

# Environmental Monitoring, Community Participation and Governance of the Commons: Insights from Nepal

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## Abstract

Monitoring changes in habitats and species allows people to alter their management and use of natural and commons resources to ensure sustainability and conservation, particularly if the monitoring involves local people; or does it? My research questions and investigates the process, influence and impact of different forms of environmental monitoring conducted by local resource-users, specifically 'participatory monitoring' involving collaboration with scientists and what I refer to as 'local monitoring' based on local knowledge and practices. It seeks to understand the multiple ways in which local communities may monitor their forest resources and the outcomes; both intended and non-intended, that these may have on social-ecological systems. I therefore place monitoring within a wider socio-economic context and draw on the fields of post-modern development theory, political ecology, commons research and work on participation. The on-going research is based on fieldwork in the community forests of Nepal and this paper presents a background to the research, the process and preliminary findings of the fieldwork and plans for data analysis. It is initially clear that monitoring, in both participatory and local forms, is an important part of people's decision-making with regards to use and management of forest resources, both in community forests and on private land. The empirical and theoretical implications of community-based monitoring with regards to equity, knowledge and power have yet to receive critical attention from researchers but will be the focus of my analysis over the next year.

**Keywords:** *community forestry, knowledge, monitoring, Nepal, participation, power*

## Introduction

Environmental monitoring is used by conservationists as a tool with which to gather information on the status of natural resources and features of biodiversity; the resulting data from which is meant to be the foundation for making decisions which ensure the sustainable use and conservation of nature and commons resources. Many monitoring projects underway in the developing world are now seeking to increase the participation of people living close to or who use the resource or commons in question, for example fishermen in the monitoring of freshwater turtle populations in the Amazon (Townsend *et al* 2005) or villagers in the monitoring of forest resources in Tanzania (Topp-Jorgensen *et al* 2005). In such 'participatory monitoring' projects, local people are encouraged to work alongside conservationists or technicians, using systematic monitoring methods which have been chosen by the latter due to their simple and easy to use nature. In these projects the analysis of monitoring results may be carried out either by the technicians, the local people or a combination of the both. Advocates of participatory monitoring claim it has various advantages over scientist-led monitoring, which is often costly, hard to sustain and perceived as irrelevant by local communities and resource managers (Danielsen *et*

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al 2005, Sheil 2001). Given that participatory monitoring is meant to promote a continuous supply of natural resources, livelihood; as well as conservation, benefits are thought to ensue. Research to date on participatory monitoring claims other benefits for local people, including increased social capital (Becker *et al* 2005), improved communication with local government and NGO staff (Van Rijsoort and Jinfeng 2005) and increased awareness of local (and arguably international) conservation issues (Andrianandrasana *et al* 2005). The potential of such participatory monitoring approaches to be fed up to national levels to help countries comply with their responsibility to monitor natural resources and biodiversity (under the Convention on Biological Diversity), has also been raised (Danielsen *et al* 2005). Bringing together the cases of 15 participatory monitoring projects in a special issue of the journal *Biodiversity and Conservation*, Danielsen *et al* (2005) conclude that future research should concentrate on ascertaining the accuracy of participatory monitoring compared to that conducted by professional scientists; as well as its potential to be 'scaled-up' and influence policy.

Participatory monitoring projects however raise many more issues than these and many critical questions remain to be asked; and subsequently answered. For example, how does participatory monitoring fit into the wider sphere of resource and commons management i.e. what influence does it have on decision-making regarding resource use compared with the multitude of other influential factors? How are local knowledge and practices of monitoring recognised and incorporated, if at all? What levels of participation are provided by participatory monitoring projects and how do these benefit those within the community? What benefits can community-based monitoring (either participatory or locally-based) provide in terms of local control of and claims over commons resources? How do these things operate at different scales i.e. the individual, household and community level; and on common property compared to that held privately?

Such questions have their foundations in the academic fields of development studies, participation, political ecology, traditional ecological knowledge and the study of the commons; amongst others. The questions relate to the inherently political issues of power, authority and knowledge, thus their answers have wider implications in both development and conservation generally. Equally, an investigation of community-based monitoring in the developing world has much to offer the developed world. In the UK for example, amateur naturalists, members of the public and various stakeholders are increasingly being encouraged to help monitor species and habitats of conservation concern, such as garden birds (RSBP 2007), bluebells (The Natural History Museum 2008), red squirrels (Scottish Squirrel Survey) and non-timber forest products (Reforestation Scotland n.d.). The outcomes and implications of such projects with regards to their influence in environmental management, the recognition and promotion of certain forms of knowledge and potential outcomes for society-nature dynamics have yet to be studied.

This paper presents the background to, process and preliminary findings of and plans for analysis of on-going research on community-based monitoring in the forests of Nepal. The research seeks to understand the multiple ways in which local communities may monitor their forest resources and the outcomes; both intended and non-intended, that these may have on social-ecological systems.

## BACKGROUND

### *Participation*

Both participatory development and community-based natural resource management (CBNRM) have long histories; however their popularity has increased steadily amongst international funding institutions, NGOs and governments since the 1980's (Blaikie 2006, Hickey and Mohan 2004). This popularity comes from claims that the participation of local people increases project efficiency, incorporates local knowledge, devolves and democratises power and decision-making, empowers those involved and in the case of commons resources, helps to ensure their sustainable use and equitable distribution (Blaikie 2006, Cleaver 2001).

Dissatisfaction with participation is ever-increasing however, both with regards to the ways in which it is practised and to its theoretical, political and conceptual limitations, with some ultimately claiming it to be tyrannical, in that it 'is the illegitimate and/or unjust exercise of power' (Cooke and Kothari 2001 p.4). Blaikie (2006) claims that CBNRM, for example, has 'largely failed to deliver the expected and theoretically predicted benefits to local communities' (p.1943). Such failures have been attributed to a failure to truly devolve power and control, a poor understanding and application of the terms 'community', 'power' and 'empowerment', the privileging of scientific knowledge and practices, a failure to consider the importance of social structure, individual agency and institutions; and the underlying motivations of those instigating the projects (Kesby 2007, Blaikie 2006, Nightingale 2005, Cleaver 2001, Mosse 2001, Agrawal & Gibson 1999, Leach *et al* 1999, Songorwa 1999, Twyman 1998). It has also been highlighted that 'much of what is considered 'participatory' is more a process whereby large numbers of people are *represented* by a relatively small group of participants' (Hickey and Mohan 2004, p.19 emphasis in original). It also cannot be assumed that everyone who is invited to participate in a project will agree to do so and some see such non-participation as a form of resistance (to the project or to other factors such as neoliberalism) (Peet and Watts 1996). Despite such critiques, participation in development and natural resource management projects remains the norm and it would seem that environmental monitoring projects are heading in the same direction.

### *Monitoring*

Monitoring of natural resources and biodiversity has been defined as 'the process of observing changes in a resource base. It requires making the same observations at the same location but at different points in time' (Lund 1997, cited in Wong 2000). Participatory monitoring projects reflect a particular understanding of nature and a belief in the scientific principles of objectivity and falsification. In this way, participatory monitoring projects tend to employ techniques which involve repeat observations or quantifications of change at precise locations over precise periods of time, generally using measurements which are quantitative, objective and repeatable. Often put as in opposition to scientific knowledge, 'traditional ecological knowledge' has been widely written about and its significance for participatory development and natural resource management frequently highlighted (Folke 2004, Ticktin and Johns 2002, Agrawal and Gibson 1999, Folke *et al* 1998, Fairhead & Leach 1995). With regards to monitoring of the environment specifically, Moller *et al* (2004) present evidence of local hunters monitoring wildlife populations based on traditional ecological knowledge which uses qualitative, subjective, non-repeatable and imprecise measurements at varying locations and at varying times. He demonstrates how this monitoring feeds directly into decision-making regarding what

and where to hunt in order to ensure the status of hunted populations. Berkes and Folke (1998) also bring together a variety of examples of such 'local monitoring' i.e. carried out by local resource users based on non-systematic observations of nature. These examples cover monitoring of both plants and animals and all are shown to effect how the resource in question is used and managed.

As mentioned above, the privileging of scientific over local knowledge in development and resource management projects has received much criticism; it has even been claimed that 'the production of Western knowledge is inseparable from the exercise of Western power' (Crush 1995 p.3). Taking an example from Nepal (where my fieldwork is based), a ruling was passed in 2000 that all Community Forest User Groups must complete a quantitative inventory<sup>2</sup> of their forest as part of the process by which they gain responsibility for their use and management from the Department of Forests. Observers have claimed that the inventory 'is neither useful nor desirable for community forest management, and it only serves the hidden political interests of powerful bureaucratic and professional elites' (Ojha 2002 p.4). Community-based monitoring; either based on participatory approaches or local knowledge, is thus clearly a political issue. Participation and the application of certain knowledge impact on local, national and international power relations and affect who and in what ways people benefit in commons management.

### *Commons governance*

Debates over common property or common's resources and their governance have a long history. Since the mid-1980's these debates have formed a coherent body of work which demonstrates Hardin's 'tragedy of the commons' to be correct in only specific and limited conditions; and therefore that commons management can be sustainable in many cases (van Laerhoven and Ostrom 2007). Writing in the first edition of the *International Journal of the Commons*, Agrawal (2007) claims that 'the study of forests as commons has been one of the central sources of stimulus to the development of scholarship on common property' (p.111) and also that scholars of common property have much to offer those interested in forest governance. He identifies four variables which between them determine the successful governance of the commons; the characteristics of the resource system, the user group, the institutional arrangements and the external environment. One important character of the resource system (along with size, boundaries, mobility, resource storage and rate and predictability of flow of benefits) is the ease of monitoring; something which he considers may potentially be altered by institutional arrangements and technological changes. The introduction of participatory monitoring represents a change in both of these latter two factors, as well as being a potential influence in the way in which people view and relate to the forest; something which Agrawal considers an under-studied area of the commons and which he suggests as one future direction for research. Another suggested future direction is the study of how processes at multiple social and institutional levels interact and generate outcomes in forest governance. The issue of 'commons in a multi-level world' forms the overarching theme of the second and latest edition of the *International Journal of the Commons*, in which Armitage (2008) claims that multi-level governance should connect scientific management with traditional management systems. Community-based forest monitoring therefore provides an interesting arena in which to

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<sup>2</sup> Monitoring is often considered as repeated inventories over time (Pilz *et al* 2006)

understand more about governance of the commons with regards to changing institutions and technology, human-environment relations and the combining of scientific with traditional approaches to management. Van Laerhaven and Ostrom (2007) call for more research on the complexity and uncertainty of commons management and no doubt an understanding of this with regards to forests would greatly benefit those interested in community-based monitoring of forests for sustainable use and conservation.

## THE FIELDWORK PROCESS

My research is based on fieldwork in the forests of Nepal, where for the last 30 years local communities have been granted responsibility for forest management through institutions known as Community Forest User Groups (CFUGs). Nepal's renowned community forest programme has resulted in a vast improvement in forest condition in many areas (Arnold 2001) however participation in it varies greatly within communities based on gender, wealth and caste (Nightingale 2003, 2005).

Traditional ecological knowledge is widespread throughout Nepal however it is highly variable both within and between communities (Ghimire *et al* 2004). The promotion by the government, NGOs and international funding institutions of scientific knowledge over local knowledge in community forestry has received much criticism (Nightingale 2005). As stated by Nightingale (2003 p.527) 'community forestry in Nepal is an excellent example of the intersections of the socio-political, cultural and ecological' and is thus an ideal place in which to study society-environment links as negotiated by and through community-based monitoring.

My fieldwork made a comparative case-study of two CFUGs in the Middle Hills of Nepal; Golmatar Paleko and Burke, in the district of Ramechhap. Both CFUGs are involved in participatory monitoring projects initiated by the Nepal Swiss Community Forest Project, who have worked in Ramechhap and two adjacent districts since 1990. The participatory monitoring projects aim to encourage members of the CFUG to establish and monitor a series of plots in the forest which demonstrate the effects of forest management techniques on resource availability and forest condition. Both projects were designed to run for 5 years and one was established in 2004 and the other in 2005. Measurements of the girth and height of trees in the plots were meant to be taken each year so that annual increments could be calculated to demonstrate overall increases in biomass.

Spending 8 months in the two villages (split between four visits) from June 2007 to July 2008, I used both qualitative and quantitative methods. After introducing myself and my work to people in the villages, I started with semi-structured interviews with as many of those involved in the participatory monitoring projects as possible; 22 (of 28) in one CFUG and 17 (of 28) in the other. Questions related to people's experience of the project and its perceived outcomes for the community and the forest. These interviews proved good ways in which to meet a large number of people and to spend time in both villages meeting others and gaining general experience of Nepali village life. I then conducted a survey of households regarding their use and management of forest resources both in the community forest and on private land (mainly quantitative data), as well as the decision-making processes involved (mainly qualitative data). The survey was completed with an equal number of households involved in the participatory monitoring projects and those not; being 12 of each in each village (48 in total). Households were chosen in a stratified

random manner based on caste and location and I attempted to conduct the survey with an equal number of men and women (overall) to look for gendered responses (often both the household head man and woman were present though). Much time was spent, throughout the year, accompanying people of different ages and castes (met through the interviews and survey) in the forest and on private land whilst harvesting or managing for a variety of forest products. At the time of writing this paper (May 2008) I plan to spend my last visit to Nepal (May-July 2008) conducting focus groups with groups of villagers, based on gender, caste, wealth and involvement (or not) in the participatory monitoring projects. Discussions will revolve around issues which have arisen during previous fieldwork and issues that those involved would like to raise. Participant observation has been a hugely important aspect of the fieldwork, for example through living in the villages, attending social gatherings and just spending time with people in and out of the forest. I will provide feedback from the fieldwork before I leave the two villages and take the opportunity to thank people. Time will also be spent conducting semi-structured interviews with staff of local and national government departments, NGOs and international funding institutions. Questions in these interviews will centre on the recognition and perception of different forms of community-based monitoring and their place within local and national policies relating to community forests and the environment.

Throughout the fieldwork I worked with a Research Assistant, who along with many other things, translated for me between English and Nepali. Translation was done during interviews and focus groups etc. but all conversations were also digitally recorded. Until now these recordings have not been translated professionally and so data comprises the slightly summarised interpretations of my Research Assistant. In case-study work such as mine, issues of translation are linked to those of representation and power and the positionality of translators as well as researchers are highly important in determining the outcomes (Katz 1994, Twyman *et al* 1999). My data analysis will therefore incorporate careful reflections on our (mine and my Research Assistant's) positionality and issues of interpretation. My positioning with regards to the Nepal Swiss Community Forest Project will also require careful consideration.

Each qualitative and quantitative data set will first be analysed independently, using appropriate analyses and, for example, software packages such as NVivo (for qualitative data). Data will subsequently be triangulated, using a qualitative approach, looking for convergence, complementarity and divergence (Nightingale n.d.) in order to bring together and compare the findings from the various methods employed in the field.

#### PRELIMINARY FINDINGS

I will briefly present some preliminary, mainly factual findings from the fieldwork and go on below to outline how I plan to analyse and use these. Monitoring of natural resources is clearly an important aspect of people's use and management of forests and forest products in both villages. The participatory monitoring project in Golmatar Paleko has been successful in helping people to understand how best to manage the forest in order to increase the availability of forest products and this knowledge has been applied in the management of other areas of the community forest. Even people who did not take part in the participatory monitoring project have a new understanding of forest management; however it is interesting that this is based on

their own observation of the monitoring plots rather than the technical findings which resulted from the project. In Burke the participatory monitoring project involves forest management for a particular species known locally as *louth salla* (*Taxus wallichiana*), and has had very limited impact or application in either the community forest or on private land and virtually no one who did not take part in the project themselves has even heard of it, including other members of a household in which there is a project participant. Only a small proportion of the communities were able to participate in the monitoring projects; 15% of households in Golmatar Paleko and 18% in Burke (through one household member only); although those who did were encouraged to share what they learnt with others. Community members were involved only in the middle stage of the monitoring project i.e. they were not involved in its conception or planning, nor in the analysis of results; these aspects were largely controlled by the forest technicians involved and it was technical forestry knowledge that formed the basis of the projects.

What I term 'local monitoring' is widely practised within both villages and consists of non-systematic observations of nature, at the individual level, household level and community level. Observations of the condition and status of both products and the forest influence people's decisions on where to collect different forest products and such information is shared within the household in order to ensure sustainable use of the resource in many, but not all, cases. This occurs both on private land and in the community forest. At the community level, management of the community forest relies on local observations of forest condition and the status of certain species or products and these are implemented through the local Community Forest User Group. The ways in which people locally monitor seems to reflect a mix of local and technical knowledge about forests. Local monitoring, just as with participatory monitoring, is however just one factor among many which determine the use and management of forests and forest products.

#### PLANS FOR ANALYSIS

Overall I plan to analyse my data around the three themes identified in the background section of this paper; participation, monitoring and commons governance. With regards to the current IASC conference 2008, the latter theme is obviously most relevant but I believe that the first two themes have much to offer to the specific issue of commons governance.

#### *Participation*

Participatory development and conservation projects often overlook or simplify the term 'community' (Agrawal and Gibson 1999, Leach *et al* 1999) and this undermines efforts to ensure the equity of project benefits. In terms of the participatory monitoring projects studied, the heterogeneity of the community involved was clear, as demonstrated for example by the widely different recollections and perceptions of the project after a number of years of its inception. These related at least in part to the gender and literacy of the participants, which demonstrates the importance of socially-embedded and 'situated' knowledge and experiences (Nightingale 2003). The importance of changing relations to the forest (in terms of use and management) throughout the life-course of a household (Cleaver 2001) also emerged as an important feature which may be overlooked by generalisations regarding community members and households. With regards to the fact that most 'participation' is in fact 'representation' (Hickey and Mohan 2004) is evidently clear in

the case of the participatory monitoring projects as in one of the villages, barely anyone who was not directly involved in the project had ever even heard of it. This has obvious implications with regards to the spread and equity of benefits (perceived or otherwise) from the project.

The fact that the knowledge base for the project is purely technical and that it did not fully incorporate local knowledge and expertise may be seen as an example of the exercising of Western power (Crush 1995), or in the least as undermining one of the key objectives of the community forestry programme in Nepal (Nightingale 2005). Thinking through how monitoring both *reflects* and *influences* knowledge and practice in resource management will prove particularly interesting in my analyses.

One much lauded goal of participatory projects is the 'empowerment' of those involved; however this term is often left undefined and as a concept has been much debated (Hickey and Mohan 2004, Cooke and Kothari 2001). The participatory monitoring project in Golmatar Paleko has empowered the community to manage its forests using methods learnt through the project; in this way they will benefit from improved supplies of forest products in the future and may in some way feel empowered to manage their forests in new and fruitful ways. Local monitoring of improving forest condition here has led the community to decide to increase the volume of timber which may be extracted in the current year (something which forest technicians agree with as sustainable); even without the official, prior approval of the district Department of Forests. In Burke however, similar local perceptions of improving forest condition have led to calls for increased allowable timber extraction, but in this case the community feel the need to obtain Department of Forest approval before putting it into action. The empowering effect of, in this case local monitoring, is thus not guaranteed. Kesby (2007) sees empowerment as something closely aligned to power and suggests ways in which participation can be negotiated positively to produce empowering effects outside of the participatory project 'space' as well as in it. I am interested to think through how participatory monitoring projects fit with his model so as to try and find positives rather than just negatives in the notoriously critique-able field of participation.

With regards to non-participation (or resistance) in participatory projects, all those spoken to were keen to participate, although most were elected to be involved by someone else. In one of the two projects however, three participants were changed during initial training due to what was termed 'laziness' by Nepal Swiss Community Forest Project staff; more in-depth explanations for their non-participation however remain unknown. In an example related to general community forest activities, certain households chose not to help thin and prune a close-by area of forest which had the double aim of providing fuelwood and improving forest condition, as they had enough fuelwood from other sources; participation cannot therefore be guaranteed, even where there are perceived benefits for participants.

These ideas (and those below) will be fully developed over the next year, building upon a complete analysis of the fieldwork data and further review of relevant theoretical and empirical literatures.

### *Monitoring*



Monitoring may proceed in a number of different ways, encompassing both systematic methods, non-systematic methods and a combination of the two. In the case of the community-based monitoring which was the focus of this fieldwork, systematic methods were employed in the participatory monitoring project and non-systematic methods in what I have termed 'local monitoring'. The two are combined in the case where people form their impression of results from the participatory monitoring through non-systematic observations of the plots i.e. through local monitoring. This demonstrates the complexity in reality of something which many would assume to be a relatively straight forward conservation tool. The neat divisions I have constructed between participatory/systematic and local/non-systematic monitoring are also not so neat. The 'local' monitoring for example of community forests by CFUG committee members in order to gather information on which to base management and distribution decisions was encouraged by government and NGOs and occurs at relatively consistent times throughout the year in at least one of the villages. This demonstrates how rather than being static and separated between 'scientific' and 'local' forms, knowledge in fact 'circulates' and is a product of relations and networks (Raffles 2002).

Whilst many participatory monitoring projects recognise local ways of observing nature (Andrianandrasana *et al* 2005, Van Rijsoort and Jinfeng 2005), few fully incorporate them or acknowledge their impacts on resource management decisions. It is clear from my fieldwork that local monitoring feeds directly into decision-making regarding forest resource use whilst in some circumstances participatory monitoring does not; the interesting question here is what determines when (either type of) monitoring is important or influential in decisions and when it is not? (I hope to concentrate on this question during my final fieldwork visit). Waddington and Mohan (2004) provide an example of participatory development projects leaving people worse off as traditional channels of communication and persuasion within the community are replaced; it will be interesting to consider if in anyway this may result from the introduction of participatory monitoring where forms of local monitoring already exist. The importance of recognising local ways of monitoring the environment (and ecological knowledge generally) is related to the importance of recognising informal decision-making processes in communities more generally. Whilst interviewing one man he told me how having cut down three rather than the two trees from the community forest he had gained permission to harvest, people came to his land and cut down a tree there, as recompense. These actions were completely outside of the community forest institutional arrangements (even though he may have had recourse to address this perceived 'theft' from his own land in some way through official channels) and thus even where a formal institution is in place for a certain purpose, it does not mean it will necessarily always be used. This has relevance for participatory monitoring projects as it demonstrates how people might still prefer to do things informally; such as monitor the participatory monitoring plots in a local, unsystematic way (as detailed above).

As discussed above, community-based environmental monitoring is an inherently political issue, given its combination of popular participation and knowledge promotion/production (amongst other things); recognition of this fact does not however seem to have been made by conservationists initiating such projects. I hope to be able to demonstrate through examples from my work that this is the case and that it should therefore receive utmost priority in participatory monitoring

projects, with projects planned in order to minimise inequity in power relations and project outcomes. The political dimensions of environmental monitoring are also relevant to debates regarding the aim of monitoring and who is monitoring for? Is it the local or the global? For people or the environment? Through talking to government and NGO staff during my final fieldwork visit I hope to investigate this issue further.

### *Commons governance*

Agrawal (2007) writes that the ease of monitoring (as a characteristic of the resource system) contributes to the likely overall success of commons forest governance and that this may be impacted through changing institutions and technology. I wish to carefully think this through with regards to the evidence from my fieldwork; however my initial feeling is that the evidence supports this claim. The way in which people use particular areas of the forest impacts their local monitoring of the condition and status of the resource i.e. the frequency and intensity with which this is done. Distant forest with few useable products is infrequently visited by most people and so they are more likely to be unsure about its state and potentially feel less authority and claim over it (I shall investigate this idea during my final fieldwork visit). It is clear however that both the participatory and local monitoring has led to feelings of control of and claims over forest resources. This has been demonstrated above in the examples where decisions were made based on local monitoring to increase timber extraction and on participatory monitoring in how to manage the rest of the forest. Both of these examples come from the same CFUG and are not true of the other i.e. the decisions were discussed but not taken. I will attempt to understand what factors created these two different situations (following through with decisions based on monitoring and not following through on them) through the full analysis of fieldwork data. It is clear however that forest monitoring is influential in how people relate to and perceive and forest (Agrawal 2007) and thus one mechanism through which society-nature dynamics are created (Nightingale 2003).

Finally, the issues of multi-level governance of the commons and the complexity and uncertainty of commons management are certainly relevant when it comes to community-based commons monitoring. As discussed above, the issue of heterogeneity within participatory project participants as to their experience of the monitoring mean that assumptions that all community members will understand and implement participatory monitoring results equally is invalid i.e. that the situation is far more complex; and therefore uncertain, than that. Monitoring impacts and has outcomes at various levels; individuals, households, communities, nationally and internationally. The use, promotion and combination of particular forms of knowledge at these various levels has relevance for the power dynamics between them, as well as the equity of benefits, but also costs, which may result from monitoring projects or processes. I will consider such arguments in my analysis, as well how these things operate depending on tenure i.e. on commons vs. private land.

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