

Distribution of benefits based on household participation roles in decentralized conservation within Kanchenjunga Conservation Area Project, Nepal

Pete Parker · Brijesh Thapa

Received: 8 July 2010 / Accepted: 10 March 2011 / Published online: 30 March 2011
© Springer Science+Business Media B.V. 2011

Abstract Kanchenjunga Conservation Area is located in the remote and sparsely populated mountainous region of Eastern Nepal. It has been locally managed as a decentralized Integrated Conservation and Development Project since 2006, the first of its kind in Asia. Major international donor agencies sponsor programs to empower and strengthen the capacity of local communities to manage their natural resources, while concurrently improving livelihood opportunities. We surveyed 205 randomly selected households throughout the project area to assess the factors that influence household participation roles in management and management groups, and to evaluate how benefits from program involvement were distributed among the community. Overall, the distribution of benefits was unequal: households with higher level participation roles had increased access to financial credit and capacity development trainings. Social variables such as age, level of education among head of households, the highest level education among household adults, and household size predicted participation. The region is economically homogeneous; therefore, economic factors such as remittances, off-farm income and the quantity of landholdings or livestock did not predict household participation roles. Our results demonstrate the importance of targeting and empowering disadvantaged households in decentralized conservation programs, including educating members about the relationship between participation and equitable distribution of benefits.

Readers should send their comments on this paper to BhaskarNath@aol.com within 3 months of publication of this issue.

P. Parker (✉) · B. Thapa
Department of Tourism, Recreation and Sport Management, Eric Friedheim Tourism Institute,
University of Florida, Gainesville, FL 32611-8208, USA
e-mail: peteparker21@gmail.com

B. Thapa
e-mail: bthapa@hnp.ufl.edu

Present Address:
P. Parker
McGill University, Montreal, QC, Canada

Keywords Decentralized conservation · Households · Kanchenjunga conservation area · Nepal · Participation · Management groups · Protected area · Community forestry

1 Introduction

Nepal formally embarked on decentralized participatory conservation programs in 1990. The policies that endorse decentralization and participation to achieve conservation goals are debatable and contentious, especially in parks and protected areas. Some authors have advocated for additional regulation and management that potentially excludes local participation and cohesion (Brandon et al. 1998; Robinson 1993; Terborgh et al. 2002), while others support further devolution of power within parks and protected areas in Nepal (Baral and Heinen 2007; Wells and Brandon 2003; Ribot 2003). Nevertheless, the need for effective integration of conservation and development in protected areas should not be viewed as islands of conservation divorced from the social and economic context within which they are located (IUCN 2003). Participatory management strategies that emphasize the need for local communities to share in protected area benefits and decision making should be promoted and achieved. Additionally, decentralization and resident participation in conservation programs should provide a balance between social and conservation goals (IUCN 2003).

Advocating for decentralized conservation management is generally based on the assumption that integrating otherwise excluded lower level decision makers enhance their access to technical and financial assistance, minimize organizational costs, all while promoting a wider level of participation within an increasingly creative and enriched economic sector (Agrawal and Gupta 2005; Ribot 2002). Protected area managers need to identify the potential positives and negatives associated with decentralized participation that should be targeted or avoided while conservation and livelihood issues are addressed (Bajracharya et al. 2006; Baral and Heinen 2007).

Participation in decentralized conservation management in Nepal determines the quantity and types of benefits and costs accrued to a household (Maskey et al. 2006). The associated costs and benefits accrued vary based on socio-economic variables including household income, education, race/caste/ethnicity (Agrawal 2000; Allendorf 2007; Baral and Heinen 2007), and forest resources dependencies (Jumbe and Angelsen 2007). The most significant benefits are consumptive, such as firewood, timber, food, herbs, medicines, construction materials, and the ability to earn income from recreation and tourism (Wells et al. 2004). However, associated costs include loss of crops and livestock from wildlife, injury and death, loss of access rights, and time and resources spent guarding against wildlife encroachment (Bajracharya et al. 2006; Baral and Heinen 2007). Overall, there is a paucity of empirical research that examines the distribution of costs and benefits of decentralized participatory conservation at the household level (Baral and Heinen 2007).

Kanchenjunga Conservation Area Project (KCAP), with its complete devolution of management authority to the local population, provides an exceptional opportunity to assess integrated decentralized participatory conservation programs in protected area management in Nepal. This research seeks to assess whether socio-cultural factors influence decentralized conservation participation, and to determine if participation roles in management groups affect the distribution of benefits at the household level. Specifically, this study examines two research questions: (1) what factors affect participation roles in

management groups by households in KCAP? and (2) Do participation roles in management groups affect the distribution of benefits among households?

2 Literature review

2.1 Decentralized conservation participation

Participation has been measured in varying forms within the development and conservation literature (Cole 2006). Agarwal (2001) assessed determinants of participation in community forestry institutions in India and Nepal. Drawing upon, Pretty (1995) and White (1996), Agarwal (2001) described participation as an extent of activeness measured as levels that would get higher with increased individual activeness. The resulting participation typology ranged from nominal/passive participation to the most active level of interactive/empowering participation (Agarwal 2001). Maskey et al. (2006) measured participation in more simple terms within four levels identified as attending meeting, making suggestions at meeting, leading discussions at meetings, or making decisions for the group at meetings. However, three broad hindrances to popular participation in decentralized conservation management have been identified as: (1) vulnerability (lacking private resources), (2) inferiority (based on discrimination due to caste, gender, and education), and (3) the potential for corruption, especially related to lack of financial transparency (Cole 2006; Lachapelle et al. 2004).

Participation in Nepal is highly correlated with demographic variables such as income, education, spatial location, caste/race/ethnicity and gender (Adhikari and Lovett 2006; Allendorf 2007; Dev et al. 2003; Maskey et al. 2006; Mehta and Kellert 1998; Neupane 2003; Sharma 2000; Smith et al. 2003). Income is a statistically significant predictor of participation in management groups: households with greater landholdings have a higher degree of participation (Maskey et al. 2006), whereas poorer households participate less than wealthier or politically connected households (Adhikari et al. 2004; Agrawal 2000; Allendorf 2007; Baral and Heinen 2007; Dev et al. 2003; Maskey et al. 2006; Smith et al. 2003). Additionally, poorer households are not necessarily interested in participation as they have higher associated costs since it takes time away from more productive employment opportunities (Agrawal 2000; Timsina and Paudel 2003).

Education can have both positive (Lise 2000) and negative (Agrawal and Gupta 2005) effects on participation. Better educated residents are more likely to understand the importance of forest conservation, and are thus more likely to participate (Jumbe and Angelsen 2007). However, higher levels of education might also lead to a greater involvement in alternative income generating activities, and subsequently create less interest in decentralized conservation participation (Jumbe and Angelsen 2007).

Older individuals from wealthier or higher caste/race/ethnicity households are more likely to participate and to be involved in decision-making from a leadership position, especially within community forest groups (Maskey et al. 2006). Mehta and Kellert (1998) found that women and low-caste people were highly underrepresented in executive committees responsible for the management of local resources. Given the social system in Nepal, community-based natural resources programs need to ensure equal participation of all associated interest groups to reduce to the risk of exclusion (Baral and Heinen 2007).

Agrawal and Gupta (2005) assessed the major factors that influenced participation in the United Nations Development Program sponsored Parks-People-Program in four protected areas buffer zones in Nepal. Supplementary income, landholdings, caste, firewood

consumption, household size, and the frequency of household visits to program offices were positive predictors of participation. However, higher levels of education often led to more lucrative wages and reduced dependency on natural resources; therefore, decreasing interest in sponsored management program participation. Agrawal and Gupta (2005) found household frequency of visits to program offices and benefits received from participation were the most significant predictors of participation. The authors argued for strategic management in favor of marginalized and poorer households in order to improve accessibility to government offices and respective officials (Agrawal and Gupta 2005).

Gender has been shown to influence roles of participation and the distribution of benefits in conservation and development projects (see Agarwal 2001, 2009a, b; Locher and Muller-Boker 2007). Women tend to be better community forest managers in terms of conservation and regeneration (Agarwal 2009b) and have more stringent rules of access and associated penalties for illegal activities (Agarwal 2009a). Even though women might be better environmental stewards, men and other household members still benefit from conservation (Gurung 2006). However, although gender is deemed as a significant factor in conservation and development projects, exclusion based on more general household socio-economic variables such as caste, ethnicity, income, and natural resources dependencies were shown to be more effective predictors (Agarwal 2001, 2009a, b; Locher and Muller-Boker 2007). Additionally, although women might actively participate within all women groups; their participation is passive and ineffective in mixed gender settings higher levels of management (Gurung 2006; Locher and Muller-Boker 2007). Considering the importance of household variables and the traditional household composition of households in Nepal (sons rarely leave their parents house), this research was conducted with a more encompassing household level unit of analysis. The analysis of participation in conservation and development based on gender is beyond the scope of this paper.

2.2 Decentralized conservation costs and benefits

Within decentralized conservation programs, wealthier and politically connected households often dominate decision-making and derive the most benefits from participation in terms of natural resources access and from community development projects (Adhikari and Lovett 2006; Agrawal and Gupta 2005). Domination of decision-making by the wealthy elite can influence community development projects that exclude disadvantaged households (Timsina and Paudel 2003). For example, Thomas-Slayter and Bhatt (1994) found the 17 richest families within one village in Nepal were the recipients of project aid targeting the disenfranchised. However, food-insecure households (poor households) have also been found to participate more often to ensure access to resources (Jumbe and Angelsen 2007). In Nepal, although poorer households are more reliant on natural resources, the absence of participation among the disadvantaged in management groups has excluded them from decision-making processes in product distribution; hence, they receive fewer benefits (Adhikari et al. 2004; Allendorf 2007; Agrawal 2000; Agarwal 2001; Baral and Heinen 2007; Dev et al. 2003; Maskey et al. 2006; Smith et al. 2003).

Spatial location of households and agency offices significantly affects participation roles and accrual of benefits. Mehta and Kellert (1998) found that residents living in remote areas of the Annapurna Conservation Area Project (ACAP) and the Makalu-Barun Conservation Area Project received substantially fewer community development-related benefits, including drinking water systems, bridges, and health clinics, than their counterparts living closer to project offices.

Maskey et al. (2006) assessed the middle hills of Nepal, finding that socio-economic factors affected the level of participation in decentralized conservation and the role of participation did enhance the amount of benefits received. Lack of participation excluded disadvantaged households from decision-making in product distribution; therefore, non-participants received fewer benefits from the community forest. Community forest user group members who held a decision-making role received a higher quantity of forest benefits (e.g., fuel wood, fodder, and timber) compared to members who merely attended meetings. The authors call for empowerment of people within lower socio-economic standing to understand the importance of participation and ensure equal distribution of benefits (Maskey et al. 2006).

Furthermore, Baral and Heinen (2007) examined two western protected areas (Shuklaphanta Wildlife Reserve and Bardia National Park) in the terai lowlands of Nepal and assessed residents who participated in community-based conservation programs and the associated distribution of benefits. Gender, education, household affluence, and conservation attitudes were significant predictors of participation, while family size, ethnicity, and resource dependency did not. Respondents noted that more benefits than costs were associated with participation in conservation programs. Overall, the sustainability of conservation programs depended on the continued devolution of power to local communities to sustain achievements, and to provide a means for an equitable distribution of benefits (Baral and Heinen 2007).

3 Kanchenjunga Conservation Area Project, Nepal

KCAP is one of the most remote and sparsely populated protected areas in Nepal and named after the third highest mountain in the world (Mt. Kanchenjunga, 8,586 m). Due to the region's unique biological characteristics, high density of glaciers, high biodiversity indices, and endangered wildlife, in April 1997, the government declared KCAP as a "Gift to the Earth" in support of the World Wide Fund for Nature's (WWF) Living Planet Campaign (Heinen and Mehta 1999). The 2,035-km² conservation area was officially created in July 1997 and primarily comprised high mountain landscapes of glaciers and rocks, with only a small amount of arable land (2% of the total). KCAP boasts 16% of Nepal's total floral species and seven mammals with conservation significance including the red panda, snow leopard, gray wolf, Himalayan black bear, Himalayan tahr, blue sheep, and musk deer (WWF 2007).

KCAP functions as an Integrated Conservation and Development Project (ICDP) with major donor agencies including WWF, the MacArthur Foundation, the Kadoorie Agricultural Aid Association, and the Darwin Initiative. The project was established with financial and technical assistance provided by WWF. WWF has invested over US \$1.5 million and has pledged continued support for another 5 years through the Sacred Himalayan Landscape project and a partnership with the Integrated Centre for Integrated Mountain Development (WWF 2007). The aim of KCAP is "to safeguard the biodiversity of the area, and improve the living conditions of the local residents by strengthening the capacity of the local institutions responsible for decision making, which will effect the long-term biodiversity conservation and economic development of the area" (WWF 2007, p. 2). The primary focus is to strengthen the capacity of local communities to manage their natural resources while concurrently improving their livelihood opportunities.

3.1 Programs and management

WWF and the government of Nepal created a democratically elected hierarchy of management at KCAP to achieve self-sustainability, based on local involvement and empowerment. The project partnered with local community-based organizations to implement a hierarchy of management and decision-making bodies (collectively referred to as management groups), namely the Kanchenjunga Conservation Area Management Council (12 total members, 2 women mandatory), seven User Committees (9 total members, 3 women mandatory), 44 User Groups, and 32 Mother Groups (exclusively comprised female members regardless of marital status).¹ The government transferred management of the area to the Kanchenjunga Conservation Area Management Committee on September 22, 2006, establishing KCAP as the first community-managed conservation area in Nepal, and of this size in Asia (Gurung 2006).

In its short existence, KCAP has achieved several of its stated objectives (Gurung 2006; WWF 2007). It further reassigned management responsibilities of 47,772 ha to sixteen Community Forest User Groups representing approximately 860 households and one Mother's Group. Funds were also created to promote sustainable extraction of Non-Timber Forest Products (NTFPs) and to develop a livestock predation insurance program (Gurung 2006). Community development projects include the delivery of metal prayer flagpoles to replace the traditional custom of annually harvesting trees, high efficiency cooking stoves to decrease fuel wood consumption, and micro-hydro schemes in Ghunsa and Gola. Additional projects include a child day care center, a girl's hostel, drinking water systems, 1,200 m of new trails, suspension bridges, toilets, a health post, an irrigation canal, and green houses (Gurung 2006; WWF 2007).

Women have been an integral component of planning, decision making, and management since KCAP was first conceived (Gurung 2006; Locher and Muller-Boker 2007). Every household has the opportunity to have at least one woman as a member of a Mother Group. Membership in a Mother Group allows access to savings and credits schemes. Access to financial capital traditionally carries interest rates of over 50%. However, some resentment of men towards Mother Groups saving and credit programs has been observed (Gurung 2006; Locher and Muller-Boker 2007). Each Mothers Group also manages a scholarship to be given to one girl each year.

Although numerous projects have been in operation since KCAP establishment, local residents tend to have unrealistic project expectations and are even confused regarding project objectives (Gurung 2006; Locher and Muller-Boker 2007). Local residents are predominantly unaware of WWF, and residents are twice as likely to identify development objectives compared with conservation-related benefits (Muller-Boker and Kollmair 2000; WWF 2007). Local residents maintain positive attitudes towards capacity building programs and believe the project has been successful at wildlife conservation (Gurung 2006; Locher and Muller-Boker 2007; Muller-Boker and Kollmair 2000; Muller et al. 2008). However, an increase in wildlife has led to increased frequencies of predation and crop damage, and therefore most residents feel the costs of conservation outweigh the benefits (Gurung 2006; Locher and Muller-Boker 2007). Residents also expressed negative attitudes towards social stratification of the area and the inequitable distribution of benefits based on differences between ethnic minorities, proximity to project offices, and the recent

¹ For a further in depth analysis of Mother Groups and women's-development approach (see Gurung 2006; Locher and Muller-Boker 2007).

Maoist insurgency² (Muller-Boker and Kollmair 2000; Gurung 2006; Locher and Muller-Boker 2007; Muller et al. 2008).

3.2 Conservation issues

Although local traditional institutions of communal natural resources management have existed without significant government intervention due to the remoteness of the area (Muller-Boker and Kollmair 2000), environmental degradation continues due to five forms of unsustainable natural resources extraction by local residents (WWF 2007). First, over 170 households practice slash and burn agriculture in high elevation (above 3,000 m) forests in the northwest part of the conservation area. Second, alpine meadows are being destroyed due to overgrazing, fuel needs, and housing construction. Third, a large amount of timber is over-harvested for residential cooking, heating, and construction, especially by residents who are heavily dependent on these resources. Higher elevation villages are more heavily dependent on natural resources access for their livelihoods (Muller-Boker and Kollmair 2000). Fourth, local residents are over-harvesting of NTFPs including sea buckthorn, cardamom, and medicinal plants (WWF 2007). Lastly, poaching and retaliatory killings of wildlife, including snow leopards,³ are also evident (Ikeda 2004; WWF 2007).

Explanations and reasons for the degrading and unsustainable pressures are a mixture of unclear ownership or tenure rights, lack of policy and enforcement, use of poorer households for labor, low agricultural productivity on existing land, food security, low levels of land ownership, a lack of linkages to cash crop markets, and external market demands for traditional medicines. Access to natural resources is limited to local residents and regulated by local institutions; however, outsiders can buy access permits (Ikeda 2004; Gurung 2006).

3.3 Study site

KCAP is located in the northern portion of the district of Taplejung (Fig. 1). According to the 2001 National Census, of the 1,34,698 people in the district, 42.4% of women and 62.5% of men were literate. The average annual population growth rate from 1991 to 2001 was 1.21%. The district has a Human Development Index score of 0.328, which is the sixth lowest in Nepal (out of 75 districts). There are 33,675 people per doctor and 8,980 people per hospital bed. Only 47.5% of the district population has access to toilet facilities, and 61% have access to improved water supplies (Central Bureau of Statistics 2001).

Around 4,570 people in approximately 860 households reside in the four Village Development Committees (VDCs) that comprise KCAP: Olangchung, Lelep, Yamfudin, and Tapethok (WWF 2007). Over 48% of the population is Limbu, another 25% is Sherpa (WWF 2007), and the remainder is comprised of many ethnic minorities including Rai, Gurung, Magar, Thakali, Tamang, Tibetan, and Jirel. The main sources of income are subsistence agriculture and animal husbandry. Additional sources of livelihood activities include cottage industries, tourism, military employment, trade with Tibet, and seasonal

² The Maoist insurgency was a civil war between the communist rebel group and the democratic national government that lasted from 1996 to 2006 and claimed over 13,000 lives. The insurgency has ended with the rebel group integrated into mainstream politics. See Baral and Heinen (2005), Bhattarai et al. (2005), and Thapa (2004).

³ The Ghunsa Valley contains 40% of the available snow leopard habitat in KCAP and is also an important part of the regional tourist trekking route.

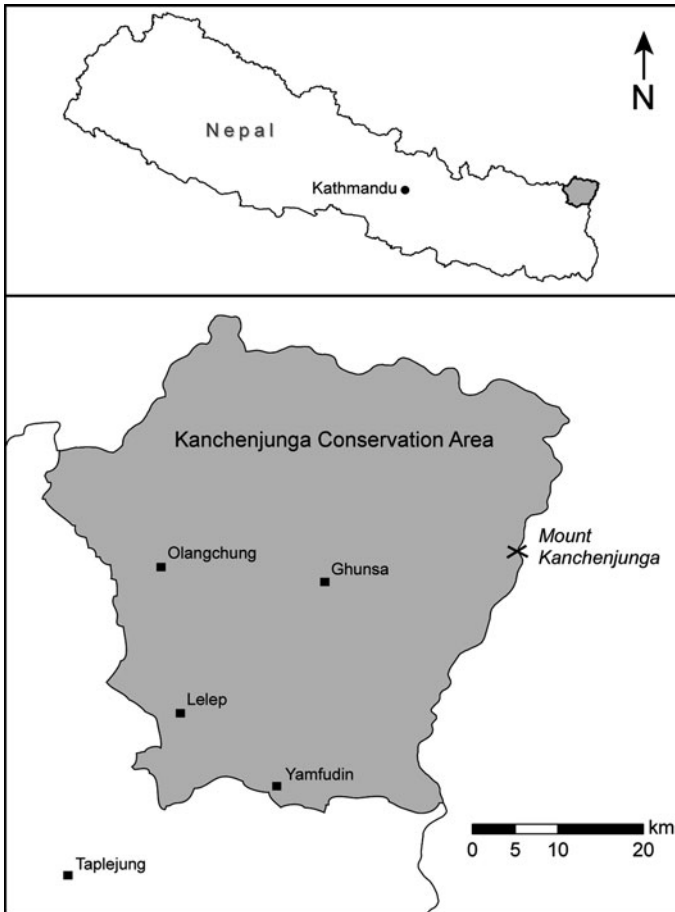


Fig. 1 Map of Kanchenjunga Conservation Area Project (KCAP) identifying KCAP office locations

labor out-migration (Muller-Boker and Kollmair 2000). The average food sufficiency in KCAP is 5.5 months and less than 10% of households produce enough food for subsistence consumption (WWF 2007).

The existing conditions in KCAP are quite different than those found at the well-known and highly successful model of the Annapurna Conservation Area Project (ACAP) in central Nepal. ACAP is centrally located and has an extensively developed tourism infrastructure and easily accessible with a transportation network that includes paved roads (Nyaupane and Thapa 2004, 2006). KCAP is one of the most sparsely populated and remotely located protected areas in Nepal with only rudimentary tourism facilities catering primarily to self-contained group tourists. There are only 37 km of roads, all unpaved, in the entire mountainous district. While ACAP has successfully attracted tourists (peaking at 75,278 tourists in 2000 (Nyaupane and Thapa 2004) and 68,541 in 2008 (Baral et al. 2010). KCAP recently opened for trekking in 1988, and tourist arrivals peaked at 800 in 2001, and then decreased to 175 in 2006 due to the Maoist insurgency and lack of tourism facilities (WWF 2007).

4 Methods

This study used a mix of qualitative and quantitative approaches (Booth et al. 1998; Ellis and Freeman 2004; White 2002) with a triangulation method to improve the validity of the data. Triangulation is described as collecting information from multiple sources and methods of inquiry, reducing the chance of researcher bias and improving validity (Denzin and Lincoln 2000).

4.1 Data collection

Data were collected between October and December 2008 using four methods. The findings presented within this study is part of a more comprehensive research project, of which the results are forthcoming. First, we reviewed project reports from the World Wildlife Fund-Nepal office, the Department of National Parks and Wildlife Conservation, and KCAP offices in Kathmandu and the research site. Information on past and current projects, policies, programs, and other management issues were examined. Second, we used participant observation methods to develop a better visual context of the community's perspective and behavior. Participant observation focused on resident livelihood strategies, non-verbal cues during participation in management groups, and sentiments toward the possible presence of equitable social inclusion within the decentralized conservation program. Third, we conducted a Participatory Rural Appraisal (PRA) wealth ranking at each village. The PRA wealth ranking allowed each community to familiarize themselves with the presence of the researcher, and express their views before being selected for this study. PRA wealth ranking techniques are commonly used in conjunction with quantitative surveys as a means to categorize populations for stratified sampling procedures or for categorical analysis post data collection (Ellis and Freeman 2004). Within this research, PRA technique was primarily used as a triangulation method for other data collection methods. Fourth, a detailed interview survey was conducted among randomly selected households throughout the sampling area. This is likely the first comprehensive and randomly sampled survey conducted within the area to be presented in the academic literature. The combination of methods was adapted from the UK Department for International Development (DFID) sponsored Livelihoods and Diversification Directions Explored by Research (LADDER 2001) project (Ellis and Freeman 2004).

Local research assistants were hired and trained to administer the survey, which helped to build local rapport and minimize both cross-cultural bias and non-sampling error (Nyaupane and Thapa 2004; Walpole and Goodwin 2001). However, the primary researcher previously lived and worked in Nepal for 27 months and is proficient in the national Nepali language. The interviews lasted up to half an hour depending on the respondent. Survey questions were asked in Nepali or local dialects when required. In translation, local words were used wherever possible and technical jargon avoided. A professor at Tribhuvan University, Kathmandu, Nepal assessed and verified survey translation accuracy from English to Nepali, and vice versa.

4.2 Selection of participants

Based on a recent census by WWF (2007), the sample population constituted the entire population that resided within KCAP borders and comprised 4,570 people in 860 households. The population was spatially distributed over four Village Development Committees (VDCs) including Lelep (47%), Tapetok (31.3%), Yamphudin (15.1%), and Olachan Gola

(6.8%). A systematic sampling method was used to select respondents. A comprehensive list of village households was created for each village during the PRA wealth ranking process. From the comprehensive list, every fourth house was surveyed after a random start for a total population of 215 (response rate = 100%), representative of 25% of the total households in KCAP.⁴ Households were identified, visited, and the head of household was requested to participate.

The head of the household (≥ 18 years of age) was personally interviewed at their respective residence. Attempts were made to contact the head of the household, but in cases of unavailability, the most knowledgeable adult member was requested to participate. If members of the household were unavailable, the next house was selected. Since local residents are not familiar with survey procedures, and more importantly, due to the high rate of illiteracy, questions were verbally read to participants while the interviewer recorded the responses (see Nyaupane and Thapa 2004, 2006).

4.3 Instrumentation

The questionnaire had five sections. The first section examined basic household data including education, occupation, and race/caste/ethnicity. The second section assessed household levels of participation in management groups including forest and conservation user groups. Section three measured income related to agriculture. Section four assessed income generated from livestock, privately owned natural resources and community-based natural resources, including NTFPs.⁵ Section five measured non-farm related sources of income such as remittances⁵ and household responses to unforeseen crises. We conducted a pilot test among project and government agency staff in the district headquarters of Taplejung, and modified or removed questions as necessary.

4.4 Operationalization and data analysis

This study assessed two research questions.

4.4.1 *Research question 1: What factors affect household participation roles in management groups?*

We used an ordered probit regression model to assess the existing household participation patterns in management groups (see Agrawal and Gupta 2005; Maskey et al. 2006). In ordered probit models, normality is assumed and dependent variables are represented by an arbitrary ranking of numbers (Maskey et al. 2006). Table 1 describes the thirteen independent variables used to assess participation levels within economic, social, and access constructs. The dependent variable measured household roles of participation in management groups, described as: 1 = attendance, 2 = suggestion, 3 = discussion, 4 = decision making (see Maskey et al. 2006). However, due to a low distribution of frequencies among the varying categories, the participation variable was recoded as: 0 = non-member, 1 = general member and 2 = leading member. The role of participation

⁴ A sample size of 205 within a population of 860 households is sufficient for categorical data analysis with the assumption of 0.05 alpha level and a 0.05 margin of error (Bartlett et al. 2001; Cochran 1977).

⁵ Remittance is considered payments to friends and family in a migrant's home of residence, practiced by over 190 million migrants totaling US \$433 billion in 2008, of which US \$328 billion went to developing countries (World Bank 2009).

in the first model is a function of income, age, education, remittances, caste, household size, dependents, livestock, land holdings, distance to nearest program office, office visits, and staff visits. The ordered probit model used for research question 1 is:

$$P_i = \beta_1 \text{ Household income} + \beta_2 \text{ Highest education level} + \beta_3 \text{ Age of head of household} \\ + \beta_4 \text{ Education of head of household} + \beta_5 \text{ Remittances} \\ + \beta_6 \text{ Caste/Race/Ethnicity} + \beta_7 \text{ Household size} + \beta_8 \text{ Number of Dependents} \\ + \beta_9 \text{ Livestock} + \beta_{10} \text{ Landholdings} + \beta_{11} \text{ Distance of house to program office} \\ + \beta_{12} \text{ Household member visits to a KCAP office} \\ + \beta_{13} \text{ Household visits by KCAP staff} + e$$

4.4.2 Research question 2: Do participation roles in management groups affect the distribution of benefits among households?

We used a linear regression to determine the distribution of benefits based on the predicted role of participation in management groups identified above (Maskey et al. 2006). A two-stage linear model was constructed for benefits as a function of participation. Participation roles were used as dummy variables with the value of 1 if the role was present and 0 if there was no participation among the three predicted roles. Model estimation used ordinary least squares regression and dropped the intercept to avoid perfect collinearity.

The models used to answer research question 2 are as follows:

Loans borrowed = $f(\text{no participation, general member, leadership position})$

Community development projects = $f(\text{no participation, general member, leadership position})$

Trainings = $f(\text{no participation, general member, leadership position})$

5 Results

5.1 Profile of household respondents

A total of 215 surveys were completed and 205 deemed usable, representing a total of 1,180 residents. The lowest elevation ($\approx 1,800$ m) VDC of Lelep (59%) was the most surveyed, followed by Tapetok (17%), Yamphudin (17%), and the highest elevation ($\approx 3,500$ m) of Olachan Gola (7%). The majority of household heads were male (86%)⁶ and the dominant ethnicities were Sherpa (53%) and Limbu (41%). The average household was headed by a 51-year-old man (86% were headed by males) without any education, and had 5.9 members, of which 2.2 were dependents and under 18 years of age.

The education system within the KCAP region has vastly improved since the establishment of KCAP. The average head of household had 0.8 years of education; however, the highest education of adults (18 or more years old) within the households ranged from 0 to 16 with a mean of 5.8 years. Half of the residents had ever attended school (50%). No one over the age of 60 and only 5% of residents between the ages of 40 and 59 had ever attended school. Only 16% of residents between the ages of 30 and 39 had ever attended

⁶ Households in Nepal are generally male dominated. In addition, sons generally reside at their parents' home with their wives after marriage. Generally, nuclear families are common.

Table 1 Operationalization of variables

Variable	Operationalization
Participation ^a	Roles of participation that a household could take in management groups: 1 = attendance, 2 = suggestion maker, 3 = discussion leader, and 4 = decision-making. Recoded due to low frequency as 0 = non-member, 1 = general member, and 2 = group leader
<i>Economic variables</i>	
Remittance ^b	Yes or no, based on the presence of remittance
Income ^b	A yes or no dichotomy based on the presence of non-agricultural income, e.g., government salaries, tourism, pensions, or other entrepreneurial activities
Landholdings ^{b,c,d}	Total land under the control of the household (hectares)
Total livestock units ^b	Collected in absolute value and converted to livestock units for analysis (1 livestock unit = 1.2 yaks, 1.2 cows, 1.2 buffalo, 5 sheep, 4 goats, 2 calves, 5 pigs, 100 chickens)
<i>Social variables</i>	
Education of head of household ^c	Highest level of education attained by the head of household
Highest education level ^{d,c}	Highest level of education attained by any adult (≥ 18 years) living within the household
Household size ^{b, c}	The number of people residing within the household
Number of dependents ^a	The number of dependents (<18 years old) residing within the household
Age of head of household ^a	Age of the head of household
Caste/Race/Ethnicity ^{a,b,c}	A categorical variable measured as 5 = Brahmin, 4 = Chettri, 3 = Sherpa, 2 = Limbu, and 1 = Rai. This variable was recoded as 1 = Sherpa and 0 = Other due to low frequency distributions in other categories
<i>Access variables</i>	
Household member visits to a KCAP office (n/y) ^b	Whether household members visited the KCAP offices within the past year (0 = no, 1 = yes)
Household visits by KCAP staff (n/y) ^b	Whether KCAP staff visited the household within the past year (0 = no, 1 = yes)
Distance of house to program office ^c	Duration of time to walk to a KCAP office from house (minutes)
<i>Benefits variables</i>	
Loans borrowed ^d	Value of loans the household borrowed from management groups
Community development projects	Number of community development projects perceived to be accrued by household
Training participation (n/y)	Whether household members participated in project training courses within the past year (0 = no, 1 = yes)

^a Adapted from Maskey et al. (2006)

^b Adapted from Agrawal and Gupta (2005)

^c Adapted from Jumbe and Angelsen (2007)

^d Adapted from Adhikari et al. (2004)

school. Therefore, 87% of the residents who had ever attended school were under the age of 30. Due to the lack of education among head of households, and considering the prevalence of nuclear families in Nepal, the research variable of highest educated adult living within a household was used for subsequent analyses.

Over 94% of respondents owned their homes. Houses were built between 1933 and 2008 with a mean age of 24 years. Although 91% of respondents indicated their homes had running water, this result is misleading in that local running water systems consisted of gravity fed, above ground polyvinyl chloride pipes (PVC). Only 1% of households had indoor toilets. Even though 63% of respondents stated their homes had electricity, Ghunsa (6% of the sample) was the only village with a fixed micro-hydro system. Other houses that reported electricity were based on the presence of small solar panels. House walls were made from varying combinations of wood, brick, stones and mud. Only 5% of house walls were built exclusively with wood, but all houses used wood for construction. Bricks constituted 26% of house walls, and 68% used mud as a construction material. Roofs were primarily made from wood (62%), followed by thatch (25%), and a mix of wood and thatch (13%).

The main KCAP office is located in the village of Lelep, while three other branch offices are located in Gola, Ghunsa, and Yamphudin. The average time to reach one of the four KCAP offices by walk is 1 h and 20 min; however, times ranged from a few minutes to 5 h. KCAP staff personnel visited 22% of the households and 15% of households had a member visit a KCAP office in the previous year. Over three-quarters of households participated in management group activities via user groups, mother groups, father groups, and conservation groups. Mother groups had the largest representation (71% of all households), while only 8% of households maintained memberships within another group. Roles of participation within these groups varied: 23% of households did not maintain membership within any group; 64% identified themselves as general members; and 12% identified themselves as holding a leadership position.

The financial wealth of households varied widely among six identified categories of off-farm sources of income. Over three quarters of households (78%) had borrowed money from a management group. The most prevalent source of off-farm income was remittances (32%), followed by tourism (14%), private industry (6%), government (3%), wage labor (3%), and casual labor (3%). Remittances⁷ were received by 29% of households from nearby sources including the district capital of Taplejung and from foreign countries including Qatar, Malaysia, Japan, and the United Kingdom. Annual values of remittances averaged US \$1,284 and ranged from US \$267 to \$534. Households owned an average of 1.2 hectare of land, ranging from 0 to 7.65 hectare. Only 38% of households owned more than one hectare. Most households owned at least one cow or yak depending on elevation. Household Livestock Units values averaged 4.56 and ranged from 0 to 49 (Table 2).

5.1.1 Research question 1: household participation roles in management groups

Results of the ordered probit model are presented in Table 3. The overall model was statistically significant and identified seven independent variables predicting participation in management groups. None of the economic variables were statistically significant.

Four of six social variables were statistically significant. The level of education completed by the head of household had a negative value and was significant, indicating that higher levels of education of the household head resulted in a lower likelihood of household members participating in management groups. However, the highest level of education among adult household members had a positive association with participation, meaning that households with members with higher levels of education were more likely to

⁷ Nepal received US \$1.2 billion in remittances which reflect 14.9% of total GDP in 2006 (World Bank 2008).

Table 2 Descriptive statistics for analysis of participation role variables

Variable	Mean	Standard deviation	Minimum	Maximum	Observations
Participation ^a	0.89	0.58	0	2	205
Remittance ^b	0.31	0.46	0	1	205
Income ^c (non-agricultural)	0.53	0.50	0	1	205
Landholdings (hectare)	1.16	1.21	0	7.65	205
Total livestock units	4.52	5.21	0	49	205
Education of head of household	0.80	2.32	0	10	205
Highest education level	5.81	4.63	0	16	205
Household size	5.87	1.50	1	10	205
Number of dependents	2.22	1.37	0	6	205
Age of head of household	51.56	13.17	25	94	205
Caste/Race/Ethnicity	0.53	0.50	0	1	205
Household member visits to a KCAP office (no/yes)	0.15	0.36	0	1	205
Household visits by KCAP staff (no/yes)	0.21	0.41	0	1	205
Distance of house to program office (minutes)	84	61	1	300	205

^a Participation refers to household role with management groups that are community-based groups which provide financial or technical assistance for both individual and communal decision making (leadership, general, and non-member)

^b Remittance includes any household receiving consistent money from family members that do not live in the house

^c Non-agricultural income includes wage labour, salary, pensions, and non-farm business profits, but not remittances

participate in management, regardless of household position. The size of a household was a significant predictor of participation: households with more members were more likely to participate in management groups. Age was also a predictor of participation in management groups but had a negative relationship, indicating that households with older household heads were less likely to participate in management groups.

All three of the access variables were statistically significant predictors of household participation roles. A visit by a KCAP officer to a household within the past year was a significant predictor of increased likelihood of participation. Household members who visited a KCAP office within the past year also had significantly increased likelihoods of participation. However, the further the distance a house was located from a KCAP office, the less likely it was to participate in management groups.

5.1.2 Research question 2: household participation roles and distribution of benefits

A linear regression was used to determine the distribution of benefits based on the predicted participation role in management groups identified above. We constructed a two stage linear model for benefits as a function of participation. Benefits associated with participation in management groups are represented by the ability to access savings accounts, financial loans, and capacity development training (see Table 4).

KCAP-related benefits were experienced by households within the region with varying levels of impact. The majority of participating households had borrowed loans from their

Table 3 Household participation roles in management groups

Variable	Coefficient	Standard error
<i>Economic variables</i>		
Remittance	-0.005	0.254
Income	0.059	0.229
Landholdings	0.001	0.004
Total livestock units	0.017	0.017
<i>Social variables</i>		
Education of head of household	-0.087**	0.040
Highest education level	0.038*	0.023
Household size	0.205**	0.087
Number of dependents	-0.098	0.100
Age of head of household	-0.015*	0.009
Caste/Race/Ethnicity	0.079	0.192
<i>Access variables</i>		
Household member visits to a KCAP office (no/yes)	0.671***	0.251
Household visits by KCAP staff (no/yes)	0.369*	0.223
Distance of house to program office (minutes)	-0.004***	0.001
<i>Ancillary parameters</i>		
Cut 1	1.477**	0.592
Cut 2	0.730	0.585

Chi-Square (13) = 38.96; Prob (Chi-squared) \leq 0.001; Pseudo-R-Squared = 0.210

Results are based on an ordered probit equation where the dependent variable is ordered 0, 1, or 2. Statistical significance of each coefficient is denoted by *, **, and ***, representing 10, 5, and 1% levels. Ancillary parameters are used to predict the possibility of each participation role based on the standardized normal distribution

Table 4 Participation roles and benefits received

Role	Savings		Loans		Training		Value of loans (US \$)			No. of benefits			Total
	No	Yes	No	Yes	No	Yes	25	25-50	>50	2-3	4-5	6-7	
None ^a	100	0	100	0	85	15	0	0	0	49	38	13	47
General ^b	13	87	2	98	87	13	41	43	16	49	49	2	134
Leader ^c	13	87	13	87	67	33	19	38	43	46	50	4	24
Total	33	64	25	75	84	16	38	42	20	49	47	4	205
Chi-Square	125.6		180.7		6.6		7.2			11.1			
df	2		2		2		2			4			
p-value	\leq 0.001		\leq 0.001		\leq 0.05		\leq 0.05			\leq 0.05			

^a None refers to no participation role in management groups

^b General refers to a general member participation role

^c Leader refers to a leadership role

respective user groups (97%) and had access to savings programs (92%). Loans averaged US \$98 in size and varied from US \$2.67 to US \$2,670. Households with members that maintained community leadership positions were more frequently able to access loans of

Table 5 Perceived household community benefits from KCAP

Community benefits	Yes	No
Trail construction	100	0.0
Bridge construction	95.5	4.5
Drinking water	93.1	6.9
Micro-hydro	34.7	65.3
Improved stove	32.5	67.5
Toilets	5.0	95.0
Healthcare post	4.5	95.5
Day care center	3.0	97.0
Irrigation	1.5	98.5
Greenhouse	0.0	100.0

Mean household perception of community development projects received = 3.71

Table 6 Parameter estimates for benefits received based on participation role

Variables	Community development	Value of loans (US \$)
No participation	3.872**	0
Standard error	0.14	
<i>t</i> value	28.49	
General member	3.649**	66.26**
Standard error	0.08	16.69
<i>t</i> value	45.34	3.97
Leadership position	3.625**	77.67**
Standard error	0.19	39.44
<i>t</i> value	19.06	1.97
R^2	94.1%	8.9%
<i>F</i> value (3, 205)	1,076.81	6.55

* Statistically significant at 5%

** Statistically significant at 1%

greater value. Although interest rates on the borrowed loans varied from 1 to 18%, the majority (83%) had rates less than 2.5%. Respondents participated in training that included animal husbandry, NTFP processing/harvesting, accounting, sewing, cooking, forestry, and agriculture. About 16% of all households participated in training activities with a disproportionate majority from households that held leadership positions. KCAP initiated several community development projects within the region including trail, bridge, and drinking water facility construction. The average household felt they benefited from an average of 3.7 community development projects provided by KCAP (see Table 5). Households with no participation in organized groups perceived a higher number of accrued community development projects.

The estimates for the second stage linear model are presented in Table 6. The model used accrued benefits as a function of participation role, since the first model concluded that participation role is a function of socio-economic factors. Non-members tended to be excluded and leadership positions were rewarded; thus benefits received were a function of participation roles. The estimates for community development and amount of loans borrowed were also statistically significant; thus, the value of loans borrowed increased with the higher participation role in management groups.

6 Discussion

Our findings identified the variables that influence household participation roles in management groups in KCAP and, ultimately underline the impact of participation roles on the distribution of benefits derived from involvement in decentralized conservation programs. Economic, social, and access variables were included in the analyses. Overall, our findings suggest that none of the economic variables measured were significantly related to household participation roles. Other related studies about decentralized conservation management programs in Nepal found economic variables to be statistically significant predictors of program participation that included income, landholdings, livestock, and remittances (Adhikari et al. 2004; Agrawal and Gupta 2005; Allendorf 2007; Dev et al. 2003; Mehta and Kellert 1998; Maskey et al. 2006; Neupane 2003; Sharma 2000; Smith et al. 2003). In this study, alternative forms of income, quantity of land owned, and number of livestock were non-significant variables. The lack of statistical significance among these economic variables could be associated with the economic homogeneity of the population. There were significant positive correlations between the four economic variables, indicating that if a household had one of the variables, it usually had all four variables. Likewise, if a household was economically disadvantaged within one economic variable, they were often disadvantaged in all four variables. However, overall the KCAP region is rather economically homogeneous: most people are quite poor. The amount of livestock owned by a household is highly correlated with altitude and inversely related to land ownership. Households at higher elevations have larger herd sizes and less land compared to lower elevation households. It is likely that the lack of variation within the economic variables led to statistical insignificance and poor predictive ability. Future research should consider household levels of natural resource dependency, and further quantify levels of diversified livelihood strategies to control for more socio-economic variations (Ellis and Freeman 2004; Kollmair et al. 2003).

Social variables were significantly related to household participation roles and included education levels of the head of household, highest education levels of household adults, head of household age, and size of households. Our findings were similar to other research conducted in Nepal. Education levels have been found to be either negatively (Agrawal and Gupta 2005) or positively related (Maskey et al. 2006) to participation levels. Such incongruence could be associated with discrepancies in operationalizing the variable. Agrawal and Gupta (2005) operationalized education as the summed years of education of all household adults (15 years of age or older). In this study, education was measured by two variables: the total years of education completed by the head of household and the highest level of education completed by any household adult (18 years of age or older). The two education variables had conflicting impacts on participation roles, where the education level of the head of household was negatively related to participation roles and the highest education level of household adults was positively related to participation roles. Although Maskey et al. (2006) found age to be positively related to participation roles, our results demonstrate a statistically significant negative relationship. Caution needs to be exercised when making policy suggestions based solely on education or age variables due to the unresolved association with participation roles.

Although the number of dependents living within a household did not significantly predict participation, total household size did play a role. Households within KCAP are large with many adults from the extended family living in one household. Family size has been proven to have an impact on participation roles, and has been previously measured as the total number of individuals within the household (Agrawal and Gupta 2005), or as the

number of dependents (Maskey et al. 2006). Results in this study found that overall household size was a better predictor of participation roles than the number of dependents. Conservation area managers should seek participation from smaller households to ensure a more representative level of involvement within conservation areas and between socio-economic categories.

Similar to Agrawal and Gupta (2005), all three access variables in this study were significantly related to participation roles. An increase in interactions with KCAP offices and staff was positively related to participation roles, highlighting the importance of program staff to conduct social mobilization activities that include social capacity trainings and community development projects. Simply allowing the community to interact with agency staff provides a major benefit. Although the access variables were significant predictors of participation roles, relatively few households perceived access to project staff and offices. Households further away from KCAP offices were only slightly less likely to participate, similar to Mehta and Kellert (1998). Similarly, lack of awareness of knowledge necessary to participate has been identified as barriers to participation in the region (Gurung 2006; Locher and Muller-Boker 2007). Moreover, given that there are only two community mobilizers for a region of this size which is geographically isolated, and comprises a heterogeneous population is dreadfully inadequate (Cole 2006; Gurung 2006; Locher and Muller-Boker 2007). Participation can be used to empower essential yet excluded disenfranchised individuals and groups to enhance community capacity to manage ICDPs and associated economic activities like forestry and tourism (Acharya et al. 2007; Agarwal 2001; Cole 2006; Scheyvens 2003).

The results of this study are important in the context of mountain versus terai (lowlands) research and of community-based natural resources management in Nepal. The mountainous KCAP area does not have the socially dominant groups found in other studies, including the Brahmin and Chettri castes that live in the lowlands. This study site predominantly comprised Sherpa and Limbu ethnicities, heterogeneously distributed following topographic lines. Most villages were dominated by one caste, and thus limited caste interactions. However, the distribution of benefits among ethnicities within KCAP was found to be unequal.

Households with higher community participation roles benefited from enhanced access to financial credit in terms of higher principles and lower interest rates. Higher participation roles also provided an increased level of involvement in capacity development training offered via program offices. If equal distribution is a goal within KCAP, increased promotion of program participation is important. Decentralized conservation programs have been heralded in the literature based on their theoretical ability to (1) decrease organization costs, (2) provide financial and technical assistance opportunities to previously excluded stakeholders, and (3) create a creatively enhanced and competitive economic sector (Agrawal and Gupta 2005; Ribot 2002). However, given the discrepancies of loan and interest rate distributions across households, and the unequal distribution of capacity development training, further research is needed to determine the level of financial and social inequalities and possible financial corruption activities. KCAP needs to address the current lack of institutional capacity and thereby improve the linkage of multiple levels of governance within a needed pluralistic framework as identified by Berkes (2007). A focus on institutional enhancement is needed along with devolution of authority within conservation and development programs (Agrawal and Gibson 1999).

There are few limitations to this study. Although the primary researcher previously lived in Nepal and spoke the national language, cultural differences were still present. Local research assistants were hired to alleviate response or researcher bias; however, the

availability of trained social researchers at the site was minimal. Although the operationalization of variables within this study was adapted from previous research conducted in decentralized conservation programs, additional improvements could be made. Due to low frequencies in the participation role, we recoded participation into three categories. We suggest that future researchers include a descriptive example of each participation role with the questionnaire, thereby ensuring complete comprehension of role categories. In addition, the economic variables of remittance and non-farm income should be measured as absolute values to further distinguish variation within the population.

Overall, this study showed that although KCAP is the first completely decentralized conservation program in Nepal, a disproportionate amount of the available benefits provided by conservation are concentrated within a small proportion of decision-making households. Though the ICDP literature calls for complete devolution of decision-making responsibilities and equitable distributions of benefits for sustainability, neither currently exists at KCAP. Current enhanced accessibility to financial and institutional capitals need to be championed and continually promoted to increase institutional resiliency in management groups, especially in such isolated and external shock susceptible regions (Baral et al. 2010). Results demonstrate the importance of targeting and empowering disadvantaged households, while educating them about the significance of participation in order to have a more equitable distribution of benefits within decentralized conservation programs to enhance their sustainable livelihoods (Cole 2006; Scheyvens 2003).

Acknowledgments We wish to acknowledge Aerin Jacob for her contributions to the written text. We would also like to thank the staff of the DNPWC, especially Megh Bahadur Pandey. Finally, we thank the people in KCAP who shared both their perspectives and their time with us.

References

- Acharya, S., Yoshino, E., Jimba, M., & Wakai, S. (2007). Empowering rural women through a community development approach in Nepal. *Community Development Journal*, 42(1), 34–46.
- Adhikari, B., Di Falco, S., & Lovett, J. C. (2004). Household characteristics and forest dependency: Evidence from common property forest management in Nepal. *Ecological Economics*, 48(2), 245–257.
- Adhikari, B., & Lovett, J. C. (2006). Institutions and collective action: Does heterogeneity matter in community-based resource management? *Journal of Development Studies*, 42(3), 426–445.
- Agarwal, B. (2001). Participatory exclusions, community forestry, and gender: An analysis for South Asia and a conceptual framework. *World Development*, 29(10), 1623–1648.
- Agarwal, B. (2009a). Rule making in community forestry institutions: The difference women make. *Ecological Economics*, 68(2009), 2296–2308.
- Agarwal, B. (2009b). Gender and forest conservation: The impact of women's participation in community forest governance. *Ecological Economics*, 68(2009), 2785–2799.
- Agrawal, A. (2000). Small is beautiful, but is larger better? Forest-management institutions in the Kumaon Himalaya, India. In C. Gibson, M. McKean, & E. Ostrom (Eds.), *People and forests: Communities, institutions, and governance* (pp. 57–85). Cambridge: The MIT Press.
- Agrawal, A., & Gibson, C. C. (1999). Enchantment and disenchantment: The role of community in natural resource conservation. *World Development*, 27(4), 629.
- Agrawal, A., & Gupta, K. (2005). Decentralization and participation: The governance of common pool resources in Nepal's Terai. *World Development*, 33(7), 1101–1114.
- Allendorf, T. (2007). Residents' attitudes toward three protected areas in southwestern Nepal. *Biodiversity and Conservation*, 16(7), 2087–2107.
- Bajracharya, S., Furley, P., & Newton, A. (2006). Impacts of community-based conservation on local communities in the Annapurna conservation area, Nepal. *Biodiversity and Conservation*, 15(8), 2765–2786.
- Baral, N., & Heinen, J. T. (2005). The Maoist people's war and conservation in Nepal. *Politics and the Life Sciences*, 24(1), 2–11.

- Baral, N., & Heinen, J. T. (2007). Decentralization and people's participation in conservation: A comparative study from the western Terai of Nepal. *International Journal of Sustainable Development and World Ecology*, 14(5), 520–531.
- Baral, N., Stern, M., & Heinen, J. (2010). Growth, collapse, and reorganization of the Annapurna Conservation Area, Nepal: An analysis of institutional resilience. *Ecology and Society*, 15(3), 10.
- Bartlett, J., Kotrlík, J., & Higgins, C. (2001). Organizational research: Determining appropriate sample size in survey research. *Journal of Information Technology, Learning and Performance*, 19(1), 43–50.
- Berkes, F. (2007). Community-based conservation in a globalized world. *Proceedings of the National Academy of Sciences of the United States of America*, 104(39), 15188–15193.
- Bhattarai, K., Conway, D., & Shrestha, N. (2005). Tourism, terrorism and turmoil in Nepal. *Annals of Tourism Research*, 32(3), 669–688.
- Booth, D., Holland, I., HentcheLand, J., Lanjouw, P., & Herbert, A. (1998). *Participation and combined methods in African poverty assessment: Renewing the agenda*. London: Department for International Development.
- Brandon, K., Redford, K., Sanderson, S., Redford, K., & Sanderson, S. (1998). *Parks in peril: People, politics, and protected areas and the defense of tropical diversity*. New York, NY, USA: Oxford University Press.
- CBS. (2001). *National report*. Kathmandu: Central Bureau of Statistics.
- Cochran, W. (1977). *Sampling techniques*. New York, NY, USA: Wiley.
- Cole, S. (2006). Information and empowerment: The keys to achieving sustainable tourism. *Journal of Sustainable Tourism*, 14(6), 629–644.
- Denzin, N., & Lincoln, Y. (2000). *Handbook of qualitative research*. Thousand Oaks, CA: Sage.
- Dev, O., Yadav, N., Springate-Baginski, O., & Soussan, J. (2003). Impacts of community forestry on livelihoods in the middle hills of Nepal. *Journal of Forest Livelihood*, 3(1), 67–87.
- Ellis, F., & Freeman, H. A. (2004). Rural livelihoods and poverty reduction strategies in four African countries. *Journal of Development Studies*, 40(4), 1–30.
- Gurung, G. (2006). Reconciling conservation and livelihood needs in protected areas of Nepal: A case study of Kanchenjunga conservation area. In J. McNeely, T. McCarthy, A. Smith, L. Olsvig-Whittaker, & E. Wikramanayake (Eds.), *Conservation biology in Asia* (pp. 45–61). Kathmandu, Nepal: The Society for Conservation Biology Asia Section and Resources Himalaya.
- Heinen, J. T., & Mehta, J. N. (1999). Conceptual and legal issues in the designation and management of conservation areas in Nepal. *Environmental Conservation*, 26(01), 21–29.
- Ikeda, N. (2004). Economic impacts of livestock depredation by snow leopard *uncia uncia* in the Kanchenjunga conservation area, Nepal Himalaya. *Environmental Conservation*, 31(04), 322–330.
- IUCN. (2003). *Durban action plan*. IUCN World Park Congress.
- Jumbe, C. B. L., & Angelsen, A. (2007). Forest dependence and participation in CPR management: Empirical evidence from forest co-management in Malawi. *Ecological Economics*, 62(3–4), 661–672.
- Kollmair, M., Muller-Boker, U., & Soliva, R. (2003). The social context of nature conservation in Nepal. *European Bulletin of Himalayan Research*, 24, 25–62.
- Lachapelle, P., Smith, P., & McCool, S. (2004). Access to power or genuine empowerment? An analysis of three community forest groups in Nepal. *Human Ecological Review*, 11(1), 1–12.
- LADDER. (2001). *Methods manual for fieldwork*. LADDER working paper no. 2. Norwich: ODG/EUA.
- Lise, W. (2000). Factors influencing people's participation in forest management in India. *Ecological Economics*, 34(3), 379–392.
- Locher, M., & Muller-Boker, U. (2007). But now men also listen to the women. Women's-development approach in the Kanchenjunga Conservation Area Project, East Nepal. *Asiatische Studien, Etudes Asiatiques LXI(4)*:1113–1139.
- Maskey, V., Gebremedhin, T. G., & Dalton, T. J. (2006). Social and cultural determinants of collective management of community forest in Nepal. *Journal of Forest Economics*, 11(4), 261–274.
- Mehta, J. N., & Kellert, S. R. (1998). Local attitudes toward community-based conservation policy and programmes in Nepal: A case study in the Makalu-Barun conservation area. *Environmental Conservation*, 25(4), 320–333.
- Muller, U., Gurung, G. S., Kollmair, M., & Muller-Boker, U. (2008). "Because the project is helping us to improve our lives, we also help them with conservation"—Integrated conservation and development in the Kanchenjunga Conservation Area, Nepal. In M. Galvin & T. Haller (Eds.) *People, protected areas and global change: Participatory conservation in Latin America, Africa, Asia and Europe*. Perspectives of the Swiss National Centre of Competence in Research (NCCR) North-South, University of Bern, Vol. 3 (pp. 363–399). Bern: Geographica Bernensia.
- Muller-Boker, U., & Kollmair, M. (2000). Livelihood strategies and local perceptions of a new nature conservation project in Nepal. *Mountain Research and Development*, 20(4), 324–331.

- Neupane, H. (2003). Contested impact of community forestry on equity: Some evidences from Nepal. *Journal of Forest Livelihood*, 2(2), 43–51.
- Nyaupane, G. P., & Thapa, B. (2004). Evaluation of ecotourism: A comparative assessment in the Annapurna conservation area project, Nepal. *Journal of Ecotourism*, 3(1), 20–45.
- Nyaupane, G. P., & Thapa, B. (2006). Perceptions of environmental impacts of tourism: A case study at ACAP, Nepal. *International Journal of Sustainable Development and World Ecology*, 13(1), 51–61.
- Pretty, J. N. (1995). Participatory learning for sustainable agriculture. *World Development*, 23(8), 1247–1263.
- Ribot, J. C. (2002). *Democratic decentralization of natural resources: Institutionalizing popular participation*. Washington, DC: World Resources Institute.
- Ribot, J. C. (2003). Democratic decentralisation of natural resources: Institutional choice and discretionary power transfers in sub-Saharan Africa. *Public Administration and Development*, 23(1), 53–65.
- Robinson, J. G. (1993). The limits to caring: Sustainable living and the loss of biodiversity. *Conservation Biology*, 7(1), 20–28.
- Scheyvens, R. (2003). *Tourism for development, empowering communities*. New Jersey: Prentice Hall.
- Sharma, A. (2000). Glamour and gripes of community forestry: Impact on income distribution. *Banko Janakari*, 10(2), 9–13.
- Smith, R. J., Muir, R. D. J., Walpole, M. J., Balmford, A., & Leader-Williams, N. (2003). Governance and the loss of biodiversity. *Nature*, 426(6962), 67–70.
- Terborgh, J., van Shaik, C., Davenport, L., Rao, M., van Shaik, C., Davenport, L., et al. (2002). *Making parks work: Strategies for preserving tropical nature*. Washington, DC: Island Press.
- Thapa, B. (2004). Tourism in Nepal: Shangri-la's troubled times. *Journal of Travel and Tourism Marketing*, 15(2), 117–138.
- Thomas-Slayter, B., & Bhatt, N. (1994). Land, livestock, and livelihoods: Changing dynamics of gender, caste, and ethnicity in a Nepalese village. *Human Ecology*, 22(4), 467–494.
- Timsina, N., & Paudel, N. (2003). State versus community: A confusing policy disclosure in Nepal's forest management. *Journal of Forest Livelihood*, 2(2), 8–16.
- Walpole, M. J., & Goodwin, H. J. (2001). Local attitudes towards conservation and tourism around Komodo National Park, Indonesia. *Environmental Conservation*, 28(02), 160–166.
- Wells, M., & Brandon, K. (1992). *People and parks: Linking protected area management with local communities*. World Bank: Washington, D.C.
- Wells, M., McShane, T. O., Dublin, H. T., & O'Connor, S. (2004). The future of integrated conservation and development projects: Building on what works. In M. Wells & T. O. McShane (Eds.), *Getting biodiversity projects to work: Towards more effective conservation and development* (pp. 397–421). New York: Columbia University Press.
- White, S. (1996). Depoliticising development: The uses and abuses of participation. *Development in Practice*, 6(1), 6–15.
- White, H. (2002). Combining quantitative and qualitative approaches in poverty analysis. *World Development*, 30, 511–522.
- World Bank. (2008). *Migration and remittances factbook*. <http://econ.worldbank.org>. Cited Jan 20, 2009.
- World Bank. (2009). *Remittance market lookout*. <http://econ.worldbank.org>. Cited Jan 20, 2009.
- WWF. (2007). *Sacred Himalayan landscape in Nepal: Understanding the changes in livelihoods assets with locals: A case study from Kanchenjunga conservation area project, Nepal*. Kathmandu, Nepal: World Wildlife Fund.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.