RESEARCH PAPER

Community-based forest management and its role in improving forest conditions in Nepal

Anup Gurung · Rajesh Bista · Rahul Karki · Shanti Shrestha · Dharam Uprety · Sang-Eun Oh

Abstract The status of forest conditions before and after intervention of the forestry projects in community forest in three districts of Nepal is examined. Benefits are observed from the adoption of adaptive collaborative management and collective learning and action research in three sampled districts. The adoption of regular silvicultural treatments has increased the availability of forest products to local users. Moreover, improved forest condition and smallholder livelihoods have improved, as has environmental sustainability. However, the community forestry program has several limitations and shortcomings. Elite capture, social disparity, inequitable benefit-sharing and exclusion of poor and marginalized groups from the community forestry program are notable challenges to be solved in coming years. Special attention is needed to make community forestry inclusive with equitable benefit-sharing and a pro-poor focus.

A. Gurung (✉) · S.-E. Oh (✉)
Department of Biological Environment, Kangwon National University,
Hyoja-dong, Gangwon-do, Chuncheon-si 200-701, Republic of Korea
e-mail: anuptamu@gmail.com

S.-E. Oh
e-mail: ohsangeun@kangwon.ac.kr

R. Bista · R. Karki
ForestAction, Kathmandu, Nepal

S. Shrestha
Department of Botany, Tribhuvan University, Kirtipur, Nepal

D. Uprety
Multi-stakeholder Forestry Program, Services Support Unit, Kathmandu, Nepal

Introduction

In order to reduce the rate of deforestation, there has been increasing interest among researchers and policy-makers in developing and evaluating efficient alternative methods of forest management (Rudel and Roper 1997; Laurance 1999; Gautam et al. 2004b; Pant et al. 2008). In recent years, many countries have begun to adopt community-based management of common pool resources (CPRs) as an important land-use policy, with due consideration to local-specific conservation and development requirements (FAO 1997; Wagley and Ojha 2002; Adhikari et al. 2007). In Nepal, the failure of state-controlled forest policies rejuvenated the concept of community-based natural resource management (CBNRM) from the early 1980s (WB 2001). The national government formally adopted CBNRM in 1978 to meet the subsistence forestry needs of local people and maintain ecological balance through scientific management of forests while simultaneously empowering ultra-poor and underprivileged communities by handling limited government forests to local control as well as ensuring their access and rights to forestry products (Adhikari 2005; Gautam 2009; MOF 2011). Accordingly, the government of Nepal divided its forest management regime into six main categories: National Forests, Community Forests, Leasehold Forests, Private Forests, Collaborative Forest Management and Religious or Protected Forests (Acharya 2002; Wagley and Ojha 2002).

Nepal's community forestry program was initially introduced in the mid-hills and the program provided a substantial level of autonomy by recognizing perpetual sovereignty of the community forest user groups (CFUGs) (Springate-Baginski et al. 1999; Ojha et al. 2009). Thereafter, the program evolved continuously over the years by gaining popularity among the local forest users (Gautam et al. 2004a; Giri and Ojha 2010). Nepal's community forestry program has achieved notable successes in terms of improving the forest conditions and rural livelihoods (Acharya 2002; Gautam et al. 2004a; Gautam 2009). Because of these successes, Nepal is considered as one of the most progressive countries in the world in terms of community forestry, and CBNRM is widely recognized an innovative approach to forest management and its governance in Nepal (Acharya 2002; Gautam et al. 2004b; Giri and Ojha 2010).

The decentralization of forest management in Nepal has proved to be one of the important activities of CFUGs for generating income (Kanel and Niraula 2004; Gautam 2009). It is estimated that Nepal' community forestry sector contributes over US$10 million[1] per year to the national GDP (Kanel and Niraula 2004). In recent years, income from the community forestry program has encouraged CFUGs to initiate developmental works, including construction of roads, schools and health posts (Adhikari et al. 2007; Gautam 2009). Despite the multiple functions it performs (including social, economic and environmental functions), community forestry continues to face organizational, structural and societal challenges (Sapkota and Oden 2008; Gautam 2009). Nepal's community forestry sector has been doomed by *passive* management of CPRs due to inequitable distribution of benefits,

---

[1] 1 US$ = 85.89 NRs. as of 18th May, 2012.

combined with uneven sense of ownership and motivation among the FUGs (Pokharel 2004; Gautam 2006). Moreover, socioeconomic disparity among users and their dependence on CPRs has become a subject of concern, when the responsibility of allocating CPRs is delegated to local communities (Sapkota and Oden 2008). This paper examines various ways in which community forestry is contributing benefits to local livelihoods and forest sustainability. In particularly, the paper addresses the question: 'What are the forest conditions before and after the introduction of a project[2] for strengthening the management policies and governance in existing community forestry?'

Study area and research method

The study was undertaken in three districts—Lalitpur, Baglung, and Nawalparasi—covering the three geographical regions of Nepal, namely Mid-hills, High-hills and Terai. The data used for this paper mainly come from the comparison before and after the 3 year (2008–2011) strategic plan adopted by the community during the 'forest management and governance training' as a part of the project 'Reducing Poverty through Innovation System in Forestry (RPISF)'. Data were collected between November 2010 and May 2011, and three data collection methods were employed, namely baseline survey, community forest management governance training and national sharing about the outcome of the project among the host organizations.

The baseline survey

In order to evaluate the forest conditions under the CFUGs, with due consideration of community forestry contributing to sustainable livelihoods and its management governance, a baseline survey was conducted in a total of 58 CFUGs (15 CFUGs of Lalitpur district, 28 CFUGs of Baglung district, and 15 CFUGs of Nawalparasi district) (Table 1). The baseline data on attributes of the forest conditions, CFUGs, forest use and other livelihood related information were collected employing mixed methods: household interview, interview with user group committee (UGC) and executive members, a focus group discussion (FGD), and regular field observations by a team comprised of a forester, a botanist and a social scientist for evaluation of the project.

---

[2] The partner organizations of the project are the Forest Resources Studies and Action Team (ForestAction Nepal), Federation of Community Forest Users Nepal (FECOFUN), Nepal Herbs and Herbal Products Association (NEHHPA), Nepal Forum for Environmental Journalists (NEFEJ) and Central Department of Sociology and Anthropology Tribhuvan University (CDSA-TU). The project has been funded by the Research into Use (RIU) Program of the UK Department for International Development (DFID), with partial funding support from IDRC. The project was formally implemented from 11 June 2008 to 30 June 2011. The aims of the project have been to: strengthen the community institutions (such as community forest user groups-CFUGs); enhance forest access for the users, particularly the poor and marginalized groups, to forest resources and forest resource-related markets; improve governance system of the CFUGs, CFUG networks and service providers; and apply an innovation systems approach among coalition partners as well as with local communities and other stakeholders.

Table 1 Total community forestry and users from the three districts

Study districts	Total community forestry	Total users
Lalitpur	15	6,841
Baglung	28	20,218
Nawalparasi	15	33,230
Total	58	60,289

Community forest management governance training

In the initial stages forest management and governance training were conducted in each CFUGs in the three districts. Five action-oriented thematic committees were formed in each participating CFUG—during the 'Forest Management and Governance' training period. These committees are: (1) Forest and Environmental conservation and development; (2) Institutional development of CFUG; (3) Community development; (4) Poverty reduction; and (5) Enterprise development. Two-year strategic plans and 10-year visioning plans were prepared by each committee. Various forms of reports—including the local resource person (LRP) monthly report, member feedback, CFUG minutes, CFUG constitutions, and other survey records—were analyzed to understand the nature of existing government forest management procedures. The major outcome of this training cum workshop is to sensitize the CFUGs about governance and forest management issues.

National sharing about the outcome of the project among the host organizations

All the experience and knowledge gained by individuals from various districts were discussed at common forums of all stakeholders, including: the district forest officer; concerned district; Federation of Community Forest Users Nepal (FECOFUN); non-governmental organizations (NGOs); coalition partners of RIU[3] program; experts (sociologist, economist and environmentalist); and media personnel. This discussion helped to develop a common consensus on the problems and also created the opportunity to share and learn about the various innovation practices of the districts.

Results

The comparative studies of the forest conditions before and after intervention of the project (RPISF) in the existing community forestry have revealed improved establishment and planting of useful plants. As depicted in the Table 2, all CFUGs

---

[3] RIU embraces holistic approach to elucidate the process of governance and management and integrating activities with innovation systems through which research can be better used to promote social and economic development in Asia and African countries. RIU is funded through DFID. The RIU Asia program is divided into four themes, further information about which can be found on www.resourceintouse.com. Theme 3, on scaling up of natural resource management research products, has a cluster of projects related to community forest management in Nepal. RIU is managed by the coalition of diverse organizations including: ForestAction, FECOFUN, NEFEJ, NEHHPA and CDSA-TU.

have been involved in active forest management such as identification of useful plants, nursery production and planting of useful plants. Out of 35 CFUGs, two CFUGs completely implemented their strategies. All CFUGs were positive towards preservation of endangered species in the locality.

According to the household respondents, the harvesting system for fuelwood, timber, fodder, and non-timber forest products (NTFPs) were unsustainable before the project intervention. Prior to involvement of the RPISF in the designated CFUGs, local users used to practice indigenous knowledge to protect, manage, and harvest forest products for fulfilling their basis needs. According to the interviewed UGC executives, most of the CFUGs were familiar with only local tree species and never been prioritized the species according to their needs. However, in recent years majority of the CFUGs have prioritized tree species according to household demand as well as to earn income from forest products. *Schima wallichii* (Chilaune), *Shorea robusta* (Sal), *Pinus* sp. (Sallo), *Dalbergia sissoo* (Sisau), and *Castanopsis hystrix* (Katus) are the most prioritized tree species of the CFUGs in three districts. The survey also revealed that the prioritization of tree species is determined by geographical condition as well as species availability. For example, in Lalitpur and Baglung districts *S. wallichii* and *Pinus* sp. are the most preferred tree species and in Nawalparasi *S. robusta* is the most preferred one which has high economic value for fuelwood and lumber timber. In Lalitpur district *S. robusta* is not available whereas in Baglung district it is rarely available and *S. wallichii* is taken as main tree species for household use and commercialization in both of these districts.

In recent years, bamboo has been recognized as useful species in all the CFUGs of Lalitpur, Baglung, and Nawalparasi due to its multiple benefits including house-thatching, rope, bamboo baskets, and preparing the skeletons of indigenous house frames. Amriso (broom grass), dale ghas (fodder grass), and *Sacrum* sp. including bankash and khar are other useful plants have been identified by the CFUGs in the community forestry. These plants play a pivotal role in fulfilling the livelihood requirements of the local users, particularly for those who cannot afford to buy modern housing materials such as wooden beams and galvanized sheets for roofing. After 2 years of the project intervention, the respondents were asked to categorize the status of prioritized species (Table 3). Approximately 43 % of the respondents replied that after the intervention of the coalition partners in the designated districts, the status of the important tree species has been improved in all the CFUGs.

Table 2 Identification, nursery production and planting of useful species

Status of planned activities	Number of CFUG	
	Before intervention	After intervention
Not initiated	3	0
1–25 % completed	24	6
26–50 % completed	6	18
51–75 % completed	2	9
76–100 % completed	0	2
Total	35	35

Table 3 Status of prioritized species in the studied 58 CFUGs

Status of species	Good	Improving	Satisfactory	Poor	Don't know
Number of CFUG	25 (43.1)	20 (34.5)	6 (10.3)	6 (10.3)	1 (1.7)

Values in parenthesis are percentages of CFUGs

An important contribution of the community forests is supply of fuelwood, fodder, timber and NTFP. The supply and utilization of forest products were variable across the CFUGs. In most of the studied CFUGS, community forests are not in satisfactory condition to provide required forest products to local users and contribute for community development activities. Although income generating is considered as an important activity of community forestry, the revenue of the CFUGs was low. At present most of the CFUGs do not have sufficient funds for directing towards sustainable livelihoods of local users, particularly those who depend on forest products for fulfilling their basic needs.

In most of the community forests the local users and the UGC members do not know actual prescription levels of forest products stated in the operational plan. Similarly, the UGC members lack technical knowledge of the specifications of the stock. For example, timber is calculated and written in cubic feet (cft) in operational plans, however, the local users generally do not understand this volume unit, and most of the CFUGs lack technical staff. In general, the local quantity unit Bhari[4] is used for extraction of fuelwood and the stock of timber is counted on the basis of number of tree present. Table 4 summarizes the stock and annual harvest of forest products in three districts.

As depicted in the Table 4, most UGCs have adopted a protection-oriented approach rather than supplying forest products to local users. Approximately 6 % of the total stocks of forest products were harvested in the sampled community forests annually. Local users were found to not follow the harvesting system prescribed in the operational plan of the CFUGs. For example, in Sisne-pani community forest of Lalitpur district only 7.5 ha of land has been allocated to 64 households. Due to poor forest condition, the UGCs do not harvest timber and fuelwood annually; however when the households are allowed to extract forest products the local users removed almost double the prescription level. One of the underlying reasons for the low rate of exploitation of forest products from the community forests is the protection-oriented approach of forest management adopted by the UGCs. The UGC adopted protection-oriented approach mainly to restore and preserve the forest products by promoting planting in the degraded forests.

The research findings revealed that the intervention of forestry projects in the studied CFUGs has improved the forest conditions as well as increasing the awareness of forest degradation among local users. As depicted in the Table 5, more than 11 CFUGs have completely set the provision of forest protection such as fencing, fire line construction, watchmen, and imposition of penalties for illegal collection of forest products.

---

[4] *Bhari* is a local Nepali term denoting a load of fuelwood and is equivalent to approximately 35–40 kg.

Table 4 Stock and annual harvest of forest products in the three study districts

Forest product	Unit	Minimum	Maximum	Average	SD
Timber stock	Cubic feet	1,969	98,340	32,458	24,392
Fuelwood stock	Bhari	2,000	71,400	23,594	20,031
Fodder or grass	Bhari	330	16,000	4,802	5,426
Annual timber harvest	Cubic feet	179	6,594	2,151	1,415
Annual fuelwood harvest	Bhari	170	5,422	2,286	1,664
Annual fodder harvest	Bhari	460	1,600	865	517

Table 5 Status of forest protection in the studied CFUGs

Status of planned activities	Number of CFUG	
	Before intervention	After intervention
Not initiated	5	0
1–25 % completed	3	1
26–50 % completed	4	2
51–75 % completed	5	3
76–100 % completed	0	11
Total	17	17

Prior to adoption of any external organizations, there was non-uniformity in the number of CFUGs in the different levels of task. However, after the intervention of the coalition partners, most CFUGs become active in adaptation of rules and regulations, which promoted forest protection activities. There was a significant change in forest protection after involvement of the project. Accessing the practice and knowledge about the various forest management activities, the CFUGs were conducting regular tending and cultural operation plan as guided by the operational plan. The RPISF aims to maintain healthy forest ecosystems for which communities have been supported by forest management training. After the intervention of the project the CFUGs have initiated regular silvicultural practices (Table 6). Out of the 36 CFUGs, only 1 has completed the tending and cultural operation like weeding, bush clearing, thinning, and pruning. This kind of silvicultural practice in the forest is needed in every year. Thus, outcomes from the project are satisfactory, with the majority of CFUGs at the stage of 51–75 % completion of their planned activities.

According to the household respondents, before the intervention of the project, the majority of the CFUG has completed the 25 % of the task. After the project facilitation on forest management, the majority of the CFUGs have completed 75 % of the task. Thus the finding shows that there is significance change in silvicultural practice adoption in the project implement CFUGs.

Timber and fuelwood are highly valued as commercial forest products in all the sampled CFUGs. In recent years, NTFP is also prioritized as one of the important species in the community forestry. Out of 58 CFUGs, 37 CFUGs have identified some commercial NTFPs in the community forests. Table 7 depicts the 10 most

Table 6 Status of adaptation of silvicultural practice

Status of planned activities	Number of CFUGs	
	Before	After
Not initiated	6	7
1–25 % completed	19	6
26–50 % completed	7	8
51–75 % completed	4	13
76–100 % completed	0	1
Total	36	36

Table 7 List of most common NTFP species found in 38 CFUGs

Species of NTFP	No. of community forest	Use
Amala (*E. officinalis*)	14 (37.83)	Medicine
Barro (*T. bellirica*)	11 (29.72)	Medicine
Harro (*T. chebula*)	11 (29.72)	Medicine
Kurilo (*Asparagus racemosus*)	8 (21.62)	Medicine and vegetable
Chiraito (*Swerita chiraita*)	6 (16.21)	Medicine
Sarpaganda (*Rauwolfia serpentine*)	5 (13.51)	Medicine
Timur (*Zanthoxylum armatum*)	5 (13.51)	Medicine and spices
Bojo (*Acorus calamus*)	4 (10.81)	Medicine
Pipla (*Piper longum*)	4 (10.81)	Medicine
Sugandawal (*Valeriana jatamansii*)	4 (10.81)	Medicine

Values in parenthesis are percentages

commercial NTFPs available in the 38 CFUGs. Amala (*Emblica officinalis*) is the most available NTFP, followed by Barro (*Terminalia bellirica*) and Harro (*Terminalia chebula*). Most of the available NTFPs are being used as medical herb or vegetables. For example, Trifala is a famous herbal medicine in Ayurveda, which is used for curing gastric and constipation, and is produced from Amala, Harro and Barro.

Most of the UGCs and local users were found unknown about the market opportunities and exact price of available NTFPs. Till date there is no market facilities for NTFPs, and is mainly consumed at the local level. Due to weak market penetration, CFUGs are selling NTFPs at a cheap price in the local market. Table 8 shows the system for fixing price of NTFPs in the sampled CFUGs. In general, the market for NTFP is fixed during the meeting of the UGCs and the local users. However, in some circumstances officers from the district forest office also facilitate to fix the price of the NTFPs. Moreover, the qualities of the locally prepared herbal medicines were not in the level to compete with multinational pharmaceutical companies.

After the project intervention, the community has planned to initiate the activities that enhance of the various ecosystem services. Major ecosystem services that community envisioned to enhance are water resource conservation and regulation,

Table 8 System for fixing price of the NTFPs in the sampled CFUGs

Price fixing system	No. of CFUG	Relative frequency (%)
Through mass meeting	48	82.75
Discussion with forest officers	9	15.51
No certain criteria	1	1.72
Total	58	100

Table 9 Creating environment to enhance the ecosystem services

Status of planned activities	Number of CFUGs	
	Before	After
Not initiated	1	0
1–25 % completed	7	2
26–50 % completed	5	7
51–75 % completed	7	6
76–100 % completed	0	5
Total	20	20

landslide control, soil erosion control, fire control and air quality regulation. The research shows that before the intervention of the project some CFUG has initiated the planned activities to generate these kind of services but after the project intervention 5 CFUG has completed their initiation to conservation water resources, landslide and soil erosion control adopting the plantation activities, awareness raising activities and scientific forest management practices (Table 9).

Overall, the status of community appears to have improved in terms of wider connectivity, availability of water for drinking water and irrigation, health and sanitation, after the intervention of the project in the sampled area. However, the status of education and tourism development did not improve even after intervention in any of the three districts. Most of the CFUGs have initiated the distribution of excess funds for community development after the involvement of the project, although the fund available in community forest is less. The CFUGs have allocated 35 % of their income for improving the livelihood of the poor and marginalized groups which rely on forest products for fulfilling their basic demands through the various income generation activities. But the satisfactory success is not in hand.

Discussion

One of the positive impacts of the RIU project is that existing CFUGs maintained the tree species of the community forests according to priority of their requirements and established their own nursery production systems. *S. wallichii* is identified as the priority tree species for timber and fuelwood in Lalitpur and Baglung districts, and *S. robusta* and *D. sissoo* in Nawalparasi district. Lalitpur and Baglung are located in the temperate zone while Nawalparasi lies in the sub-tropical zone. Thus,

existing CFUGs maintained tree species according to the geographical setting as well as household requirements and economic performance. Out of the 47 CFUGs, 35 have started the above-mentioned tasks to promote the wellbeing of the forests so that forest products can be harvest sustainably. In recent years, most of the CFUGs have been concerned about useful NTFPs to meet their local demand as well as to increase their community income. Useful species including bamboo, amriso, dale ghas, bankash and khar have been planted in the community forests to meet their household requirements. These species have traditional livelihood values, particularly for poor and marginalized groups, because they are suitable for house frames and roofing.

NTFPs are also being recognized as important species in the sampled CFUGs. NTFPs play a pivotal role in meeting the values of medicine and vegetable at local level. Despite having potential of great economic prospects, these species were not being taken into consideration; however, the RIU project has encouraged local users to promote the management and utilization of NTFPs. At present most of these species are being used domestically rather than for income generating. There were no market facilities for NTFPs, and hence no market price information is available. Usually, the export of NTFPs managed and harvested from community forests in unprocessed form is banned, and the local users do not have adequate knowledge of processing and preservation (Paudel and Weiss 2009). Thus, NTFPs receive little attention due to government discouragement.

Most CFUGs generate income from selling fuelwood and timber. At present, the revenue of the CFUGs studied was not substantial, and poor and marginalized groups did not benefit as expected. The majority of the local users did not know details of the CFUG funds because the financial auditing was controlled by the elite group. However, after the introduction of the RIU project, local users become increasingly aware about the financial status of the respective community forests. Skill-oriented training was given to poor and marginalized groups because their involvement has direct effects on forest conditions and their livelihoods. One of the achievements of the RIU project is implementation of allocating 35 % of the fund for poor, dalit[5] and marginalized groups, particularly those which depend on natural resources for their livelihood. In Nawalparasi, some CFUGs built houses for the poor as a strategy to make the community forestry pro-poor in practice.

There are still many unresolved issues and challenges in making the community forestry as pro-poor in practice. Notable challenges include social disparity and inequitable benefit-sharing. Most of the CFUGs are led by the elite and wealthier group, and poor and marginalized groups are excluded from the community forestry due to social structure and economic condition. In Baglung, some Kami (dalits) households are excluded from the community forestry, on the grounds that their traditional blacksmith occupation will further degrade the forests. Similarly, in Nawalparasi some households are excluded because they are not able to pay NRs

---

[5] Dalit is a self-designation for a group of people traditionally regarded as 'lower caste' and 'untouchable' according to Hindu caste division system. In Nepal, dalits are a mixed population of numerous caste groups including Kami (Blacksmiths), Damai (Tailors), Sarki (Shoemakers). Discriminations against dalit still exist in rural areas of Nepal and they are not allowed to access to temples, water resources and eating places of higher caste groups.

100 in membership fees for the community forestry. Although Nepal's community forestry is well instituted in terms of CBNRM, its contribution to poor and marginalized livelihoods remains questionable. The livelihoods of the poor and marginalized groups have not improved as expected. In most of the CFUGs, the annual revenue of the community forestry remains low compared to its prospects. Moreover, the program has imposed economic hardship on the poor and marginalized groups because these have no alternative to exploiting forest resources for their living.

Conclusions

Nepal's community forestry program offers both opportunities and limitations to contributing sustainable livelihoods of the local users. Restoration of degraded land and improving forest conditions are the major benefit of community forest. Apart from environmental services, improved forest conditions increases the availability of forest products to the local users thereby improving their livelihoods. Nevertheless, Nepal's community forestry program is shadowed by numerous issues and challenges in implementation. Social disparity, elite capture, exclusion of socially excluded people, inequitable benefit-sharing and lack of transparency are the notable challenges Nepal's community forestry currently facing. The community forestry policy does not optimally support the sustainable and market-oriented management of the forest resources. The livelihoods of the local users, particularly poor people who dependent on forest products for their livelihood have not improved to the extent expected. Due to limited supply of forest products and low revenue from the community forests, the funds allocated for community development are insignificant. More attention needs to be paid in making forest user groups more equitable, inclusive and pro-poor in practice.

References

Acharya KP (2002) Twenty-four years of community forestry in Nepal. Int For Rev 4(2):149–156
Adhikari B (2005) Poverty, property rights and collective action: understanding the distributive aspects of common property resource management. Environ Dev Econ 10(1):7–31
Adhikari B, Williams F, Lovett JC (2007) Local benefits from community forests in the middle hills of Nepal. For Policy Econ 9(5):464–478
FAO (1997) Implementing sustainable forest management in Asia and the Pacific. In: Proceedings of a regional expert consultation, 12–15 December 1995, Bangkok
Gautam KH (2006) Forestry, politicians and power-perspectives from Nepal's forest policy. For Policy Econ 8(2):175–182
Gautam AP (2009) Equity and livelihoods in Nepal's community forestry. Int J Soc For 2(2):101–122

Gautam AP, Shivakoti GP, Webb EL (2004a) A review of forest policies, institutions, and changes in the resource condition in Nepal. Int For Rev 6(2):136–148

Gautam AP, Shivakoti GP, Webb EL (2004b) Forest cover change, physiography, local economy, and Institutions in a Mountain Watershed In Nepal. Environ Manage 33(1):48–61

Giri K, Ojha H (2010) Enhancing livelihoods from community forestry in Nepal: can technobureaucratic behaviour allow innovation systems to work? 9th European IFSA Symposium, 4–7 July 2010, Vienna

Kanel KR, Niraula DR (2004) Can rural livelihood be improved in Nepal through community forestry? Banko Janakari 14(1):19–26

Laurance WF (1999) Reflections on the tropical deforestation crisis. Biol Conserv 91(2):109–117

MOF (2011) Economic survey: fiscal year 2010/11. Ministry of Finance (MOF), Government of Nepal, Kathmandu, Nepal

Ojha HR, Cameron J, Kumar C (2009) Deliberation or symbolic violence? The governance of community forestry in Nepal. For Policy Econ 11(5–6):365–374

Pant M, Kim KH, Joshi C (2008) Temporal mapping of deforestation and forest degradation in Nepal: applications to forest conservation. For Ecol Manage 256(9):1587–1595

Paudel A, Weiss G (2009) Implications of fiscal policy instruments in community forest management of Nepal: issues and challenges. Banko Janakari 20(2):41–47

Pokharel BK (2004) Contribution of community forestry to people's livelihoods and forest sustainability: experience from Nepal. World Rainforest Movement, Maldonado, Uruauay, http://www.wrm.org.uy/countries/Asia/Nepal.html. Accessed on 20th July 2011

Rudel T, Roper J (1997) The paths to rain forest destruction: cross national patterns of tropical deforestation. World Dev 25(1):53–65

Sapkota IP, Oden PC (2008) Household characteristics and dependency on community forests in Terai of Nepal. Int J Soc For 1(2):123–144

Springate-Baginski O, Soussan JG, Dev OP, Yadav NP, Kiff E (1999) Community forestry in Nepal: impacts on common property resource management. School of Environment and Development, Series No. 3, University of Leeds, UK

Wagley M, Ojha H (2002) Analyzing participatory trends in Nepal's community forestry. Policy trend, IGES, Japan, pp 122–142

WB (2001) Community forestry in Nepal. Precis, World Bank Operations Evaluation Department, No. 217, Washington, DC