

Title: From Customary to Customized Institutions for Adaptation to Change in the Mountains

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ABSTRACT

The effects of climate change in Nepal are pronounced among poor and marginal populations whose livelihoods are primarily natural resource based, and where climate change has a potential to cause long-term transformations in local socio-ecological systems. In the study pilots of district of Mustang community livelihoods in the mountains are characterised by subsistence agriculture. History shows that communities here are managing key natural resources like forests, rangelands, and water under traditional governance structures. The local institutional arrangement on CPR's are organised by the local "Mukhiya System". Traditionally the selection of village head men or 'Mukhiya' is not only democratic, but even distribution and allocation of water are inbuilt in their social hierarchy, the informal rules and regulations according to local communities have proven to be an efficient customary governance model. However, with changing times, these institutions are being challenged since apart from non climatic factors such as dominant role of the states in shaping development policy and practice, imposing of top-down statute by the state and increased role of elected local governance bodies, and finally out-migration, climate change impacts are fast affecting such institutions. It is important to understand how traditional institutions are managing CPRs or whether their transformation to manage change is happening. The study analysis draws on Ostrom's Institutional Analysis and Development (IAD) framework, One of Ostrom's defining contributions is the framework, used to analyze policy relevance and effectiveness of institutions. The framework also describes three levels of action: operational, collective choice and constitutional choice. These three are interconnected since, for instance, the outcomes of the 'constitutional choice' affect any 'collective choice' decision-making, which in turn affects operational-level activities. Generic data collection methods were used and data was analyzed using 'systematic qualitative technique'. Five assessment criteria were identified: validity; reliability; objectivity; acceptability to respondents. The most popular and widely used methods were one-to-one interviews and FGDs. Institutional diagnosis of CPRs was done by analysing locally pertinent issues for institutional arrangements such as policy and development; markets; and out-migration. The institutions were assessed by using good governance parameters such as efficiency, equity, accountability and adaptability. The early analysis shows that roles of CPR's for sustaining rural livelihoods has changed over time as multi-stakeholdership in resource use and diversification

are shaping future incomes. This means that institutional arrangements need to adjust. Moreover, effective service delivery, whether it involves health care or natural resource management, requires more than implementing policy.

Keywords: Common Property Resources (CPR); Collective action; Customary institutions; Governance; Institutional structures; Natural resource governance; Communities and Climate Change.

INTRODUCTION

The effects of climate change are most pronounced among poor and marginal populations whose livelihoods are primarily natural resource-based and where climate change has a potential to cause long-term transformations in local socio-ecological systems (Rodima-Taylor, Olwig et al. 2011). Community livelihoods in the mountains are characterised by subsistence agriculture. History shows that where a community is able to protect their natural resource-based livelihoods collectively, they are able to sustain themselves. Common Property Resources (CPRs), or rural commons, are institutional arrangements within communities to collectively manage and harness their natural resources to complement the gains from individually owned natural resources (Jodha, Singh et al. 2012). Managing key natural resources like forests, rangelands, and water under traditional governance structures in mountains is common practice. However, apart from non-climatic factors, such as the dominant role of the states in shaping development policy and practice, the imposition of top-down statutes by the state and increased role of elected local governance bodies, and migration, climate change impacts are fast challenging customary institutions. Such institutions are caught between modernism and traditionalism. Further, the creation of new institutions by external agencies then challenge customary institutions, as issues of inclusiveness, poverty and governance become a priority. Institutional contexts, including not only specific institutions but their interlinkages, thus emerge as mediators not only of resource access but also of access to adaptive strategy options, conduits for delivery of external support, and are therefore integral to local (individual and communal) livelihoods, adaptive practices and innovations (Upton 2011). Therefore, research on the social dimensions of adaptation to change, customary institutions and their multi-scale approach to mediate responses to climate variability require innovation and need to be embedded into social and ecological processes that determine collective actions on the ground. It is important to understand how traditional institutions are managing CPRs or whether they are transforming to manage the present changes. Customary law and practice forms the basis of group tenure and collective resource management in many parts of the world. In at least 28 of the 411 cases included in a worldwide study, there are indications of some level of reliance on customary authority (both with and without state support) for regulating access to forests, fisheries and lands that are managed as common property (Fuys, Mwangi et al. 2006). However, in areas where traditional systems have already fallen into disuse, problems of resource abuse appear imminent (Turkelboom, Gurung et al. 2001). A study from

¹ CGIAR's Collective Action and Property Rights initiative (CAPRI) and the International Land Coalition (ILC) sent out a call for case studies to contribute to a joint study on "Rural Common Property in a Perspective of Development and Modernization." 41 case studies on common property systems from 20 countries in Africa, Asia, Europe and Latin America were synthesized between June and September 2005.

Zimbabwe suggests that the gap between traditional institutions and design principles for sustainable common property resource management can be bridged by making small continuous institutional changes over an extended period of time (Dore 2001). Traditional institutions, although sometimes considered to hinder people's incentives, may enhance the sustainable livelihoods of people living in fragile environments (Omura 2008).

In a study conducted by the International Centre for Integrated Mountain Development (ICIMOD) (Jasra, Joshi et al. 2012), the ownership of pastoral communities was reported as one of the main issues concerning pastoralists in the Hindu Kush Himalayan (HKH) rangelands. However, despite 83% of rangeland in Nepal belonging to local communities, uncontrolled grazing, inadequate governance and management, and climate change were perceived as the main challenges. It is important to understand the institutions managing these resources. This paper drew evidence from cases of the local 'Mukhiya' system in the Lower Mustang region of Nepal, which dates back about 400 years..

Geographical and historical contexts:

Nepal has traditionally relied on locally evolved governance structures for everything from managing and sustaining farming practices to organizing religious and cultural functions. These governance structures have helped fulfil the needs of the community and ensure self-reliance. However, efforts made since the 1950s for decentralization have, instead, led to the process of centralization (Bhattachan 2002). Table 1 gives a succinct account of CPRs in a host of districts in Nepal in terms of their use, management and sustainability. It is evident that CPRs have a consistent local value for ensuring subsistence livelihoods. Therefore, for the purpose of sustainability, community management is of great significance. At the same time, as signs of the degradation of CPRs are frequent, local institutional arrangements need to be better understood and strengthened.

Table 1: Status of CPR's in Nepal.

Common property Resources	Use		Management		Sustainability		Location	Type of study
	Subsistence	Commercial	Local	Government initiated	Sustainable	Degrading		
Community Forestry	✓		✓	✓	✓		All districts of Nepal	Literature review (APFSO II, DoF, 2005)
	✓		✓		✓	✓	Mustang	Field study
Leasehold forestry	✓	✓	✓	✓	✓		27 districts of Nepal	Report review LFLP 2011
Medicinal plants	✓	✓	✓			✓	Humla, Dolpa, Jumla.	Literature review, Luitel. H. 2002, Kunwar, et.al. 2006
<i>Cordyceps Sinensis, Morchella conica, Zanthoxylum Armatum</i>		✓	✓			✓	Baitadi, Darchula	Literature review, CIRRRUS 2008
Bamboo	✓	✓	✓			✓	Sindhuli	Literature review, RECS 2010
Irrigation	✓		✓		✓		Mustang	Filed study + Literature review, (Neupane & Bhatt, 2010)
	✓		✓		✓		Rupandehi	Literature reviews, (Bhattachan, K.P.2002)
water	✓		✓		✓		Accham, Dailekh, Jajarkot & Kalikot	Literature reviews, HELVETAS 2010
crops	✓		✓	✓	✓		24 districts of Nepal	Report review (CARITAS Nepal 2010)
Communal pastures	✓		✓		✓	✓	Mustang	Filed study + Literature review, (Pokhrel & Chetri 2006)
	✓		✓		✓		Rasuwa, Doplal	Literature reviews, (Bhattachan, K.P.2002; Thomas, Et.al 2004

Source: Table modified in context to Nepal, from (Turkelboom, Gurung et al. 2001).

A classic study of the diversity of property rights systems used for many centuries by Swiss peasants (Netting 1981) observed that while individuals fully divided their agricultural land into separate family-owned parcels, grazing lands located on the Alpine hillsides were organized into communal property systems. The same individuals here used different property right systems simultaneously for multiple centuries (Ostrom and Hess 2011). In the ‘Mukhiya’ system, the village headmen determines the use of rights to resources, the specific access and withdrawal rights, sharing of maintenance costs and future investments, and allocation of annual returns from common production activities within the community.

A consistent finding on communal property rights systems is that these do not exist in isolation and are usually used in conjunction with individual ownership. In most irrigation systems that are built and managed by the farmers themselves, for example, each farmer owns his or her own plot(s) while participating as a joint proprietor or owner in a communally organized irrigation system (Ostrom and Hess 2011). It is argued that the government policy should facilitate the emergence of effective, local institutions for rangeland management in Nepal. Given the limited grazing land available to many communities in the region, a critical aspect of this will be finding ways to legitimize current patterns of extensive resource use that traverse existing ‘community’ boundaries. (Bennett, Ainslie et al. 2010)

Mustang is a unique district where the government policy envisions the use of CPRs for income generation and environmental restoration, and government line agencies are supportive to local communities. With emerging climate challenges, local communities and NGOs are demanding an increasingly active role of public institutions in the delivery of updated technological options to strengthen their coping capacity (Rodima-Taylor, Olwig et al. 2011). Despite the importance accorded to the role of local institutions in fostering climate change adaptation, few researchers have investigated how the challenges of managing natural resources may induce new forms of institutional arrangements. Much of the attention in developing countries has focused on the impact of climate change on natural systems, producing little insights on the present and future adaptability of whole systems.

Furthermore, rural areas are increasingly connected to regional and national markets, and, in many cases, opportunities to earn income through commercial use of the commons are expanding. While this trend may help rural households improve their livelihoods by drawing on resources from the commons, it can also lead to disputes among different user groups or between the poorer and the better-off families within a community (Fuys, Mwangi et al. 2006). Besides, market-driven processes tend to enhance differentiation within the community leading to decline of collective decisions and actions (Jodha, Singh et al. 2012).

The following research draws on Ostrom’s Institutional Analysis and Development (IAD) framework, used to analyze the policy relevance and effectiveness of institutions. The framework takes into consideration that policy processes and outcomes are affected, to some degree, by four variables that are not under the control of individuals: attributes of the physical world, attributes of the community, rules that create both incentives and constraints for certain actions, and interactions with other individuals. The framework also describes three levels of action:

operational, collective choice and constitutional choice. These three are interconnected since, for instance, the outcomes of the ‘constitutional choice’ affect any ‘collective choice’ decision-making, which in turn affects operational-level activities. For example, in India, joint forest management is a programme under the State’s participatory action-promoting policy, which encourages communities to collectively form Forest Protection Committees that are expected to make operational rules for resource use, monitoring and sanctioning.

METHODS

Case study:

The high mountain and Himalayan areas of Nepal, which are mostly located in the 18 mountain districts, comprise 42% of Nepal’s area, 9% of its cultivated area, 79% of its pasture area and 32% of its forest area. These 18 districts had in 2001 a population of 1.7 million, which is 7% of Nepal’s total population. These numbers indicate a sparse population with moderate access to low productive agricultural land, but abundant pasture and forest resources. The human population here is a mix of Tibetan-origin ethnic groups, the best-known of which are the Bhote, Sherpa of the East, and the Thakali from Mustang.

Mustang lies in the mid-western part of Nepal. Earlier studies (Neupane 2010), mention traditional institutions in Upper Mustang, mainly around Lomanthang and headed by a local ceremonial king² who still plays a significant role in the distribution of water, as a part of a system that builds on local hierarchies and stratification, which divides society into an upper ruling class and lower working class. It has been pointed out that the water allocation system in this region is unequal and there is an asymmetrical relationship between the upper class villagers who run the system and the lower class farmers. However, this is not the case in the study area in Pangling and Marpha villages of Lower Mustang. Not only is the selection of village headmen or ‘Mukhiya’ democratic, the even distribution and allocation of water are also inbuilt in their social hierarchy. The informal rules and regulations according to local communities have proven to be an efficient customary governance model; however, with changing times, customary institutions are challenged with factors affecting their governance.

Box 1: Selection of village headmen and Mukhiyas in Lower Mustang

The Mukhiya, or village head, is selected through a democratic process. In Lower Mustang, mainly Marpha, the ‘Thakali community’ has four castes (Hirachan, Lalchan, Juharchan and Pannachan). These communities nominate candidates to be elected as one of the four Mukhiyas. The four Mukhiyas are then selected locally; each Mukhiya gets a rotational term of one month to lead as village headman for year. The elected Mukhiya and its committee serve a term for up to two years, and most of the representatives are male. Each village or community have their own nomination and selection rules.

The Mukhiya system is a committee formed by locals who elect a village headman, the Mukhiya and its committee serves as the sole decision making body. The role of Mukhiya governance

² In 2008, Nepal became a Republic, the functions of the local king in Mustang (Jigme Palwar Bista) are now only ceremonial.

ranges from natural resource management to solving family issues (land separation, divorce and marriage). This committee also acts as the interface between locals and local state or civil organizations. Any outside agency (state or civil organizations) discusses the implementation of development projects and programs with the local Mukhiya system. It is usually through a general consensus among the Mukhiya and its community that decisions for implementation are then communicated to outside agencies. Locals have observed that the ten-year Maoist insurgency did not affect the Mukhiya system mainly because of its role in managing local governance with social unity.

Data Collection

Analyzing quantitative and qualitative perspectives of CPR theories and the role of effective ‘institutions’ in the management of natural resources, this research was initiated to understand the role of customary institutions in managing resources, and, given the challenges outlined above, if and which collective actions are necessary for future adaptive management strategies. Data collection is based on anecdotal data, informant interviews, and focus group discussions (FGD). Interviewees were purposively selected from the FGD participants to share their personal experiences and perceptions of changes in resource use (Bennett, Ainslie et al. 2010).

The key research questions are: a) Which collective actions are taken by local institutions?; b) What are the decision-making structures?; c) How can institutional diagnosis be tested against future inclusive and proactive decisions needed to counter climate change and other human-induced changes for consolidated coping strategies?; and d) Which process steps could be suggested to these institutions to manage the change?.

For this study, existing data and information was used from ICIMOD’s on-going work in the Lower Mustang region. Literature review and desk study was conducted along with field study to gather updated local information from relevant stakeholders. ICIMOD’s Vulnerability and Capacity Assessment (VCA) is a practical participatory rural appraisal (PRA) tool that can be used to conduct assessments of vulnerability and capacity in relation to climate change in mountain areas (Macchi 2011). Therefore, this tool was used to supplement information missed in questionnaire surveys and key person interviews. At the field level, a combination of open-ended questions, questionnaires, key informant interviews and PRA tools (see Table 2) were used. Farmers were interviewed face-to-face as this is the most accurate method for surveying people who sometimes cannot read and write (Shikui). A Venn diagram (see Figure 1) was used in focus group discussions as this tool helps local communities identify their association with key local institutions and the importance and significance these institutions play in their day-to-day lives. A Gender Equality and Social Inclusion (GESI) situation and analysis (see Table 4) was conducted in Pangling. The main purpose of this analysis was to get some ground truthing on gender dynamics in statutory and customary institutions, the roles and responsibilities of men and women, and the management and control of resources in this region. Preliminary analysis of qualitative data and questions formed the basis of this research.

Table 2: Overview of VCA Assessment tool

Assessment tool	Purpose	Source of information
Literature review	To gain solid knowledge of the context that the VCA is set in (climate data, study site characteristics) as well as an overview of what assessments have already been carried out and what knowledge has already been generated in the study area	Existing climate change data, census data, assessment reports of NGOs or IOs, project baseline studies, evaluation reports, policies, maps, scientific articles, grey literature, and others
Participants observation <ul style="list-style-type: none"> • Transect walk 	To become familiar with the mountain community and their daily practices in dealing with climate and socioeconomic change through intensive involvement with them in their natural environment	Community members (men and women)
Focus group discussions (FGDs) <ul style="list-style-type: none"> • Community historical timeline • Seasonal calendar • Livelihood seasonal monitoring calendar • Community ranking of hazard severity • Venn diagram of institutions 	To obtain a better understanding of the livelihood strategies and assets of the communities in the study area, their dependence on different resources, the changes they perceived, their capacity to cope with these changes, and their needs as well as to gain information on the role of different institutions in supporting them to cope with and adapt to perceived changes	Community members (men and women), representatives of local organizations
Semi-structured interviews	To obtain a greater depth of information on the implications of climate and other changes on the lives of mountain people and on their capacity to deal with these changes	Community members (men and women), representatives of local organizations

Source: ICIMOD VCA Tool, 2011

Data Analysis:

Data collected were grouped separately. The data was analysed using a ‘systematic qualitative technique’ and five assessment criteria were identified: validity; reliability; objectivity; acceptability to respondents. While all the methods have distinct strengths and weaknesses, there was a lot of ambiguity in the literature. The most popular and widely used methods were one-to-one interviews and FGDs. Overall 58 resource persons were selected from the study area in Lower Mustang.

RESULTS

To get a concise account of the status the results are being discussed below keeping focus on the Mukhiya System as the institutional arrangement in managing CPRs.

Institutional arrangement in managing CPRs:

The role of local institutions has shaped how rural residents respond to environmental challenges. Because adaptation to climate change happens at a local level, it is critical to better understand the role of local institutions in shaping adaptation and improving the capacities of the most vulnerable and different social groups (Agrawal 2010).

Nepal has recently drafted a rangeland policy to manage CPRs (ICIMOD, 2012). There are five ministries working jointly in coordination with line agencies at the local level to manage CPRs in areas like Mustang where rangelands dominate, including the ministries listed below:

- Ministry of Forests and Soil Conservation (MoSFC)
- Ministry of Local Development (MoLD)
- Ministry of Environment, Science and Technology (MoEST)
- Ministry of Home Affairs (MoHA)
- Ministry of Culture, Tourism and Civil Aviation (MoT)

The above ministries have line agencies at the local level coordinating various projects and programs for managing public land and supporting development and innovative livelihood strategies. Table 3, gives a summary of the roles and involvement of various local state agencies and other local institutions involved in managing CPRs in the Lower Mustang region.

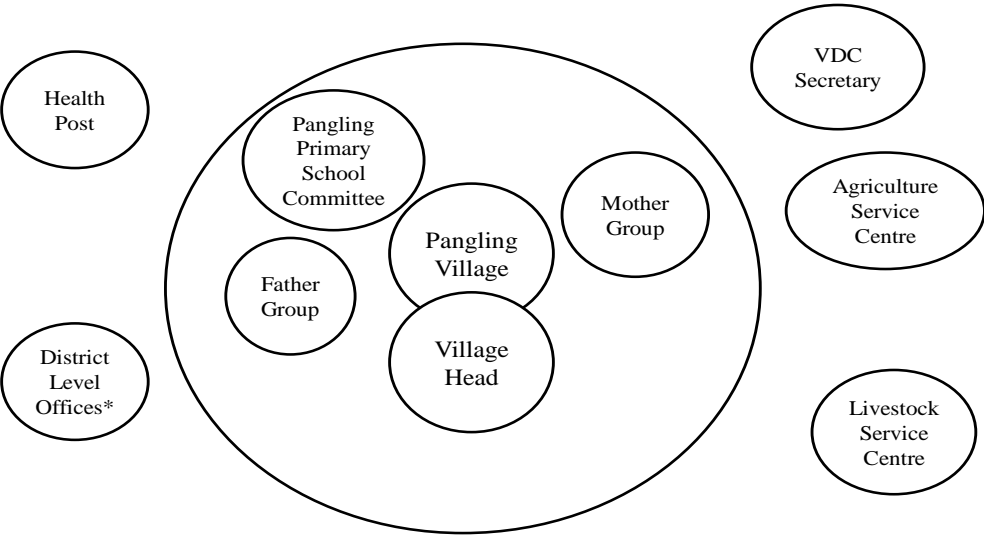
Table 3: Summary of key institutions in Mustang

Local state institutions	Roles	Collective action and external interventions
District Development Committee (DDC)	Development projects	Irrigation channelling, road building, water supply
District Agriculture Development Office (DADO)	Training, local technical support	Farmer field schools, pest management, distribution of seedlings
District Livestock Service Office (DLSO)	Support to animal husbandry and health care of livestock	Training on livestock management, construction of tanks
Department of National Park and Wildlife Conservation (DNPWC)	Participatory governance, biodiversity conservation, promotion of the sustainable management of forests	Management of protected area and forests
Local non-state institutions	Roles	Collective action and external interventions
Mukhiya	Meetings, information sharing, communication, conflict	Pasture management, irrigation, land and water management,

	resolution, decision making.	mobilisation of local communities
Mother Group	Micro-credit, social mobilisation, capacity building	Local mobilisation, farm management
Annapurna Conservation Area Project (ACAP)	Natural resource conservation, services, training and technology transfer	Drinking water, irrigation, agriculture and livestock development, participation with local community
Civil societies/NGOs	Capacity building, training, awareness workshops, action research pilots, innovative low-cost technologies	Demonstration plots, monitoring stations

Communities in Pangling were asked to draw a Venn diagram to illustrate the presence and networking between various local institutions (see Figure 1). In Lower Mustang, the communities have a stronger link with the village head (Mukhiya) and other community groups than other institutions and organisations, although they still recognise an association with other state and district agencies.

Figure 1: Venn diagram of local institutions and stakeholders in Pangling Village, Mustang.



Note: * District Development Committee; Agriculture Development Office; Livestock Development Office; Annapurna Conservation Area – ACAP; Soil Conservation; others

Source: Focus Group Discussion, 2011

In interviews with state and external agencies it was found that approval from the local Mukhiya was almost mandatory before planning or implementing any development projects or programs in the region. Local state agencies consult with Mukhiyas to get their views and consensus. Because there is a strong local mechanism in place, coordination between local and state actors in managing and planning relevant programs and projects usually does not lead to any conflicts in these areas. However, there is still confusion on land tenure as policies on rangelands in Nepal are yet to be implemented (ICIMOD 2012). On the other hand, the landscape is being treated under Annapurna Conservation Area Project (ACAP) which is mixing conservation efforts with local development and has therefore got a positive response so far. This reflects at least the responsiveness of the Mukhiya System to address degradation through support to conservation efforts. Voluntary service to repair local infrastructure is further evidence that the system is multifaceted and locally owned even in the fast changing times.

Policy and Development

A new policy on the management of land, including rangelands, is currently being drafted in Nepal. The policy document mentions laws that will ensure the delineation of rights for conserving, promoting and using public land. It further mentions that public land, which falls within areas that are traditionally used as pasture lands by local communities, will be demarcated and the rights of livestock herders will be ensured (ICIMOD 2012). Through focus group discussions, the locals agreed that few causes of local conflicts, they were identified as, access to grazing land, access to water resources on rangelands, uses of rangeland resources for different purposes, the issue of tenure of large pastures, boundary conflicts from household to various administrative levels, the confusion of land tenure, and road construction.

In Mustang, land outstrips the population. Local state agencies have developed a vision for the use of public land for collective benefits. Through the coordination of District Offices, the state is encouraging communities to access public land in order to manage CPR for income generation and natural resource conservation through the provision of technical support. Good practices have been identified in Tangwe Village in Chusan Village Development Committee (VDC), and collective action initiated by state agencies in cooperation with communities are promoting schemes such as commercial apple farming and harvesting of non-timber forest products (NTFP). State line agencies provide support, the fencing is done by DDC, terracing by DSCO, planting materials supplied from DADO and forage from DLSO. Likewise, collective potato farming is taking place in some villages of Upper Mustang. In Jharkot Village in Muktinath VDC, a women's group runs a cooperative, which encourages women to engage in NTFP-based enterprise. These initiatives in Chusan and Muktinath VDCs have motivated many other villagers, including those in Pangling, to adopt the same approach in managing CPRs. Accordingly, Pangling Village has already planned for the management of a plot for intensive use such as apple and forage plantation and potato farming with support from line agencies and other organizations. However, there are always risks associated with diversification and development projects and programs.

Market:

While mountain specificities call for supply condition-driven adaptations, globalization pushes for the demand-driven over-exploitation of resources, including fragile lands and their selected

products (Jodha, 2007). Market products of mountain regions have a high value nationally and globally. It is important for states and communities managing CPRs to appropriately assess market entry in the field of CPRs as it can carry risks and opportunities. Most of the local producers interviewed mentioned that equitable links between communities and market agencies can help enhance opportunities and reduce risks. Mustang has a range of high-value products such as apples and medicinal and aromatic plants, but due to improper value chains systems, coordination, and weak institutional policy support, local producers reap a meagre share of the value of the final product or service. Much of the benefit accrues to people and places at higher levels on product value chains such as processors and exporters. The survey indicated that with support from future public and civic investment projects, local farmers gave a high priority to apple production as compared to other income diversification activities such as livestock rearing, agriculture or tourism.

Migration:

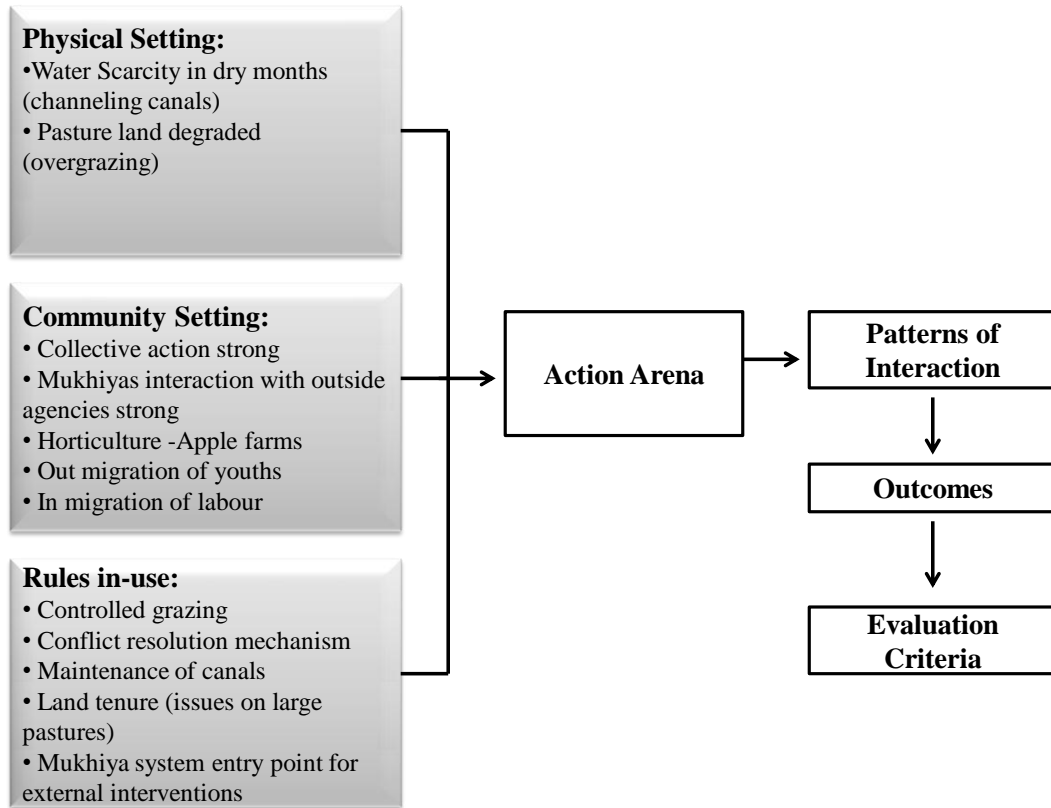
This research also indicates that out-migration is an issue in this region, though in a few cases in Pangling, youths have returned due to opportunities in agriculture and apple farming. With a sizeable income flowing in to local communities from “Remittance Economy” households appear to make their own choices and decisions. There is concern among the Mukhiya System members on continuity if trend of the out-migration continues. Thus local farm labour now is to great extent coming from neighbouring mostly inaccessible districts. There is a rise in the tourism sector in the Annapurna region, induced reverse migration from the lowlands to the highlands as people found lucrative business and employment opportunities in the mountains. The mountain tourism hubs of Ghandruk, Jomsom and Manang in the Annapurna region have benefited from the influx of government and non-governmental organisations in generating employment opportunities (Nepal 2007; Kollmair and Banerjee 2011).

This is compensating for the deficit of household members and in turn allowing them to carry on the private land use with good returns. Any conflict with in-migration workers is still settled by the Mukhiya System. Since private land maintains its productivity through full utilisation and lead to assured incomes, CPRs are increasingly losing attention and therefore degraded further. Even the planning for restoration becomes less interesting as these lands are only seen as buffers. The Mukhiya system is not able to agree or effect a rehabilitation of these lands even if interventions are funded from outside, it shows that local control and decision-making is still inadequate.

Institutional Analysis and Development Framework: Assessing Institutions

The Institutional Analysis and Development (IAD) framework relies on four interrelated criteria to assess the overall performance of institutional arrangements: 1) efficiency, 2) equity, 3) accountability, and 4) adaptability (Ostrom, Schroeder et al. 1993; Imperial and Yandle 2005). Ostrom refers to the three attributes that lead to institutional action, i.e., physical setting, community setting and rules in use. It is also important to understand the relationship between institutional performance and policy outcomes (Imperial and Yandle 2005). The following sections describe the IAD framework’s components to analyze CPR management of the Mukhiya system as an institution.

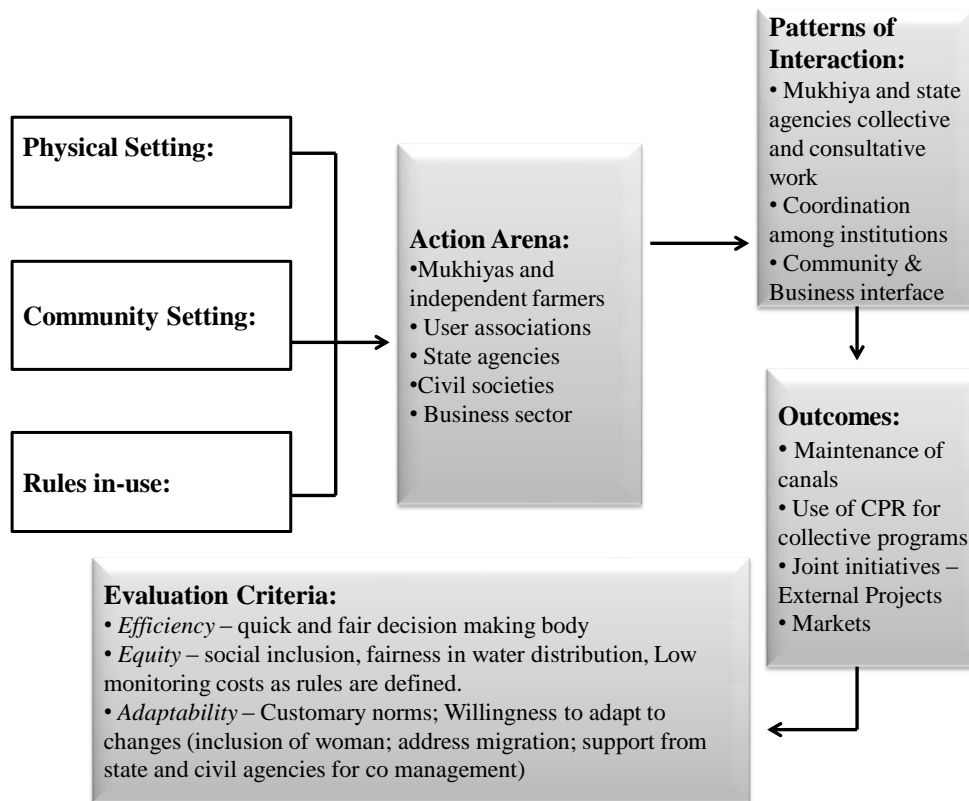
Figure 2: IAD framework analysis (physical, community and rules-in-use attributes) in the context of Lower Mustang



The attributes of the physical world, community, and rules in use in Figure 2 explain the current situation analysis using the IAD framework.

The customary institution of the Mukhiya system has control over most of the attributes as described in the given figure. The only concerns are the in-migration of labour workers into Mustang, what risks this might have for local governance and whether there are proper norms in place to address these issues.

Figure 3: IAD framework analysis (action arena, interactions, outcomes and evaluation criteria) in the context of Lower Mustang



Efficiency:

Efficiency in the context of Mukhiya system is evident. A court official in Mustang mentioned that there are very few cases in the District Court compared to the piles of court cases pending in other parts of Nepal. Local issues related to natural resources, local conflicts, land, divorce and other local administrative issues are solved by the Mukhiyas. As a result, locals find it easier to resolve their disputes within the Mukhiya system than going to government judicial bodies (administration, office, police or court). It is also important to consider administrative efficiency (Imperial and Yandle 2005). Community-based approaches and decision making processes are likely to incur lower administrative time and costs than other state institutional arrangements. Locals mention that the cost of information and travel to district headquarters in search of justice is rather expensive. Moreover, these institutions act as a common village stakeholder to negotiate and bridge the gap between the community and external environment (state agencies, private sector, etc.).

Equity:

It is important to understand the institutional structure or decision making process to be fair and equitable in the distribution of resources. Governance and decision making structures of customary institutions in Mustang are more related to a patriarchal social system. Although the role of women at the household level is relatively strong, their integration and participation in customary institutions like the Mukhiya system is weak. Even though it has been difficult to integrate women into the natural resources management organizations, there have been some successes in the establishment of women's committees. For example, in Jharkot Village in

Muktinath (Village Development Committee, Ward 4 and 5, Lower Mustang), a women's group runs a cooperative which has engaged women in NTFP-based enterprise like juice making. According to the head of the DSCO, the cooperative uses public land for NTFP production and has earned NPR 1.5 million³ (USD 16,900) out of an investment of NPR 0.7 million (USD 7,909). Such initiatives have encouraged traditional, male-dominated institutions, like the Mukhiya system, to consider addressing gender inclusion in decision making processes. Table 4 provides an analysis of access and control over resources by gender in Pangling Village. In Upper Mustang, elite families usually control and govern resources. For example, irrigation canals were built on the initiative of the upper class, and they still play a crucial role in the day-to-day management of the system in terms of decision making and networking. However, in Pangling and Marpha in Lower Mustang, groups are not marginalized and everyone has a fair chance to elect Mukhiyas and their committees.

Table 4: Access and control over resources by gender in Pangling Village, Mustang

Resources	Access		Control and ownership	
	Men	Women	Men	Women
Land	√	√	√	
Training	√	√	√	
Technologies*	√	√	√	
Equipments (thresher)	√	√	√	
Inputs/chemical fertilizers and pesticides	√	√	√	
Goats/chyangra	√	√	√	
Horses and mules	√		√	
Cattle	√	√	√	
Information**	√	√	√	
Education	√	√	√	√
Non-agricultural business***	√	√	√	√
Cash	√	√	√	√
Seeds	√	√	√	√
Community building	√	√	√	√
Chickens	√	√		√
Total no. of resources.	15	14	14	8

* Early varieties of apples, black plastic compost making and off-seasonal vegetable seedlings

** Information related to price of apples, potatoes etc.

*** Woollen trading in India during the winter

Source: Field Analysis, 2012

Accountability:

Local customary norms are usually informal, although local constitutional rules are also recorded in writing. The question is whether these community-based systems can be held accountable to the larger section of society and people living downstream. The local systems do not have any legal authority to punish free-riders for violations; the methods of fining and punishment are merely social. The primary job of the Mukhiya is to set new rules and regulations and bring justice in management and development of the community. A supportive committee known as

Note: ³ Exchange rate of US dollar (USD) to Nepali rupee (NPR): USD 1 = NPR 88.50 as per Nepal Rastriya Bank, 2012

'bhadra bhaladmi', also elected by the community, supports the Mukhiya in complex decision making. There have been no cases where the local Mukhiya system has been held accountable for their actions; however, there have been times when few locals have felt the decisions made by customary institution did not provide justice as expected.

Adaptability:

Given the limited grazing land available to many communities in the region, a critical aspect of adaptability will be finding ways to legitimize the current patterns of extensive resource use, which traverse existing 'community' boundaries (Bennett, Ainslie et al. 2010). Getting the rules right takes a long time (Imperial and Yandle 2005). Irrigation projects and programmes in Mustang and in other parts of Nepal have tried to improve the availability of water, and, with the support of the national government or donor organizations, they all hope to benefit local farmers. However, because they rarely recognize existing, locally-sanctioned norms, they run the risk of destroying the social capital that has developed over centuries within these communities. Many studies show the crucial role that such social capital plays in the governance of common resources. It takes a long time to develop accepted rules and norms of governance for these resources, but relatively little time to erase them (Neupane 2010).

Policy Outcomes:

Good management practices of customary institutions, like those of the Mukhiya system, have led village development programs and government offices to coordinate and implement programs through these instructions at the local level. However, as shown earlier, when degradation of landscape has gone beyond control, policy and programme initiatives have not shown any impacts on rehabilitation. Local line agencies, which implement such policies, are not able to convince this institutional arrangement to effect restorative actions. Partly this is due to the fact that local communities are economically doing well through income diversification and assured farm production. On the other hand, any restorative attempts on vast rangelands is going to be affecting the free grazing and thus no-cost gains from it. It is only when local government is taking a decision that such lands can be utilised for other short-term productive uses and funds are provided that CPRs are created (e.g. Communal horticulture). Since in harsh climate restorative investments have a long and uncertain gestation periods, policy outcomes on such CPRs are difficult to measure or perceive.

It is often noted that in Nepal development and research projects are at times not successful over the long term as they either fail to meet farmer expectations or are unsustainable and unstable. Poor communication with local farmers is another barrier to the smooth implementation of research and development projects. According to state professionals, a lack of funding, poor infrastructure, and illiteracy are major limits in research, extension, and management interventions. However, in Mustang the Mukhiya system plays a very important role as it serves as the local decision making body with state institutions, such as the District Development Committee (DDC), District Office and other line departments. Even today state agencies coordinate and consult with local customary institutions and Mukhiyas to implement development projects and programs.

In a case study conducted in Upper Mustang, (Neupane 2010) many young people were found to be reluctant to follow the traditional regulations and norms. In recent times, the rising frequency in the violation of irrigation norms has given rise to an increased number of conflicts. As more efforts are being made by external agencies to use and manage CPRs for income generation, customary institutions are still facing various climatic and non-climatic challenges. Anecdotal evidence gathered from local communities indicates that climate change is being observed by locals. But local-level adaptation strategies are yet to be embedded into local policies and community plans.

Based on a vulnerability assessment spider chart, further assessment of people’s perception of climate change in Marpha and Pangling villages are listed in Figure 4.

Figure 4: Assessment of location specific community hazard ranking.

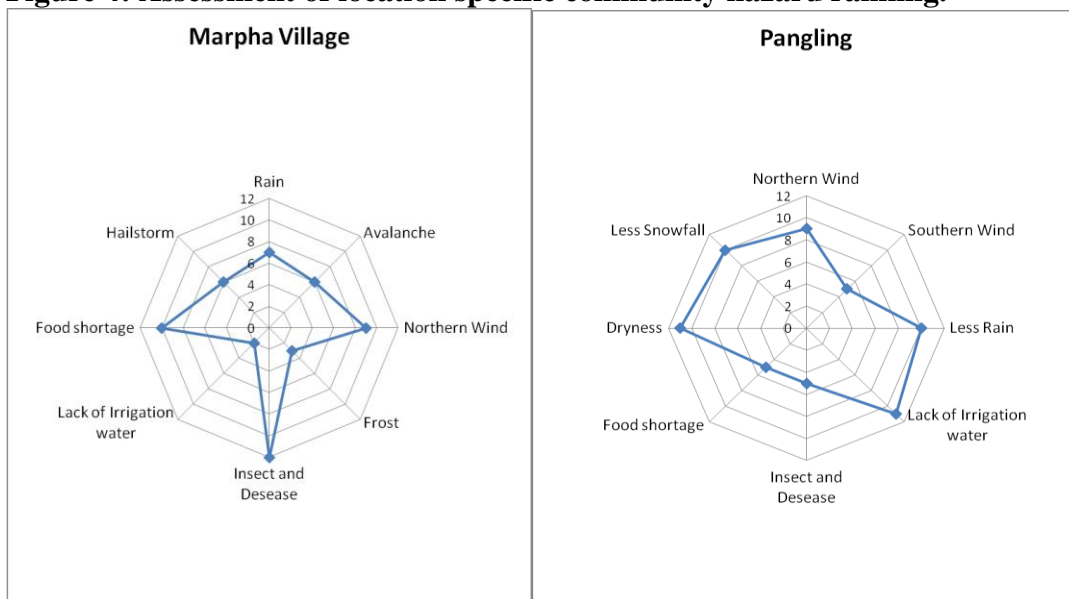


Figure 4, illustrates an analysis of people’s perception of community hazard ranking. There are differences in perception between the two villages. Insects and diseases are more of a concern in Marpha due to its lower altitude. Due to rising temperatures, the relation of phenology and species change to higher altitudes is evidence in mountain regions. Studies from the Indian Himalayas provide evidences that climate change is causing noticeable effects on life cycles and distribution of the plant species. A need for research to improve understanding of these effects on high-altitude medicinal plants and issues need immediate attention (Gairola, Shariff et al. 2010). (Singh and Bengtsson 2005), mention that snow- fed basins are more sensitive in terms of reduction in water availability due to a compound effect of increase in evaporation and decrease in melt. This may be in the case of Pangling, as the impact of warmer climate on melt from snow-fed streams decrease or dry as mentioned in the spider diagram. Communities in Pangling are thus concerned and rank ‘dryness’ and lack of irrigation water for agriculture productivity higher than other hazards.

DISCUSSION

Experiences from other mountainous areas, including other areas of Nepal and parts of northern Thailand, indicate that specialized cash crop production is concentrated in pocket areas where suitable agro-ecological and socioeconomic conditions coincide. Understanding the controlling factors for such successful transformations can be useful for future planning. However, the transfer of lessons learned is only possible to areas with similar conditions. In other areas, unsuitable agro-ecological conditions or high transport costs are likely to inhibit the development of a profitable cash crop-based rural economy. Moreover, competition from other Himalayan horticulture-producing areas in third countries is increasing, especially since the recent liberalization of the Indian market (Turkelboom, Gurung et al. 2001). Developed countries have established well-defined property rights over numerous resources and, in some instances, have extended non-exclusionary rights over privately owned resources for an extended period of time. In the developing world, however, the share of community property is extensive, either as a response to an expanding market or because market exposure is still in nascent stages. This, coupled with the demands of globalization, has led to the co-existence of the community ownership of resources and the evolving private property rights market. Tension between public and private ownership rights is particularly relevant in the developing countries of South Asia, not only because of the region's shared history but also because its resources frequently cross national boundaries (Ghate, Jodha et al. 2008). Studies of commons tend to be relatively negligent in examining how aspects of the resource system, some aspects of user group membership, and the external social, physical, and institutional environment affect institutional durability and long-term management at the local level (Ostrom, Gardner et al. 1994; Lam 1998; Agrawal 2001). The Trans-Himalayan region of Nepal is often referred to as the country's desert. Water is a scarce resource that has traditionally been managed through local norms and institutions. The remoteness of the region has limited the role and influence of the central government. Although the locally managed irrigation system has been running for centuries, recent developments challenge the sustainability of this approach in the long run (Neupane 2010).

Development investments in research areas are mostly top down, overwhelming customary institutions. A mindset of full dependence on the state develops as a result. One example we can draw from this research is a state-supported irrigation channel in Pangling watershed. The irrigation channel is now in need of further maintenance to fix water leakages; however, the local or customary institution does not consider it their sole responsibility to repair the channel. They expect the State to support in maintenance work. The distribution of property rights is important because resource users must, at a minimum, have access, withdrawal, and management rights to maintain sufficient incentive for users to responsibly manage resources over the long term (Ostrom and Schlager 1996; Imperial and Yandle 2005). Communal Horticulture directive from local DDC should be mentioned here as evidence that guaranteed management rights brings local interest to the fore. However, subsidised development culture does not allow a sizeable voluntary contribution and ownership.

The incentives of governments to secure common property rights are mixed. Most governments have a strong incentive to generate revenues through investment in extractive industries or non-consumptive use, such as conservation and tourism (Fuys, Mwangi et al. 2006).

(Bhattachan 2002) gives an example of a democratic grassroots voluntary system in the Mustang area called 'Posang', which has been managing local governance through a unique system of resource governance and regulations. Community members manage local governance issues, from managing natural resources to ensuring justice and social wellbeing and organizing festivals. However, such traditional systems have been marginalized after the adoption of multi-party democracy in 1990 brought about policy reforms and change management which resulted in the formation of formal local bodies such as Village Development Committees.

Irrigation projects and programs in Mustang and in other parts of Nepal have worked to improve the availability of water with the support of the national government and donor organizations. Although the goal of these programs is to benefit farmers, because they rarely recognise existing, locally-sanctioned norms, they risk destroying the social capital that has developed over centuries in these local communities. Many studies have shown the crucial role that such social capital plays in the governance of common resources. It takes a long time to develop accepted rules and norms of governance for these resources, but relatively little time to erase them (Neupane 2010). The arguments above about changes in resource use and management institutions under the influence of markets are in line with more general perceptions about the transformative role and potential of new capital, market forces, and institutions. But the differences between market and population pressures need greater attention in any examination of commons institutions. It is important not only to attend to different levels of these pressures, but also the effect of changes and rates of change within them (Agrawal 2001).

With the exception of Upper Mustang, where tourism-related business is emerging as an additional source of income, there is little evidence of livelihood diversification in other rangelands of the HKH (Jasra, Joshi et al. 2012).

CONCLUSION

Local CPR governance is increasingly being tested by a host of stakeholders so far unknown to the Mukhiya System. Thus more development investments are being made in the region by the state through participatory approaches trying to make local decision-making a more inclusive and intensive process. Similarly, wide range of market actors such tourism developers and natural resource processing companies are interacting with local populations for a win-win outcome of local investments. In a fast degrading landscape and economically fast changing social scenario, and processes of in-and-out migration, emerging issues of natural resource governance, new policies and practices and climate change are testing the resilience of an institution which has sustained itself with an admirable quantum of robustness when it comes to delivery and acceptance of decision-making by local populations. Both primary and secondary data show that despite major socio-economic and developmental changes taking place in Mustang, the Mukhiya System as means to govern CPRs has prevailed. As a major conclusion, it can be endorsed that the system will remain intact in times to come. Some specific conclusions

are however drawn from the study as follows, which should reflect on the necessary institutional changes required to counter the host complex and yet unknown impacts of mixture of climatic and non-climatic factors:

- Mukhiya system is still the key local decision-maker which means that all external interventions and investments by any kind of stakeholder need to get the approval from it. However, there is clear tendency that external agencies are pushing for externally driven norms and procedures for CPR management
- Mukhiya system is provenly efficient when it comes to timely and satisfactory decision-making (e.g. social justice, CPR conflicts) as compared to state service delivery mechanism, thus so far sustaining its local ownership
- Mukhiya System is a resilient and accepted institutional arrangement for CPR related decision-making though community members and even Headmen are perceiving the need for change as issues of gender, inclusiveness, equity, in-migration, economics and degradation become complex to handle
- Roles of CPR's to support rural livelihoods over time has changed as diversification of household requirements and incomes take place
- Mukhiya system could be challenged by the out-migration of the youth and men and women become the dominant community group
- Non-climatic and climatic factors in future though are going to test this institutional arrangement further but it is very much possible that the Mukhiya System will adopt and adapt to changes in its roles, norms and procedures as long as the Nepalese state is unsettled when it comes to the political system it adopts.

RECOMMENDATIONS:

Though the study could not be completed in terms of expected sample surveys, above conclusions drawn build the base for some key recommendations:

- Before making development and policy-related changes, it is crucial to first determine a sound institutional diagnosis of customary institutions and then match their strengths and weaknesses against future challenges and create a demand for changes in the institution itself.
- There is a need for a consultative process in the change management of customary institutions as well as a need for socio-institutional engineering and sensitization processes.
- Learning should be conveyed to decision makers at both policy and practical levels in order to design reform processes and policies accordingly. These policies and reform processes must recognise and try to mainstream tried and tested coping principles of such institutions.
- As stakeholdership and number of stakeholders for the local socio-economic development and conservation is increasing, it becomes important that awareness of such institutions on emerging challenges and opportunities is made and monitored.
- Mukhiya System is aware that women are becoming important actors for the above development and conservation hence need to be part of the local decision-making. Hence

social-engineering process must be started with these institutions to broaden their horizon and mandate on restoring local landscapes and building local economy.

- On the basis of this research, it is argued that policy and customised programmes should focus on facilitating the emergence of effective, local institutions for natural resource management. Of which Mukhiya system is integral part.
- The overuse of CPRs, markets and future climatic conditions need to be assessed before such interventions.

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REFERENCES

- Agrawal, A. (2001). "Common property institutions and sustainable governance of resources." World development **29**(10): 1649-1672.
- Agrawal, A. (2010). "Local institutions and adaptation to climate change." Social Dimensions of Climate Change: Equity and Vulnerability in a Warming World. Washington DC, World Bank: 173-198.
- Bennett, J., A. Ainslie, et al. (2010). "Fenced in: Common property struggles in the management of communal rangelands in central Eastern Cape Province, South Africa." Land Use Policy **27**(2): 340-350.
- Bhattachan, K. B. (2002). Traditional Local Governance in Nepal. paper presented.
- Dore, D. (2001). "Transforming traditional institutions for sustainable natural resource management: history, Narratives and Evidence from Zimbabwe's Communal Areas." African Studies Quarterly **5**(3): 1-18.
- Fuys, A., E. Mwangi, et al. (2006). "Securing Common Property Regimes in a Modernizing World: Synthesis of 41 Case Studies on Common Property Regimes from Asia, Africa, Europe and Latin America." CGIAR Systemwide Program on Collective Action and Property Rights (CAPRI) and International Land Coalition (ILC).
- Gairola, S., N. M. Shariff, et al. (2010). "Influence of climate change on production of secondary chemicals in high altitude medicinal plants: Issues needs immediate attention." J Med Plants Res **4**(18): 1825-1829.
- Ghate, R., N. Jodha, et al. (2008). Promise, Trust and Evolution: Managing the Commons of South Asia, Oxford University Press.
- ICIMOD (2012). Supporting Formulation of Rangeland Policy in Nepal (draft version). Kathmandu, ICIMOD.
- Imperial, M. T. and T. Yandle (2005). "Taking institutions seriously: using the IAD framework to analyze fisheries policy." Society and Natural Resources **18**(6): 493-509.
- Jasra, A. W., S. Joshi, et al. (2012). "Vulnerability assessment of rangeland dependent mountain communities under climate change in the Hindu Kush- Himalayas(HKH)." Environmental Development and Social Change in Himalayan Region 29-46.

- Jodha, N. S., N. P. Singh, et al. (2012). "The Commons, Communities and Climate Change." Economic & Political Weekly 47(13): 49.
- Kollmair, M. and S. Banerjee (2011). DR9: Drivers of migration in mountainous regions of the developing world: a review. T. G. O. f. Science. London, UK, Foresight.
- Lam, W. F. (1998). "Governing irrigation systems in Nepal." Oakland, California: Institute for Contemporary Studies.
- Macchi, M. (2011). Framework for community-based climate vulnerability and capacity assessment in mountain areas, International centre for integrated mountain development (ICIMOD).
- Nepal, S. K. (2007). "Tourism and rural settlements Nepal's Annapurna region." Annals of Tourism Research 34(4): 855-875.
- Netting, R. M. C. (1981). Balancing on an Alp.
- Neupane, N. B., G.D. (2010). "Irrigation management in the Himalayas. The role of a local committee in changing times." UN RÉSEAU, UNE DYNAMIQUE!
- Omura, M. (2008). "Traditional Institutions And Sustainable Livelihood." Economics Of Poverty, Environment And Natural-Resource Use: 141-156.
- Ostrom, E., R. Gardner, et al. (1994). Rules, games, and common-pool resources, University of Michigan Press.
- Ostrom, E. and C. Hess (2011). "Private and common property rights."
- Ostrom, E. and E. Schlager (1996). "The formation of property rights." Rights to nature: Ecological, economic, cultural and political principles of institutions for the environment: 127-156.
- Ostrom, E., L. Schroeder, et al. (1993). Institutional incentives and sustainable development: infrastructure policies in perspective, Westview Press.
- Rodima-Taylor, D., M. F. Olwig, et al. (2011). "Adaptation as innovation, innovation as adaptation: An institutional approach to climate change." Applied Geography.
- Shikui, D. "Promoting Institutional Development for Sustainable Rangeland Management in Mountainous Areas of Northern Nepal."
- Singh, P. and L. Bengtsson (2005). "Impact of warmer climate on melt and evaporation for the rainfed, snowfed and glacierfed basins in the Himalayan region." Journal of Hydrology 300(1): 140-154.
- Turkelboom, F., T. R. Gurung, et al. (2001). "Role and Use of Common Property Resources (CPRs) in Bhutan Himalayas: Between Tradition and Globalisation." Department of Research and Development Services, Ministry of Agriculture, Thimphu, Bhutan. p: 1-22.
- Upton, C. (2011). "Adaptive capacity and institutional evolution in contemporary pastoral societies." Applied Geography.