989) and culture (Fisher 1990; Thakali 1994). Moreover, Gurung (1989, p. 136) believes that traditional cultures will change due to increased communication with the external world, whether tourism occurs or not.

It appears, however, that few are receiving an equitable share of the economic benefits arising from ecotourism. Women and the poor especially appear to be excluded from the benefits of ecotourism. The project could develop a programme such as 'Developing Women's Entrepreneurship for Tourism' (DWET), which has been successfully implemented in the Annapurna Conservation Area. DWET aims at developing entrepreneurial skills amongst women and assisting them in utilizing tourism opportunities (J. Gurung [Women Development Assistant, ACAP] personal communication 1997).

We believe the government restriction on foreign visitors to the Hatiya sector should be lifted. The dominant ethnic group of this area, the Bhotes, are also the poorest. Opening this area to ecotourism could enhance off-farm employment opportunities, and thus provide incentives to conserve natural resources. As the Nepalese government has opened previously-restricted areas to tourism in other parts of the country, no convincing reason exists why Hatiya should remain closed.

Local communities overwhelmingly endorsed the project's policy of allowing them to use and manage community forests. It appears that communities regard common property regimes as preferable to either state or non-property (open-access) regimes. The lack of active participation and proportional representation of women in CFUGCs, however, needs to be addressed. Women are most involved in collecting forest products, and therefore their role in managing community forests is important. Finally, problems arising from the boundary delineation of community forests and politicization of CFUGCs need to be rectified. These difficulties represent major obstacles to the project's goal of sustainable community forestry.

Wildlife depredation in the CA is a contentious issue requiring immediate attention. The project should implement

its policy of hunting pest animals if it wishes to obtain a greater local support for long-term wildlife conservation. Financial compensation for wildlife damage must also be addressed. Most importantly, there is an urgent need to move beyond the 'paper' policy to actual implementation.

The Rais, the major ethnic group in the CA, should be permitted to hunt for spiritual purposes using traditional methods. Hunting is a critical aspect of their cultural heritage. The preferred wild animals of the Rais, barking deer and Goral, are not endangered species in Nepal and, therefore, there should not be a legal obstacle to hunting these animals.

The project's primary objective is conserving biodiversity. The project must thus encourage a more positive attitude amongst local communities toward wildlife conservation than exists now. The foundation of the CBC paradigm rests on the assumption that people will be more conservation oriented if they have a greater role in the allocation and receipt of benefits from the management of local natural resources. Only time will tell if this assumption holds in Makalu-Barun.

The best predictors of local communities' attitudes toward CA policy and programmes were ethnicity, gender and wealth. The Bhotas have the least favourable attitudes toward all major policy and programmes. Women were less supportive of ecotourism and community forestry. Wealth certainly shaped attitudes toward ecotourism and wildlife, implicitly endorsing the principle of 'conservation for development'. Age and education surprisingly did not help much in explaining variations in locals' attitudes toward major policy and programmes. You would expect young and educated community members to hold more favourable attitudes toward biodiversity conservation, given the project's focus on education and training.

The CBC approach is relatively new and, thus, the project should monitor local attitudes on a long-term basis. An adaptive management approach is clearly warranted, with changes in policies and programmes occurring to ensure that limited funding and human resources are allocated wisely and productively.

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