Climate and Development at the Third Pole

Dynamics of power and knowledge reshaping community forest governance in Nepal

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Cover: Early morning view of the Himalaya from Charikot, Dolakha.
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Climate and Development at the Third Pole: Dynamics of power and knowledge reshaping community forest governance in Nepal

Abstract

Given the international climate objectives of adaptation and REDD+ being adopted in many developing countries there are growing concerns about their effects. This thesis seeks to investigate the implications of implementing climate objectives for community forestry governance. The thesis deals with the questions of how community forest management and uses are (re)shaped by the influence of governmental and non-governmental interventions and what effects the changing community forestry objectives may have on the interests of people reliant on forest resources. The thesis draws on extensive field studies and the author's long-term engagement in development interventions and policy processes in Nepal. The analysis is primarily concerned about the dynamic of knowledge and power in (re)shaping local resource governance agenda and examines the way certain forms of knowledge and discourses get translated into interventions, transforming rules and practices in community forest management. The analysis conceptualizes power, where knowledge is a product as well as an influence. The analysis also pays attention to how knowledge and discourses are mobilized by actors towards certain ends. Findings shows that the community forestry objectives and priorities have shifted over time prioritizing certain resources such as timber as a source of revenue and undermining local needs of livelihoods and food security. Such shifts were found to have been influenced by a combination of factors, including broader socio-economic changes shifting the role of forest in peoples' lives, scientific expertise and governmental and non-governmental interventions. I argue that the climate policy objectives that are superimposed on the established community forestry institutions can bring new forces that fuel the ongoing changes in forest management objectives and enhance the technical and bureaucratic influence on community forests management. The technical and bureaucratic nature of interventions under donor funded projects on climate change have reinforced the way forests are valued for monetary benefits. The projects studied appear to have limited effects in delivering the promise of supporting local livelihoods; instead the interventions, such as in REDD+ piloting, risk curtailing local rights and benefits. There is a risk that local interests in managing community forests will be subsumed to the technocratic logic of climate interventions. The development of climate-related policy and interventions need to pay greater attention to the dynamics of knowledge and power and safeguard local interests against those of local elites, experts and external organizations.

Keywords: Community forestry, climate change, policy translation, knowledge, discourses, power, REDD+, adaptation, Nepal.

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Klimat och utveckling vid den tredje polen: maktdynamik och kunskap som omformar byskogsförvaltning i Nepal

Abstract

I och med antagandet av internationella klimatanpassningsmål och uppstarten av REDD+ i många utvecklingsländer växer oron angående deras effekter. Denna avhandling avser att utforska följderna av implementeringen av klimatmålen för byskogsförvaltning. Avhandlingen rör frågor kring hur byskogarnas förvaltning och användning (om)formas av statliga och icke-statliga interventioner och vilka effekter förändrade mål med skogsförvaltning kan innebära för människor som lever av skogens resurser och deras intressen. Avhandlingen bygger på omfattande fältstudier och författarens långa engagemang inom utvecklings- och policyprocesser i Nepal. Analysen fokuserar i första hand på dynamiken mellan kunskap och makt i (om)formandet av den lokala resurshanteringsagendan. Arbetet undersöker hur vissa typer av kunskap och diskurser översätts till åtgärder som (om)formar regler och praktiker i förvaltningen av byskogar. Analysen konceptualiserar makt så att den inkluderar kunskap både som en produkt och ett inflytande. Analysen uppmärksammar också hur kunskap och diskurser mobiliseras av aktörer mot vissa bestämda slutmål. Resultaten visar att målen och prioriteringarna för byskogsförvaltning har förändrats över tid genom att prioritera vissa skogsresurser som till exempel timmer som inkomstkälla och underminera andra lokala behov av försörjning och matsäkerhet. Sådana skiften fanns påverkas av en kombination av faktorer, inklusive breda samhällsekonomiska förändringarna som i sin tur förändrar skogens roll i människors liv, vetenskaplig expertis, samt statliga och icke-statliga interventioner. Jag hävdar att klimatmålen, som läggs på de etablerade institutionerna för byskogsförvaltning, kan pådriva pågående förändringarar i målen med lokal skogsförvaltning, samt öka det tekniska och byråkratiska inflytande över förvaltandet av byskogar. Den tekniska och byråkratiska karaktären av givarfinansierade klimatanpassningsprojekt omformade sättet som skogar värderas på mot mer monetära möjligheter. De studerade projekten verkar ha haft begränsad effekt i uppfyllandet av löftet att stödja lokal försörjning; istället har åtgärder, som till exempel REDD+, utgjort en risk för inskränkande i lokala rättigheter och förmåner. Därmed finns det en risk att lokala intressen i förvaltningen av byskogar kan inordnas under en mer teknokratisk logik av klimatåtgärder. Därför behöver utvecklingen av klimatrelaterad policy och åtgärder skydda lokala intressen mot den lokala elitens, experternas och de externa organisationernas intressen och bli mer uppmärksamma på dynamiken mellan kunskap och makt.

Nyckelord: Byskogsförvaltning, klimatförändringar, policy översättning, kunskap, diskurser, makt, REDD+, klimatanpassning, Nepal.

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Preamble

Trained as a forester, I worked for about a decade from 1998 as development practitioner for a Swiss funded community forestry project in the hill districts of central-eastern Nepal. These experiences provided me with not only understanding of how people draw on forest resources, but also the opportunity to witness the evolution of Nepal's community forestry. In 2008, I joined a university in the Netherlands and pursued a masters in development studies. After completion of masters in late 2009, I joined ForestAction Nepal, a Kathmandu based policy research organization. This was a time of great activity in climate change policy processes in Nepal. A parallel process was underway to develop climate change adaptation and climate forestry programme, called Reducing Emission from Deforestation and Forest Degradation, popularly known as REDD+. I was involved in both policy processes through ForestAction and hence could closely observe them. I sat on a committee called the REDD+ working group, a multi-stakeholder body to coordinate carbon forestry policy development in Nepal. I also attended many of the expert meetings organised during the process of climate adaptation policy development. Furthermore, as a researcher in ForestAction I was also involved in providing inputs to the climate related initiatives. Through these engagements I could follow the way climate related policies and interventions developed and implemented in Nepal.

From 2012, I became part of three different international research projects on issues related to climate change and community forest management. One of them was on climate change and rural institutions which had funding to cover a stipend for a PhD study in local universities. My attempt to get enrolment in Nepalese universities did not work because my masters in interdisciplinary subject of development studies did not fit into the disciplines they offer PhDs in. This pushed me to explore opportunities outside Nepal. Meanwhile I became associated with another research project led by the Swedish University of Agricultural Sciences, SLU. It turned out that the SLU had an arrangement called industrial model for a PhD in which organizations could sponsor somebody to undertake PhD. This unique arrangement allowed me to pursue my PhD drawing from different research projects and publishing with my supervisors.

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My PhD study and this thesis was made possible by pooling resources together from three different international research projects: a Danish government funded research project, Climate Change and Rural Institutions (CCRI) and two projects funded by the Swedish Research Council (RV-2011-39 580-84834-46 and VR-2014-39580-111284-48). One of the papers included in this thesis also drew from the Australian Centre for International Agricultural Research (ACIAR) funded research project (FST/2011/076). I acknowledge and appreciate all these funding sources.

I had an amazing team of supervisors that became true mentors and good friends, which helped to make my PhD possible by pulling together work carried out under different research projects. I met my main supervisor, Professor Adam Pain, for the first time in 2012 in London along with my colleague and supervisor, Dr Hemant Ojha, to discuss the CCRI project. Since then we have become good friends and collaborators on a number of projects. I extend my sincere gratitude to him for his mentorship, continuous encouragement and guidance on research and writing processes. I met Dr Kristina Marquardt, my second supervisor, when we (including Adam and Hemant) started PECA (Payments for Ecosystem Services: Consequences and Alternatives) research in Nepal in 2013. We became friends and collaborators afterwards and then cemented our relationship as student and supervisor. However, her role has been far more than a supervisor, as she was gracious enough to host me for most of the time I stayed in Uppsala. I am indebted to her intellectual inputs as well as her support and care. My life in Uppsala and the department became far easier due to her support. Dr Hemant Ojha, my supervisor from distance, did an amazing job of providing continuous guidance and support. Every conversation with him provided me with new thoughts and ideas. I am grateful that he was on-board during my PhD journey. Finally, I am privileged to have had Professor Andrea Nightingale as my informal supervisor and true mentor. I appreciate the

time she offered for informal discussions on bizarre ideas and reading my draft texts. Her comments and thoughts were extremely valuable and helped me to navigate theoretical approaches. Andrea, you are truly my didi (older sister).

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ForestAction and the Southasia Institute for Advanced Studies (SIAS) has been my institutional homes in Nepal and housed me when I was based there for field research and writing. I appreciate the institutional support provided by colleagues from both ForestAction and SIAS. The list will be very long if I mention all names, but I am especially grateful to Amrit Adhikari, Kamal Devkota, Gyanu Maskey, Dr Hari Dhungana, Ngamindra Dahal, Govinda Paudel, Rahul Karki, Kushal Pokharel, Madan Bashyal and Sanjaya Khatri for their support and encouragement. My field work would not have been possible without the great assistance provided by colleagues from ForestAction and SIAS: Bikash Adhikari, Niru Gurung, Sabina Lamichhane and Tikeshwori Joshi, I extend my gratitude for their support with field work and transcribing interviews. Bikash deserves special thanks for his untiring support on data analysis and developing maps. I am also grateful for the time and support provided by Dr Naya Paudel who made himself available for a series of informal discussions on my research ideas and questions.

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The family environment in the Department of Urban and Rural Development (SOL) and especially in my division of Rural Development (LAG) made me feel supported and at home. I am grateful to colleagues in LAG and want to acknowledge the special support and encouragement of Seema Arora-Jonsson, Stephanie Leder, Harry Fisher, Patrick Oskarsson, Örjan Bartholdson, Noémi Gonda, Eva Stephansson, Cecilia Waldenström, Opira Otto, Margarita Cuadra, Patrick Wennström, Flora Hajdu and Yvonne Gunnarsdotter. I would also like to extend my gratitude Ann Djurberg, Petra Fabel, Marithe Lindelöf, Carina Lundgren, Thomas Plesner, Marlén Tälleklint and Elinor Carlbrand for administrative and logistical support at SOL. I extend my special thanks to David for his patience while listening to my computer and IT related problems and Anni Hoffrén for her support with the design and layout of my final thesis. I am

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I admire the editorial support provided by Kyla Krogseng; who had done an amazing job of editing the texts.

Last but not the least, I am very much indebted to my beloved family! Janaki (my wife), took the entire burden of running the family in Kathmandu and taking care of our two lovely kids (Anushka and Aarya). Thanks for your true love and care and making time available for this long journey of my PhD study! I owe Anushka and Aarya the love and care you deserved from your father and look forward to paying this back after this journey is over! My mother and entire family have been extremely supportive and encouraging throughout my life and the PhD journey and for that I am indebted.

Dil B. Khatri
June 2018, Uppsala

Dedication

To my late father **Bhakta Bahadur Khatri** and mother **Binda Maya Khatri** for the value they put on our education.

Contents

List of publications

This thesis is builds on the work contained in the following papers, referred to by Roman numerals in the text:

I **Khatri, D.***, Shrestha, K., Ojha, H., Paudel, G., Paudel, N. & Pain, A. (2017). Reframing community forest governance for food security in Nepal. *Environmental Conservation*, 44 (2), pp. 174-182.

II Marquardt, K.*, **Khatri, D.** & Pain, A. (2016). REDD+, forest transition, agrarian change and ecosystem services in the hills of Nepal. *Human Ecology*, 44 (2), pp. 229-244.

III **Khatri, D.***, Marquardt, K., Pain, A. and Ojha, H. (2018). Shifting regimes of access and control on forests: What might REDD+ implementation mean for community forestry? Evidence from Nepal. *Forest Policy and Economics*, 92, pp. 1-10.

IV **Khatri, D.*** (under review in *Climate and Development*). Adaptation or 'Development as usual'? Doing climate change adaptation under forestry and conservation projects in Nepal.

Papers I, II and III are reproduced with the permission of the publishers.

* Corresponding author.

My contribution to the papers included in this thesis was as follows:

Paper I: I developed paper idea and led analysis and writing with inputs from H. Ojha and K. Shrestha. G. Paudel led field study and N. Paudel led policy analysis.

Paper II: I was involved in research design, field study, framing argument, analysis and writing along with K. Marquardt and A. Pain.

Paper III: I led research design, field study, data analysis and writing with contributions from K. Marquardt and A. Pain and inputs from H. Ojha.

Paper IV: This is a single author paper and field study and transcription of interviews were undertaken with assistance from B. Adhikari, T. Joshi and N. Gurung.

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Abbreviations

CAPs:	Community adaptation plans
CF:	Community Forestry/Forests
CFUGs:	Community Forest User Groups
DDC:	District Development Committee
DFO:	District Forest Office/Officer
FECOFUN:	Federation of Community of Forest Users', Nepal
ICIMOD:	International Centre for Integrated Mountain Development
MFSC:	Ministry of Forest and Soil Conservation
MSFP:	Multi Stakeholder Forestry Programme
NAPA:	National Adaptation Programme of Action
NGO:	Non-Governmental Organizations
NORAD:	Norwegian Agency for Development Cooperation
PLMGs:	Public Land Management Groups
REDD:	Reducing Emissions from Deforestation and Forest Degradation
SLU:	Swedish University of Agricultural Sciences
UNFCCC:	United Nations Framework Convention on Climate Change
USAID:	United States Agency for International Development

1 Introduction

In February 2013, I was participating in a field study in Dolakha, one of the mountain districts of Nepal, along with other researchers from ForestAction Nepal and the Swedish University of Agricultural Sciences (SLU). We were in a community forest user group (CFUG or simply user group) named Sukram in the village of Sundrawati. We learned that the CFUG had recently completed an estimation of carbon stock in a community forest (CF) based on measurements conducted with support from Federation of Community Forest Users' Nepal (FECOFUN) office in Charikot, the district centre of Dolakha. We were told by the leadership of the user group, the chairperson and secretary, that they had heard about a carbon project being implemented in the neighbouring villages where a number of user groups would receive payments for carbon storage. The chairperson and secretary visited the FECOFUN office in Charikot, which was involved in the implementation of the project. They inquired about the possibility of being part of the carbon project and were told that it was already too late. They were also told that the project was a pilot and the carbon forestry initiative, REDD+[1] as it was called, could be expanded across the district in the future. As a way to prepare and be one step ahead, the Sukram user group had taken the decision to carry out their own carbon measurement in the forest. The carbon measurement was carried out in 2013 and by the time we visited, the group had already had estimates of the carbon reserve in the community forest.

The next day, we visited another user group, which was included in the REDD+ pilot. During the meeting with key members of the user group in their office, the chairperson expressed his view that "the REDD+ brings money to the user group for not cutting trees. If we protect more trees, we can earn more money". We learned that fifty-eight user groups from the Charnawati catchment close to

[1] Reducing emissions form deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries.

Charikot were included in the REDD+ pilot and received a yearly payment, based on the results of carbon measurements and the socio-economic characteristics of the user group. The socio-economic aspects considered for determining the payment included the number of women and households from the Dalit caste[2] and ethnic communities (Janajati) and number of poor households.

The following day we visited the FECOFUN office in Charikot, and talked with the chairperson along with some others involved in the pilot. The chairperson explained the project to us this way:

> The REDD+ is good opportunity for user groups and people as it brings money for forest conservation. We consider this as a reward for their past contribution for conservation and management of the forests. Poor people from the groups are going to get a direct benefit from the REDD+ payments. Because of this pilot project, people like us also got opportunity to develop capacity and we feel that we are ahead of many other districts in terms of REDD+ implementation.

These observations in Dolakha gave me an insight into the way REDD+ was conceived by the leadership of user groups and the interventions that were undertaken on the ground. I learned how the user groups were told by project staff that REDD+ would provide revenue for conserving forests and that they would not have to give up the existing forest uses and management practices. I became intrigued by the way REDD+ was portrayed as an additional source of income to these groups whereas in the villages, REDD+ did not seem to mean the same for ordinary members of user groups. Many people had little knowledge about the pilot and those who had heard about it also shared their worries about the possibility of further restrictions on certain uses of forests, such as grazing.

A man from a poor family we visited in one of the user groups in Dolakha noted that he had heard about the carbon project in the user group meeting and the need for greater protection of forests to increase carbon stock. He was worried that in the future he might not be allowed to graze his cattle in the community forest. He said:

> I need to bring cattle into the community forest because I do not have adequate fodder to feed them. I keep a buffalo and a few cows which I share with a neighbour. I heard from neighbours that the leaders are planning to stop grazing even in the small patch that remains. If this happens, I cannot keep cattle. I neither can afford to buy improved breed of cow or buffalo nor feed them as this requires good quality fodder.

[2] In the hierarchical caste system, a Dalit lies in the lowest rank in the hierarchy and is considered untouchable and marginalized in the community. Janajati belong to different ethnic groups in Nepal and are placed above the Dalit and below so called higher castes of Brahmin and Kshatriya.

His worries were however not acknowledged by the chairperson of the user group, who heard the comment. The chairmen, asserted that "there were no changes in the rules regarding the use of forest products". But he also emphasized "we should protect trees and we can earn more money".

From my involvement in a number of the project-related meetings in Kathmandu, I had a fairly good understanding about the pilot and its objective (i.e., implementing REDD+ on Nepal's established community forestry institutional mechanisms). Forest user groups were important local units for implementing REDD+ interventions and demonstrating the objectives of carbon sequestration. There were concerns raised by researchers regarding the possible effects of implementing new conservation initiatives of REDD+ (Ojha *et al.*, 2013; Bushley & Khatri, 2011). However, besides REDD+, a number of climate change adaptation related projects had also taken CFUGs as an institutional basis for implementing their interventions (Nightingale, 2017; Paudel *et al.*, 2013).

During field work for another research project, I was in Lamjung, a mid-hills district in Western Nepal with a team of researchers. We visited the FECOFUN office to explore Hariyo Ban ('green forest' in Nepali) project, one of the two forestry projects studied for this thesis. FECOFUN was involved in implementing the project activities in Lamjung where it had a shared office with CARE Nepal, one of the two international organizations leading Hariyo Ban project. In response to our query about involving user groups in adaptation-related activities, a project staff from CARE Nepal responded, "CFUGs have a well-established institutional structure and they also have mechanisms to target poor people. Hariyo Ban wanted to capitalize on those structures and mechanisms to reach the most vulnerable households". He added, the "groups can also use their own resources (of labour and money) and can coordinate with other organizations in the village and district to generate resources to implement the adaptation plans". The instrumental use of user groups for the projects to achieve their objectives astonished me and made curious.

These changing dynamics of development interventions in Nepal are consistent with wider practices, where conservation and development practitioners (Lund *et al.*, 2017), see climate change as a new resource to continue their activities (Eriksen *et al.*, 2015a; Tanner & Allouche, 2011). However, what intrigued me with these new developments in Nepal was that the local forest user groups were drawn into the international climate objectives, such as REDD+ and adaptation, and they were being used in instrumental ways to meet project objectives. It raises questions of how the international climate objectives are applied on the ground and what they mean for the existing practices of governing CF. In other words, do interventions under climate-related projects give rise to changes or transform existing management and use

practices of CF and if so in what ways? Observations in Dolakha had indicated some subtle changes in rules and practices of managing forests. These observations drew my attention to the debate in the emerging body of literature about the possible effects of new conservation initiatives of REDD+. The core of the argument in this debate has been that the logic of governing forests through financial incentives and technical interventions under REDD+ can undermine the central principle of CF governance, local control and benefits of forest management (Arora-Jonsson *et al.*, 2016; Leach & Scoones, 2015; Balooni & Lund, 2014; Fairhead *et al.*, 2012) affecting people's livelihoods (Ece *et al.*, 2017; Benjaminsen & Bryceson, 2012; Beymer-Farris & Bassett, 2012; Groom & Palmer, 2012; Chhatre & Agrawal, 2009) .

These concerns point to the need for the design and implementation of climate-related interventions to recognize local interests in governing forests for livelihoods and food security. However, it would be naïve to assume that the existing CF governance mechanisms have been addressing all local livelihood needs and food security (Khatri *et al.*, 2017). Despite remarkable achievements in ecological outcomes, with regard to restoring the once degraded forests and halting deforestation in Nepal, (Yadav *et al.*, 2003; Niraula *et al.*, 2013), reports on the contribution of CF to livelihoods and food security of local populations present a mixed picture (Khatri *et al.*, 2017; Nagoda, 2015; Dhakal *et al*., 2011; Persha *et al.*, 2011; Malla, 2000). Concerns have been raised in various studies that the forest management rules and practices in CF, influenced by interests in generating revenue from timber, have undermined the diverse value and uses of forests for meeting local needs (Persha *et al.*, 2011; Forsyth & Walker, 2008; Nightingale, 2005). This suggests the possibility that climate policies directed towards CF institutions might reconfigure CF governance through the influence of powerful international (Leach & Scoones, 2015; Sikor *et al.*, 2013; Phelps *et al.*, 2010) as well as local actors including those from within communities (Paudel, 2016b; Ojha, 2008; Nightingale, 2006). Further, there is an increasing flow of development funding on climate change adaptation and development practitioners are mobilizing their existing networks with local organizations (Nightingale, 2015b; Yates, 2012) and involving forest user groups to implement these interventions (Nightingale, 2017; Paudel *et al.*, 2013; Gentle & Maraseni, 2012). But there are not consistent findings about the effects of such interventions in addressing local vulnerabilities (Nagoda & Nightingale, 2017; Eriksen *et al.*, 2015b; Nagoda, 2015; Nagoda & Eriksen, 2014; Marino & Ribot, 2012). Thus the governance of climate-related initiatives at the local level merits scrutiny, focusing on their implications for local livelihood needs and food security.

Nepal's CF is an exemplary case for examining these issues. The CF, a major policy shift in Nepal's forest governance to devolve rights to manage and use

forests to local communities, was a measure taken to address the failure of earlier centralized forest governance (Ojha, 2008; Metz, 1991). People's participation in forest conservation began in the mid-1970s and evolved to the current form of the user group-based model of CF, through a major policy reform in late 1980s i.e. development of the Master Plan for Forest Section of Nepal (Ojha, 2008; Gilmour & Fisher, 1992). The CF programme received legal recognition through the Forest Act in 1993. The CF has now become extensive, covering more than a fourth of the country's forest area. The local communities registered as CFUGs in local forest authorities (called District Forest Office (DFO)), can manage forests and use resources within the framework of a management plan jointly agreed upon by CFUG and DFO. The recovery of the once degraded mountains has been attributed to this policy reform (Yadav *et al.*, 2003; Niraula *et al.*, 2013; Gautam *et al.*, 2003). However it has been suggested that the ecological achievements have been gained at the cost of restricting access to forests for certain traditional uses, such as grazing (Dhakal *et al*., 2011; Thoms, 2008; Adhikari *et al.*, 2007; Nightingale, 2005).

Since the early 1990s, when CF programmes flourished, the rural economy and livelihood practices have also changed, with a substantive move towards semi-commercial farming and off-farm income sources, including remittances (Fox, 2018; Shrestha & Fisher, 2017; Sharma, 2016). Arguably, the dynamics of changes in the rural economy have given rise to changes in the way people value and use forests. Some studies show a decline in the number of livestock holdings and in turn demand for certain forest products has declined (Adhikari *et al.*, 2007; Nightingale, 2005). As climate interventions are superimposed on these dynamics, attention is needed to how such changes unfold and what they mean for the management and uses of CF. Further, understanding the effects of the climate-related interventions requires situating these changes and their consequences relative to the lives of people who still rely on forests.

There is an emerging body of work concerning the effects of climate interventions on gains made in forest decentralization (Phelps *et al.*, 2010; Sandbrook *et al.*, 2010) and local authorities and benefits (Funder *et al.*, 2018; Nightingale, 2017; Eriksen *et al.*, 2015b; Leach & Scoones, 2015). A critical body of literature is also emerging that questions the way planned responses to climate change are being organized in technical and managerial ways with limited engagement with local vulnerabilities (Nagoda & Nightingale, 2017; Sapkota *et al.*, 2016; Eriksen *et al.*, 2015a; Nagoda, 2015; Taylor, 2014; Yates, 2012; Eriksen *et al.*, 2011). Yet, empirical evidence is thin on how the international objectives are translated and applied in specific local contexts and the implication of this for local livelihoods and food security.

1.1 Research questions

This thesis seeks to investigate what climate interventions mean for CF governance in relation to the local needs. The thesis first examines the existing CF governance mechanisms in the context of changing rural dynamics and the resulting effects on the role of forests in peoples' lives. Then it moves on to examine the way climate interventions play out in the local context and the effects on CF governance. The thesis primarily deals with the question of how CF management and uses are shaped and reshaped by governmental and non-governmental interventions and what effects the CF management mechanisms have on the interests of people reliant on forest resources. The inquiry is guided by the following four research questions:

a) How are the existing practices of CF management constituted? To what extent do they address the local interests of meeting livelihoods and food security needs?
b) How are the international climate objectives of REDD+ and adaptation translated into the context of CF?
c) How do the climate objectives and discourses become part of CF management practices and how do they transform existing practices of management and use of CF?
d) What effects can the climate interventions have on local interests in supporting livelihoods, achieving food security and addressing climate related problems?

1.2 Analytical focus

This thesis maintains that mechanisms of resource governance are shaped through the dynamic interplay of knowledge and power, prioritizing some resources over others, hearing some voices and ignoring others. Thus the analysis is concerned with the forms of knowledge, which includes scientific expertise and discourses, that influence practices of CF governance and the actors who mobilize this knowledge to pursue specific interests, while marginalizing others. The research also focuses on how certain forms of knowledge get translated by experts and development practitioners into interventions (re)shaping CF objectives. Drawing on a Foucauldian notion of power, the thesis adopts the view that knowledge is a product of and serves to influence the agenda of governing resources (Eriksen *et al.,* 2015b). The thesis looks at the two way relationship between knowledge and power. On the one hand, certain forms of knowledge and discourses become dominant in determining the rules and priorities of governing CF, privileging certain

resources and side-lining others. This explains how the management of CF has been determined as to marginalize certain traditional uses. On the other hand, the specific forms of knowledge and discourses are used and actively promoted by some actors (individuals and organizations) to promote specific agendas (Tanner & Allouche, 2011; Ojha, 2008; Forsyth, 2003). The analysis focuses on the way existing actors in the conservation and development industries mobilize certain forms of knowledge and discourse to justify particular types of responses (Eriksen *et al.*, 2015b; Forsyth, 2014; Taylor, 2014).

Power is a central conceptual thread informing analysis in this thesis. It is conceptualized as relational effects (Ahlborg & Nightingale, 2018; Allen, 2016), (re)produced through interactions between individuals and organizations shaping priorities and actions at the local level. This conceptualization of power, drawing on a Foucauldian approach (Foucault, 1991; Foucault, 1990), sees knowledge and discourse flowing through networks and connections producing effects with regard to the governance of resources. This analysis is concerned about the power of a governing force to direct the actions of people (Winkel, 2012; Dean, 2010) in relation to resource management. Governance mechanisms are effects of the process in which knowledge and discourses are internalized and embraced by individuals and organizations involved in the governance of resources (Lund, 2015; Forsyth & Walker, 2008; Li, 2007; Forsyth, 2003). The analysis also moves beyond the Foucauldian discursive approach, and examines how knowledge and discourses are mobilized by actors to meet certain objectives (Tanner & Allouche, 2011; Nightingale, 2005; Latour, 1984). In this sense, knowledge can help reinforce the existing power structure and authority of certain actors, reproducing marginalization.

1.3 Argument structure and organization of the thesis

The core argument of this thesis is that the CF management practices are (re)shaped by the influence of governing forces of knowledge and discourses, privileging certain resources, which in turn may undermine local needs. The thesis builds this argument by examining the changing dynamics of CF governance, including the recent phenomenon of implementing climate change policies that build upon CF institutions. The argument is developed drawing on the four papers included in this thesis.

Paper I, investigates the questions of how the CF regimes (rules and practices), influenced by modern forestry science, prioritizes timber production and revenue generation within user groups, in turn undermining certain traditional practices of using forests to meet local livelihood and food security

needs. As presented in Table 1, the paper draws on the study conducted in six user groups from two mid-hill districts of Nepal.

Paper II, examines the changing dynamics in the agrarian economy in Nepal and implications for the shifting objectives of CF management. The paper juxtaposes the change in CF regimes with the implementation of the climate objectives of REDD+ and argues that the REDD+ pilot projects undertaken in Nepal's CF consisted of technical approach and interventions and paid limited attention to these changes. The paper maintains that the REDD+ implementation can pose the risk of further detaching CF objectives from local needs. This paper considers that there is a risk that REDD+ implementation can accelerate an ongoing shift in CF objectives towards monetary benefits, with negative effects on the diverse non-monetary benefits of forests, which many people derive to sustain their farm-based livelihoods.

Paper III and IV turn towards climate interventions and examine the ways the international climate objectives are translated into the local context of CF and their effects on the changing nature of CF management. Paper III builds upon the argument of Paper II, by examining the design and implementation of a REDD+ pilot project. It maintains that the implementation of REDD+ is underpinned by the logic of carbon sequestration and involves technical interventions that can reinforce the current shift in CF objectives towards generating revenue in user groups and undermining the local values and uses of forests. Paper IV examines adaptation interventions under two forestry projects. It contends that interventions in two projects were influenced by an understanding of adaptation through forestry and conservation lenses and implemented through a top-down process. These are likely to reinforce the existing priorities towards timber production and biodiversity conservation. The interventions take a limited account of the local contexts determining peoples' vulnerability[3] and hence have limited effects on the ground (see also Eriksen *et al.*, 2015b; Nagoda, 2015). See Table 1 for key questions addressed by the papers and the cases examined.

[3] Vulnerability is conceptualized and used in different ways. Development practitioners often conceive of vulnerability as an outcome of climate change or external shocks and fail to take into account the socio-political context underpinning it (Schipper, 2009; O'Brien *et al.*, 2008; Eriksen & O'Brien, 2007; Schipper, 2007). Further, vulnerability is often equated as poverty (Eriksen & O'Brien, 2007) ignoring elements of risk. This thesis takes a broader conceptualization of vulnerability as outcome of diverse contextual factors (Arora-Jonsson, 2011; O'Brien *et al.*, 2008; O'Brien *et al.*, 2007) and assumes that addressing local vulnerability to climate change requires a socio-political response (Eriksen *et al.*, 2015b; Ribot, 2014).

Table 1. Questions/objectives and cases focused in four papers.

Paper	Questions/objectives	Cases and sites
I	To what extent have CF policies and management practices contributed to the needs of livelihoods and food security and if so how?	Six user groups from two mid-hill districts of Nepal, Lamjung and Kavre.
II	Examines the dynamics of socio-economic change and relation to changing CF objectives and situates this in relation to REDD+ implementation.	User groups from within and outside of REDD+ pilot site in Dolakha and groups from pilot site in Chitwan districts of Nepal.
III	How has REDD+, an international climate change policy, been translated into the CF context and with what effects on the management and use of CF?	User groups from within and outside of REDD+ pilot site in Dolakha and groups from pilot site in Chitwan districts of Nepal.
IV	How has the existing paradigm of conservation and development influenced the way adaptation is framed and implemented and with what effects on local vulnerability?	Two forestry projects focusing on climate change adaptation; studied in one district per project i.e. Lamjung and Rupandehi.

This introduction is followed by a background section focusing on a selective description of the contexts in which CF operates and the climate change interventions. The section also provides a brief overview of climate policy development in Nepal, and the cases of the projects examined in this thesis. Section 3 provides methodological reflections and methods. Section 4 gives an overview of the literature and theoretical issues and presents a framework for analysis. The analytical framework identifies the key elements guiding the inquiry. Section 5 presents findings and analysis, followed by a discussion and conclusion in Sections 6 and 7 respectively.

2 Context

The international climate policy objectives in Nepal are implemented in various contexts, each with specific socio-economic dynamics, resource governance and political environment. There are four aspects that are important to consider. This section briefly outlines these contextual dynamics followed by a brief overview of the climate change policy development in Nepal. A brief overview of the cases of climate change projects is also provided towards the end of the section.

2.1 Bio-physical contexts and variation across different regions

Nepal's physiographical and topographical distribution gives rise to enormous climatic and ecological variation. About 83 percent of Nepal's area is mountainous and only 17 percent is flat and this terrain can be found in the south in the Tarai (MOHA, 2009, p. 5). There are huge altitudinal variations from the southern plan to the Himalayas in the north. This gives rise to ecological and climatic variation that ranges from subtropical in the south to arctic in the north. The climate is essentially dominated by the south-easterly monsoon, which provides most of the precipitation during the rainy summer months from June until September. The key climate change impacts on Nepal will most likely include significant warming, particularly at higher elevations. This increase in temperature will lead to reductions in snow and ice coverage with effects on river flow. Some projections indicate an increased frequency of extreme events, including glacier lake outburst floods (GLOF), floods/landslides, droughts, and an overall increase in the precipitation intensity during the wet season (Sudmeier-Rieux *et al.*, 2012, p. 123).

The variation in the ecological and climatic parameters across the different regions (i.e. Tarai, middle hills and higher mountains), give rise to differentiated climate-related risks. In the mountain region, which includes both high

mountains and mid-hills, such as Dolakha and Lamjung (see Figure 1), people face risks due to landslides, flash floods and weather variation. During the field study in these districts, district officials and farmers reported that the extent and frequency of such extreme events had increased in recent years, which they attributed to climate change. In contrast, in flat areas such as Rupandehi, people experience problems such as floods, drought and more frequent periods of extreme heat or cold.

The districts vary not only in bio-physical contexts, they also vary in socio-economic dynamics, particularly in regards to their agrarian economy and dependence on forests. While, many smallholder subsistence farmers in the mountain districts rely on forests for fodder and fuel-wood, a major portion of the population in the Tarai districts, such as Rupandehi, have limited access to forests (Sinha, 2011). Household access to resources such as land and forests are key to rural livelihoods and reducing vulnerability. Access to these resources are historically determined by social structures and relations (see Nagoda & Eriksen, 2014; Varughese & Ostrom, 2001; Ghimire, 1998).

2.2 Dynamics of changes in rural economy and implication on forest uses

The mountain region of Nepal, particularly the mid-hills such as Lamjung, Dolakha and Kavre, has a long history of established settlements with mixed populations of ethnicities and castes. Subsistence agriculture has historically been the main occupation and there are sharp discrepancies between different caste groups with regard to land size and productivity. In general, fertile and irrigated lands along the river valleys are owned by the people from higher castes. People from ethnic groups cultivate mostly rain-fed lands on mountain slopes and Dalits own smaller pieces of marginal land or are landless[4]. In contrast, the Tarai districts, such as Chitwan and Rupandehi, were densely forested and sparsely populated until the 1950s. With the elimination of malaria in the 1960s and construction of the east-west highway in 1970s, migration from the hills started. It was promoted by the state by encouraging the clearing of forests and land reform policies that included the distribution of land to landless people (Shrestha, 1989). Landless levels however are high in the Tarai (about 15-20% of the population) and the landless are mainly from the Tarai Dalits and indigenous communities such as Tharu.

[4] This is linked with the historical process of marginalization. Historically Dalits were occupational groups working for in-kind payments by so called higher caste people.

The rural economy of Nepal particularly of mid-hills is in poor health with high levels of outmigration. As Blaikie *et al.* (2002) noted in a revisit to a panel set of households in the mid-hills first surveyed in the 1970s agriculture had remained at a subsistence level. Farming is still a major source of livelihoods even in Tarai but the agrarian economy is richer in Rupandehi and Chitwan compared to Dolakha, Kavre and Lamjung. In flat areas farming is more productive and market oriented but in mountains a significant percentage of the population are still living through subsistence or semi-commercial farming. However, there have been remarkable changes in the rural economy in recent years with an increasing volume of remittance income generated by migrant youths working in Korea, Malaysia and the gulf countries (Sugden *et al.*, 2018; Gartaula *et al.*, 2012; Seddon *et al.*, 2002). The extent of the outmigration is relatively low in Tarai districts such as Rupandehi where many poor and landless families instead work as agricultural labour in Nepal and India (CBS, 2011).

There have also been changes in farming practices even in the mountains with moves towards semi-commercial farming (primarily vegetable and fruits) and off-farm activities. As noted by Blaikie *et al*. (2002, p. 1268-1269) the effects of a global labour market in providing work and remittances to the mid hills has reduced the role of agriculture in rural livelihoods. This has led to not only improvement in living standards but also to social and cultural changes (Sugden *et al.*, 2018; Gartaula *et al.*, 2012), while agriculture has remained stagnant. A government report suggested that about 55 percent of households receive remittance mostly from the foreign labour (from India, Malaysia and Gulf countries) (CBS, 2011). Yet, a significant percentage of population still rely on subsistence or semi-commercial farming with only 15 per cent of gross farm output being sold in 2003/04.

2.3 Forests and their variability across the regions

The farming practices in Nepal particularly in the mountains are closely linked with forests. However, the nature of the forests and how people draw on forests varies across regions. There is a significant variation in forest cover and type between the mid-hills and the Chure and Tarai regions. Mountain landscapes consist of a mosaic of forests patches and settlements and people derive a range of products from the forest including fodder to keep livestock, fuel-wood for cooking and litter for manure. In contrast, forests in flat area of the Tarai have either already vanished (converted to farm land) or exist only in distant north on the foothills of the Chure. Hence, many people from Tarai have limited access to forests (Rai *et al.*, 2017; Sinha, 2011). The larger tracks of forests with higher value timber (i.e. *Shorea robusta and Terminalia spp*.) are used by local people

to meet their subsistence needs and extracted for the market. In contrast to the mountain, a major part of the forests in these regions are still under government control and the forest cover has been declining (Paudel *et al*., 2013). Further, the harvesting of forest products in the Tarai is more regulated by the Forest Department than in the mountains (Sunam *et al.*, 2013; Ojha, 2008).

Most of the forests in mountains and major parts in Chure are managed under community forests. For example, in Lamjung about 85% of households are members of CFUGs (Khatri *et al.*, 2015). But in the Tarai, most forests are either still under government control or managed as collaborative forests[5] which were introduced to provide forest access for people in the Tarai (Rai *et al.*, 2017). Other initiatives under some donor funded projects promoted plantations in private or public lands. The Multi-stakeholder Forestry Program (MSFP) for example, promoted plantations on common lands and groups called Public Land Management Groups (PLMGs) were formed to manage them. These plantations, as observed in Rupandehi, are very small pieces of land (mostly about a hectare), insufficient to meet demand of forest products. Even some CFs in the north of the Tarai have made provision to provide certain forest benefits to residents from the south. However, these initiatives have limited and many people still have no access to forests.

Despite the issues in the Tarai, CF is a major mode of forest governance in Nepal. However, the governance and use of the forests even under CF has been changing.

2.4 Community Forestry in Nepal

Community forestry has become well-established in Nepal and covers more than one-fourth of the country's forest area. In 2016, about 1.8 million hectares of forests were managed by 18,960 CFUGs comprising about 40% of the country's population (DOF, 2016). The idea of peoples' participation in forest conservation was initiated in the mid-1970s but the current form of CF was established in forest policy in the late 1980s and widely implemented, primarily in the mid-hills of Nepal, in the 1990s after the promulgation of the 1993 forest law. The law provided the framework to devolve rights to local people to manage and utilize forests under the institutional arrangement of CFUGs. The CFUGs have been credited with the restoration of the once degraded hills forests and significantly improving forest cover and biomass (Yadav *et al.*, 2003; Gautam *et al.*, 2003). This has improved the supply of forest products for local needs

[5] Collaborative forests management is a mechanism of forest governance introduced by forestry ministry in Tarai as alternative to the CF where relatively bigger patches of forests are managed through a joint mechanism involving DFO, local communities and local government.

(Birch *et al.*, 2014; Ojha *et al.*, 2009; Adhikari *et al.*, 2007). However changes in forest cover in the Nepalese mid-hills also have to take account of shifting demands for forest resources (Paper II).

2.5 Political contexts

Even after a decade of a peace agreement between the Maoist rebel groups and government the political environment in Nepal has not been fully settled. During last two decades or so, it has passed through turbulent political environment with 10 years of insurgency (1996-2006), a peace agreement in 2006 and process to settle conflict, abolishment of monarchy (2008), writing the new constitution through the constituent assembly (2015) and restructuring of the centralized state into a federal one. Underlying these difficulties and central to a view of Nepal as a state with limited capabilities is the ongoing challenge to its legitimacy, the failure of the state to perform in terms of delivery of basic public goods and reduce poverty (Pain *et al.*, 2014), all underpinned by the persistence of an old political elite based on old social hierarchies and practices leading to enduring patterns of social exclusion.

It took a decade to draft a new constitution from the comprehensive peace agreement was signed in 2006 to the new constitution promulgated in 2015. The first Constituent Assembly formed through election in 2008 could not agree a new constitution because of disagreements among political parties and social groups. The constituent assembly was dissolved in 2012 after failing to develop a new constitution even after four extensions of the deadline. The Second Constituent Assembly formed through election in November 2013 finally agreed on the new Constitution on September 20, 2015. But there has been a strong disagreement over this by the Madhesi and Tharu ethnic communities from the southern plains of Nepal, bordering to India giving rise to a political stalemate (Paudel, 2016a). Nepal faced about a six months long strike in Tarai obstructing at the Nepal-India border blocking supply of fuel and other goods.

The political dynamics has to do with the way authority and legitimacy are exercised by governmental and non-governmental organizations at local levels with regards to engaging with and influencing external interventions, including climate change (Ojha *et al.*, 2016a; Nightingale, 2015a). Hence, the way in which international climate objectives are implemented requires situating in the unstable political environment of Nepal.

2.6 Climate change policy processes in Nepal

Framing Nepal as one of the 'highly vulnerable' countries[6] to climate change and requiring immediate planned adaptation responses opened the door for donors' support. The process began in 2008 with development of policies following United Nations Framework Convention on Climate Change (UNFCCC) proposed framework. A National Adaptation Plan of Actions (NAPA) was developed between 2008-2010[7] seeking to respond to urgent and priority actions for adaptation. During the NAPA preparation process, vulnerability assessments were carried out by a team of experts and 75 districts of Nepal (sub-national administrative territories) were ranked and divided into three categories i.e. high, moderate and low vulnerable districts. This ranking was seen to help development organizations identify geographical priorities in planning adaptation responses. The NAPA process was followed by the development of two other important policy documents namely the Climate Change Policy (2011) and the national framework for Local Adaptation Plan of Actions (LAPA). These policies provided the basis for donors and international organizations to design and implement adaptation related projects. During the peak period of climate policy development in Nepal i.e. 2008-2012 and afterwards, a number of climate related projects were designed and implemented. These projects included, but were not limited to the Pilot Programme for Climate Resilience, Nepal Climate Change Support Programme (NCCSP) and various projects funded through the UNFCCC to implement NAPA priority actions.

Alongside these adaptation related initiatives, there was, a parallel process underway, preparing the ground for REDD+ implementation. The Readiness Preparation Proposal (RPP) was approved by the World Bank in 2010 and implemented between 2011 and 2015. It included activities such as identifying policies and institutional gaps, assessing capacity and developing mechanisms for carbon monitoring and reporting, local consultation and stakeholder engagement and developing a national REDD+ strategy. During this readiness period (2009-2015) a number of projects were designed and implemented. These were designed to demonstrate the REDD+ mechanisms, create understanding of policy and institutional aspects and develop capacity at national and local levels.

[6] For example Nepal was ranked fourth most vulnerable country in the Climate change vulnerability index (CCVI) done by Maplecroft. See report at http://maplecroft.com/about/news/ccvi.html (assessed in February 07 2012).

[7] NAPA development funded by Least Developed Country Fund of UNFCCC and carried out by UNDP Nepal in collaboration with Ministry of Environment. The NAPA development constituted a process to identifying priority and urgent actions for climate change adaptation to be supported through UNFCCC's dedicated fund for the least developed countries.

These initiatives, both policy development and local interventions, received dedicated climate funding from the UNFCCC and World Bank. The donors and international organizations working in these areas incorporated climate change related interventions into their ongoing and future projects. In so doing, these organizations mobilized their established relations and networks at a local level to implement the projects and drew them into the new arena of climate change. The two major forestry projects studied in this research are a clear example of this where forestry sector donors designed their new projects to include climate change as major area of intervention and 40% of the project budget was allocated to adaptation alone.

2.7 Overview of the case study projects

The Research draws on detailed case studies of three selected donor funded projects. One is a REDD+ pilot project, the only REDD+ demonstrational project implemented in Nepal. The other two were forestry projects with climate change adaptation as a major focus: the MSFP and the Hariyo Ban Programme. A brief description of the projects is given below. See Table 2 for the overview of projects.

2.7.1 The REDD+ pilot

The REDD+ 'pilot' project (hereafter called the REDD+ pilot) was implemented between 2009 and 2013 (ANSAB, 2010, p. 1) in three districts with one site per district, each site covering a catchment. These were the Charnawati catchment in Dolakha, the Ludikhola catchment in Gorkha and the Kayarkhola catchment in Chitwan district. The project area in total covered about 10,000 ha of forest, managed by 105 CFUGs. The sites in Dolakha and Gorkha districts are located in the mountains whereas the Chitwan site lies in the Chure in the foothills of the mountains.

The project funded by the Norwegian Agency for Development Cooperation (NORAD) was implemented by a consortium of three organizations. It was led by the International Centre for Integrated Mountain Development (ICIMOD) a regional intergovernmental organization, in partnership with two national NGOs (Non-government Organizations) of which one is FECOFUN—the apex organisation of a network of about 15,000 CFUGs. The aim of the project was to "demonstrate the feasibility of REDD in [community forest] involving local communities" (ANSAB, 2010, p. 1).

Table 2. Brief overview of the projects.

SN	Projects	Funding arrangements	Budget and geographical coverage	Implementing agency/s	Design process
1	REDD+ piloting	Funded by NORAD	Covered three selected catchments in three districts	Led by ICIMOD with involvement of two NGOs including FECOFUN	Designed by consortium partners but led by experts in ICIMOD and ANSAB
2	Multi-stakeholder Forestry Programme (MSFP)	Joint funding of three prominent forestry sector donors in Nepal	150 million for 10 years covering about half of districts in Nepal	Ministry of Forest and Soil Conservation and national and local NGOs	Programme designed through government led process (under MFSC)
3	Hariyo Ban Programme	Funded by United States Agency for International Development (USAID)	30 million for 5 years covering 15 districts (in two geographical areas)	Led by international NGOs (with prior experience of implementation of projects in the field of conservation and development) with two national NGOs as partners	Project primarily designed by donor and outsourced for implementation

Sources: (ICIMOD, 2011; MFSC *et al.*, 2011; USAID, 2010)

2.7.2 Two forestry projects with adaptation focus

The MSFP, established in 2012 was a major forestry project in Nepal funded by three donors all of whom had separately funded forestry projects in Nepal before. The project was notable because three major forestry sector donors came together seeking to jointly fund a 10 year project with a commitment of $150 million. Even more significant was the fact that the government led the multi-stakeholder process of project design, marking a major change in the way in which support to the Forestry sector has been given by external donors. The project covered 35 (out of 75) districts with core activities and some thematic activities were implemented in another 31 districts.

The project aimed to support the improvement of livelihoods of what were termed 'poor and disadvantaged' people (MFSC *et al*., 2011, p. 7). There were four major objectives: a) development of forest sector policies and plans (12% of budget); b) private sector promotion for increased investment and jobs in the forest sector (15% of budget); c) promotion of livelihood benefits from

forest management (48% of budget) and d) forest related ecosystem services enhancement and monitoring (23%). All these objective were stated to be linked with a climate agenda with improved forests supporting better livelihoods for people and the objective three had a specific focus on climate change adaptation.

The initial four-year phase of the project (2012-2016) was administered by one of the donors (under a bilateral modality) and overseen by a 'multi-stakeholder' committee of government, donor and other stakeholders. In the second phase, the document envisaged a separate entity to administer the programme comprising different stakeholders (MFSC *et al.*, 2011). However, the project terminated after completion of the first phase in 2016 after disagreement between the Ministry of Forests and Soil Conservation (MFSC) and donor organizations about the governance arrangement. The shutdown of the project related to a struggle over authority among donors, MFSC and non-governmental organizations. This sheds light on the politics of projects and future of forest governance in Nepal but is beyond the scope of this thesis.

Hariyo Ban was a USAID funded project established in 2011. The five year project was designed under USAID's 'Global Climate Change Initiative in Nepal'. The project's objectives included: a) reducing threats to biodiversity in target landscape(s); b) building the structures, capacity and operations necessary for effective sustainable landscape management, especially REDD+ readiness; and c) increasing the ability of target human and ecological communities to adapt to the adverse impacts of climate change. Each objective was linked to a specific programme component i.e. biodiversity conservation, sustainable landscape management (REDD+ readiness) and adaptation to climate change with a proportional budget allocation of 25%, 30% and 40% respectively.

The Hariyo Ban design drew from previous projects supported by USAID. The project focused on two selected geographical regions which were identified by WWF, a conservation organization, as 'critical biodiverse areas', indicating the need for conservation initiatives. One of these was called the 'Tarai Arc Landscape' and included nine districts in central and western Tarai. The second was called 'Chitwan-Annapurna Landscape' the catchment that links Chitwan National Park (in Chure and Tarai) to Annapurna Conservation Area (mountain) and covers six districts.

The project was designed by the donor and outsourced for implementation. A call for proposals to implement the project within the given objectives, indicative activities and identified geographical area (USAID, 2010) was announced in 2010. A consortium led by the WWF which had long history of implementing the USAID funded conservation and development projects in

Nepal, was selected. The consortium comprised two international NGOs that include the WWF and CARE and two national NGOs. The national NGOs were the National Trust for Nature Conservation (NTNC) which had been involved in conservation activities including managing the Annapurna Conservation Area and FECOFUN.

3 Methodology

3.1 Research approach

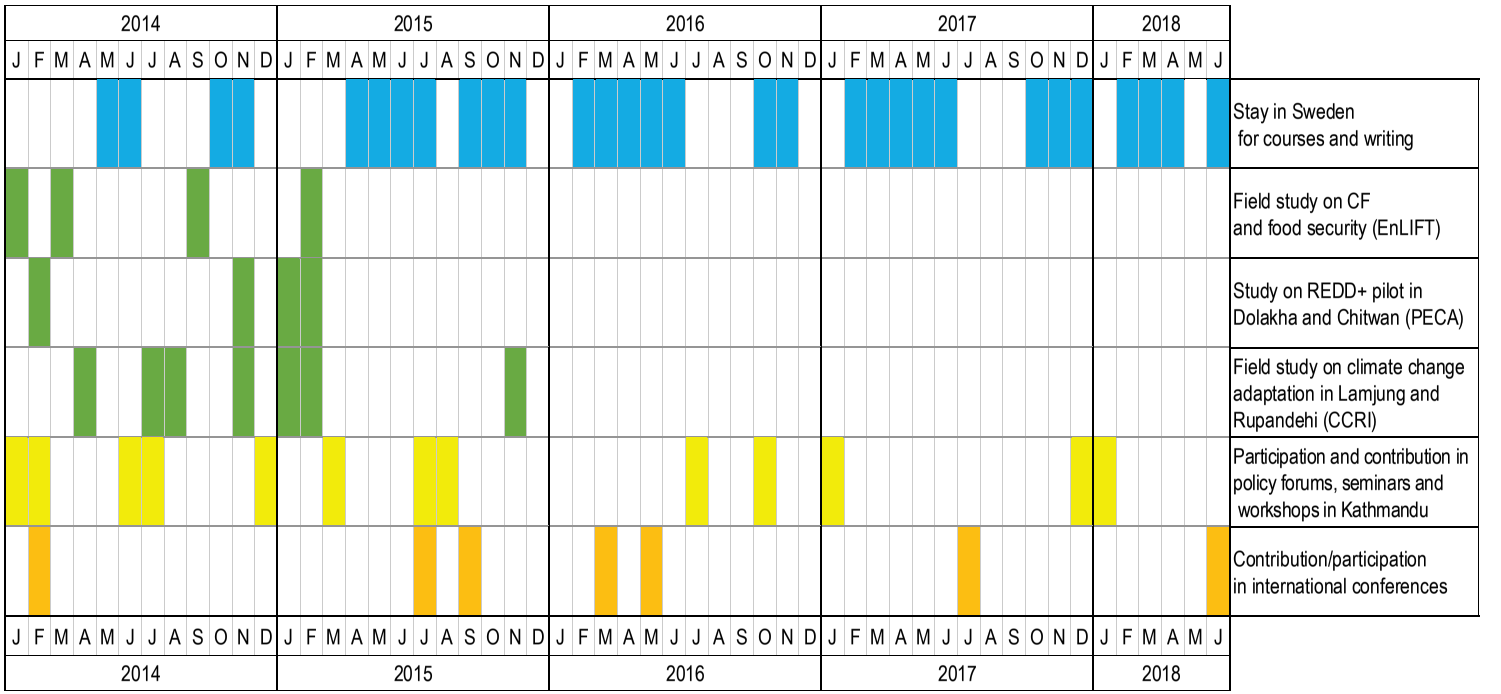
This thesis is primarily based on field studies focusing on selective cases of donor-funded climate change projects and CFUGs from within and outside the studied projects. In addition, the analysis is inspired by and benefits from the author's previous engagement in the development practice (i.e. working for a donor-funded community forestry project) and previous and ongoing engagements in forestry and climate change related national policy processes.

The field study draws from three different international research projects of which I was part of. The first was Climate Change and Rural Institutions (CCRI), led by the Danish Institute for International Studies. The CCRI project focused on climate change adaptation and understanding institutional responses to climate change at the local level. Evidence for Paper IV has been drawn from the CCRI work carried out along with two supervisors (Professor Adam Pain and Dr Hemant Ojha). The second was Payments for Ecosystem Services: Alternatives and Consequences (PECA), a research project led by the Swedish University of Agricultural Sciences (SLU) and implemented in Nepal in collaboration with ForestAction Nepal, the organization I am part of. The PECA research included the examination of the REDD+ pilot project in Nepal, which provided the empirical basis for two papers (i.e. II and III). In the PECA research I was responsible for leading the Nepal case and worked with two supervisors (Professor Adam Pain and Dr Kristina Marquardt). The third project was 'Enhancing Livelihoods and Food Security from Agroforestry and Community Forestry in Nepal' (EnLIFT) and funded by the Australian Centre for International Agricultural Research (ACIAR). I was involved in the project during the first year of my PhD studies (2014) and drew the empirical material for Paper I from that research. The paper, which was led by myself, was jointly

written with research team members from the project including one of my supervisors (Dr Hemant Ojha).

My PhD research involved a combination of staying for periods in Sweden for course work, literature review and writing, and in Nepal (about 50% during first two years and 33% during last two years) for field study, policy engagements and writing. As mentioned earlier, the field study was undertaken under three different projects and I got the opportunity to work with three different teams of researchers (with some overlaps). The arrangement of working under different projects provided me with the opportunity of working with a team of researchers from different disciplines as well as practitioners and policy actors. A brief overview of the field study approach and timeline is given in Table 3.

Table 3. Calendar of research activities and timeframe.



Some field activities were undertaken under three different projects in 2013 (before my enrolment as PhD student at SLU).

The field study adopted a case study design. Climate change interventions and their effects were examined through a detailed case study of three climate change-related projects. The selected CFUGs from within and outside of the project sites studied for climate interventions became 'embedded units' (Baxter & Jack, 2008, p. 550) of the project cases. However, the CFUGs, both from within and outside of the projects were also taken as cases to explore the questions related to CF management dynamics and ongoing changes (examined in papers I and II).

The cases (of both CFUGs and projects), are considered as 'analytical constructs' (Lund, 2014, p. 224) and helped in organizing knowledge about the way CFs are managed and climate policies are implemented at the local level. The case study approach therefore helped in moving from micro situations and empirical reality to general observations and abstraction (ibid). In this thesis, the selected projects are examined as examples of the way international climate objectives are translated into the CF context. Similarly, the CFUGs become cases for how forest management objectives and priorities are influenced by the external forces of governmental and non-governmental interventions. Putting together, the examination of selected projects and CFUGs helps in making a general point about the dynamics of power and knowledge in shaping the local agenda of resource governance (see Lund (2014) for analytical moves from empirical details of the cases to generalization and abstraction). The findings and analysis presented in this thesis have general relevance beyond Nepal's community forestry and provide insights to the development and implementation of climate-related policies and projects, particularly those that intend to overlay community forestry. Further, the analysis contributes to the theory of power and knowledge, focusing on the effects of the dynamic interplay of power and knowledge with regard to influencing local agendas of resource governance.

3.2 The cases and field sites

The choice of cases of projects and selection of field sites and CFUGs (both as cases and embedded units for project cases) were strategic. Rather than seeking representativeness, the projects, field sites and CFUGs were selected in the way they better explain the cases outlined above (see Lund, 2014). Meaning, the cases were selected with reference to the relevance to the questions and analytical focus of the thesis (Silverman, 2010). For example, REDD+ pilot project was the only REDD+ piloting exercise undertaken in Nepal that builds on CF. Further, the projects and CFUGs as cases were selected because they offer the general characteristics of the point (Flyvbjerg, 2006) this thesis is

trying to make on the role of knowledge and power in shaping local priorities in governing resources.

Field sites (i.e. districts) for field study were selected considering geographical, socio-economic and resource governance contexts. The districts were chosen to cover the contrasts across different ecological regions of Nepal. The sites for ACIAR funded research were pre-determined by the project (i.e. Kavrepalanchok (called as Kavre) and Lamjung districts in the mid-hills region of Nepal (Figure 1)). The districts represent the mid-hills region where community forestry programmes were widely implemented. Kavre district was of particular interest for the research given the long-term intervention by the Australian government on CF programme.

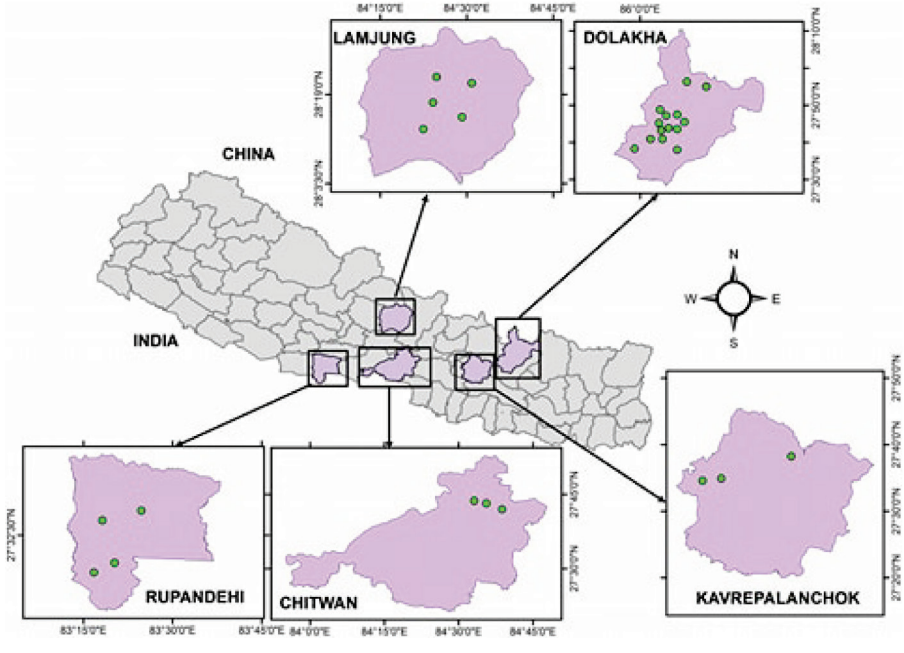


Figure 1: Map showing field sites.

Sites for the REDD+ project case were Dolakha and Chitwan. While most of the fieldwork was undertaken in Dolakha, a less extensive field study was undertaken in Chitwan. Dolakha was selected from three of the REDD+ pilot sites due to its relatively strong CF programme, resultant from a long history of Swiss support. The forest management practices in Dolakha are also characteristic of Nepal's mountain region (Figure 1). The study in Chitwan examined the contrast of mountain region of Dolakha with the Chitwan site in

the Chure[8] and Tarai, given the different landscapes, settlement patterns and forest governance arrangements.

For the two forestry project cases, one district for each project was selected. Lamjung was covered by the Hariyo Ban and Rupandehi by MSFP. These districts are in different geographical regions with Lamjung in the mid-hills and Rupandehi in the Tarai. They also have different socio-economic dynamics and ecologies, important factors shaping peoples' vulnerability to climate change. These districts fall in two extremes on NAPA's vulnerability ranking of districts which considers exposure to climate-related risks and poverty index. Lamjung sits 'very high' and Rupandehi 'very low' in the index.

In each district, forest user groups were selected for detailed studies. In the study of climate change projects, the groups were selected from where the project interventions were implemented (see Figure 1 and Table 4).

Table 4. Overview of cases and field sites.

Research focus, cases and related research projects	Field sites (districts)	Local units (cases)	Remarks
CF dynamics taking CFUGs as cases, drawing on ACIAR's project (linked to Paper I)	Kavre and Lamjung	CFUGs	Both districts represent mid-hills of Nepal
REDD+ piloting drawing on PECA research (link to Papers II and III)	Dolakha and Chitwan	CFUGs from pilot sites and outside sites	Districts representing mountain (Dolakha) and Chure (Chitwan)
Adaptation interventions drawing on CCRI research (linked to Paper IV)	Lamjung (Hariyo Ban) and Rupandehi (MSFP)	CFUGs and PLMGs (only in Rupandehi)	One district from each project and represent mountain (Lamjung) and Tarai (Rupandehi)

3.3 Field study approach and methods

Examination of the projects (i.e. three climate-related projects) began with a review of project documentation and secondary materials. Project proposals and design as well as procedural manuals and reports were reviewed focusing on their intervention logic, assumptions and implementation approaches. Senior officials from the projects and/or donor agencies were interviewed in

[8] Chure is a foot hill of mountain and is the frontier between the mountains and southern plain (Tarai).

Kathmandu and regional towns (i.e. Pokhara and Butwal) focusing on the design of interventions and implementation mechanisms of the concerned projects.

Field work involved repeated visits to each field sites (districts), where different tools were used to gather data (see Table 3 for time frame of field work under different research project). A brief discussion of the methods is provided below (see Table 5 for the overview of respondents).

Key informants' interview: Field visits in each district began with key informant interviews (KII) with representatives from government and non-government organizations involved with environment and climate related-issues in the district (Figure 2). Major government organizations interviewed included DFO, District Development Committee (DDC) and District Soil Conservation Office (DISCO). The KIIs were not only beneficial in building rapport with key organizations from the district centers, they also helped to get an overview of the projects and identify field sites and CFUGs. Getting appointments with government authorities such as DFO and Local Development Officers from DDC was often challenging. For example, the CCRI research team failed to interview DFO and LDO in Rupandehi in the first attempt. Networks of friends and local resource persons were mobilized for getting appointments in these cases. Learning from these difficulties, CCRI and PECA research adopted a strategy to seek help from FECOFUN members to establish connections with other organizations. In the case of Rupandehi, I had to ask a friend in the forestry ministry to get an appointment from DFO.

In-depth semi-structured interview: Semi-structured interviews were conducted with representatives from selected government and non-government organizations involved in the implementation of climate change-related projects. The interviews focused on different aspects of implementing project activities. Repeated visits and interviews were done with implementing organizations of the case study projects, which also included FECOFUN (Figure 3).

Group interview in local forest groups: Group interviews were conducted with the selected CFUGs in the groups' offices or public places (Figure 4). The interviews were primarily conducted with the leadership of CFUGs (i.e. executive committee members). In these interviews the key members of the committee (i.e. the chairperson and secretary) spoke the most. In some cases where female members occupied these key positions, male members from the committee were often dominant. In many cases some ordinary members of the user groups were also invited by the leadership but they spoke little during the interview.

Focus group discussions: Focus group discussions (FGD) in the selected CFUGs were conducted involving members from the marginalized groups (i.e. women, Dalit and Janajati). The FGD were primarily focused on the particular interest of such groups in management and uses of CF and targeted support from the climate change projects to these groups.

Household interviews: Interviews in selected households from different income groups (i.e. poor, middle income and better off) were held in their house or on their farms (Figure 5). The families from different income groups were identified using the well-being ranking exercise undertaken in CFUGs by earlier interventions such as a Swiss-funded project in Dolakha. In the user groups where climate change projects were implemented, the households who received project benefits were purposively selected for interviews. Interviews were focused on households' relation with community forests and climate-related interventions.

Observations: Interviews with CFUGs and families were followed by observations of community forests, management activities undertaken in the forests (i.e. tree planting), and climate change-related activities implemented through the projects (Figure 5). Observations during the household interviews were focused on household level interventions by the projects, such as small infrastructure development as part of climate change responses, were also observed.

Review of CF management plans and climate adaptation plans: The CF management plan, known as the Operational Plan (OP) were reviewed focusing on CF management practices and changes in rules after climate interventions. A systematic review of the OPs of six CFUGs from Kavre and Lamjung were done concerning CF provision on livelihoods and food security (Paper I). Further, local climate adaptation plans were reviewed in the groups where adaptation plans were developed (Paper IV), focusing on the activities planned by the projects.

Figures 2-5, on the following page:

Figure 2: Interview with DFO in Besisahar, Lamjung.

Figure 3: Interview with FECOFUN officials in Dolakha.

Figure 4: Group interviews. (A) Dhodsingh CFUG, Sundarbajar, Lamjung and (B) Betkuiya VDC, Rupandehi.

Figure 5: Household interviews and observations in Jagreni CFUG, Lamjung. Photos: Kristina Marquardt.


2


5


3
बायोग्यास


4A


4B

In an aggregate, the field study covered five districts, 29 forest user groups (including 27 CFUGs and two PLMGs) and 54 households. At the district level, 20 people involved in implementation of climate change related projects from different implementing agencies and 18 people from government organizations were interviewed. In addition, eight people from regional and national-level offices of project units or partner organizations were also interviewed (see Table 5).

Table 5. Overview of respondents.

SN	Research focus, associated research projects (and districts)	People/organizations interviewed at regional and/or district centres	Number of user groups	Households
1	CF dynamics under ACIAR project (Lamjung and Kavre)	Officials from DFO and FECOFUN (4) Officials from agriculture and veterinary development offices (4)	6 (3 from each district)	FGD with interest groups
2	REDD+ piloting under PECA project (Dolakha and Chitwan)	Project staff from partner organization (FECOFUN) (9) Officers from DFO office (3)	8 (5 in Dolakha and 3 in Chitwan) from pilot site and 9 from outside (only in Dolakha)	45
3	Adaptation interventions under CCRI project (Lamjung and Rupandehi)	Project staff from partner organization working in the district (11) Officials from the related government organizations (7)	4 CFUGs and 2 Public Land management groups (PLMG) (from Rupandehi)	9

3.4 Data management and analysis

Interviews conducted during the field studies were audio recorded. Prior consent was obtained before recording interviews and it was explained to the respondents that the recorded materials would only be used for research purposes and their identity will be disguised. Detailed field notes were also taken, capturing key aspects of interviews. The audio recordings, which were generally in Nepali language were transcribed into English by research assistants from the respective projects (i.e. Niru Gurung, Sabina Lamichhane, Bikash Adhikari and Tikeshwori Joshi). While the field notes helped in drawing out key patterns for analysis, transcriptions were primarily used for quotes and in-depth insights.

The research team conducted reflection/debriefing meetings every evening on the same day of field work (as far as possible) focusing on key insights and further questions to be covered. Data analysis began in the debriefing meetings where the team members drew out major empirical observations and analytical insights. Key points of such debriefing meetings were captured in the field reports (which we called back to office report), produced (in most of the cases) at the end of each field visit. The reports were helpful to identifying key themes and patterns for analysis.

Data (i.e. field notes, transcribed interviews, debriefing notes, and review of secondary materials) were analysed using Excel sheets and NVivo, software for qualitative data analysis. The coding (i.e. identification of key themes and patterns) was primarily based on field notes, debriefing notes and back to office reports. In many cases the key patterns were verified with NVivo coding. The NVivo software was particularly helpful for extracting quotes.

3.5 Policy engagement and validation

My personal engagement (contribution and participation) in the national policy processes (i.e. policy-related events and forums) on forestry and climate change in Nepal provided important insights and evidence. As indicated earlier (see preamble) such continuous engagement in policy processes from ForestAction Nepal helped enriched the analysis in this thesis.

The notable national-level events where I gave presentations during my PhD study included: a) The Himalayan Climate and Development seminar series held in 25 August 2015, where I shared a manuscript of Paper IV; b) A seminar organized by ForestAction in Kathmandu in 15 January 2017 where I shared insights drawing on Paper II; c) a seminar jointly organized by ForestAction and SLU in Kathmandu in 23 January 2018 where I gave a presentation based on Paper III. I also provided contributions in other workshops/seminars organized by FECOFUN, where I shared insights from Paper I and II – primarily focusing on the dynamics of CF management and implications for future of community forestry governance in Nepal (see Table 3). These events not only provided space for me to share research findings and validate them; I could also provide contributions to Nepal's CF and climate change-related debates. These were direct contributions of my research to Nepal's policy process. Further, I also led and co-authored a number of policy relevant texts (i.e. policy briefs, research reports, journal articles and media Op-Ed), which also offer important contributions to national policy processes and inform wider audiences (see Appendix 1).

3.6 Reflexivity: my position as policy researcher and methodological implications

My engagement and role as a policy researcher (with some element of activism) had implications for analysis and writing. The trajectory of my PhD research thus has not only required a move with regard to gathering data, analysis and writing; it has also involved a shift in position between activist and academic researcher. I have benefited from being an 'insider' in the Nepalese policy process, gaining a nuanced view of policy development and informal processes, which happen beyond the formal policy forums and negotiations. It would have been difficult for an outsider to get such access. On the other hand, as a policy researcher my findings and interpretation might have element of activism and sound critical to government authorities and experts, which might have been reflected in my analysis and writing. My colleagues and peer reviewers at conferences, seminars and readers of the manuscript, have pointed out a tendency to be overcritical of donor interventions, experts and government authorities. I have struggled to establish a detached view and tried keep myself outside the policy community of experts in Nepal and use the pronoun 'them or they'. However, this does not necessarily mean that I was not then, or am not now, part of that policy process.

My position as a critical researcher (an activist within ForestAction, which has political positions in the forest and climate change policy process of Nepal) has also given rise to difficulties during field data collection in some cases. A forest officer from one of the study districts refused my request for an interview and asked me if I had official consent from the Department of Forests. Studies and publications from colleagues from ForestAction have been rather critical of the Department of Forests concerning their motives and strategies to recentralize authority in the community managed forest, for example the critical perspective on inventory rules (Fischer, 2017; Ojha, 2002). On the other hand, it was convenient for me to work with FECOFUN officials from all sites as they have close collaboration with ForestAction and perhaps have seen me as their 'ally'.

The important lessons I have learnt are that "it is not easy to maintain a balance between the academic and an activist" (Neale, 2008, p. 218). I could relate to the same situation as Neale stated: "Sitting down to write, you can feel yourself pulled in two different ways. The result is often muddled thinking and murky process" (ibid). I found the value and language of expression are different. While I have constantly attempted to transform myself, from activist to academic researcher, it involves unlearning my approach as an activist and learning the academic language of expressing.

4 Literature and theories

4.1 Locating debates

In Nepal, the implementation of international climate objectives such as REDD+ and adaptation are being superimposed on the established institutional mechanisms of CF. This has raised concerns among researchers and policy actors regarding the possible implications for the existing practices of CF governance. Studies have pointed to the likely negative (and unintended) consequences of climate policy implementation on local forest management and uses (Nightingale, 2017; Arora-Jonsson *et al.*, 2016; Leach & Scoones, 2015; Fairhead *et al.*, 2012). However, literature surrounding this debate appears to have make assumptions about outcomes of existing CF governance with regard to addressing local forest product needs. The literature on decentralization of forest governance is heavily influenced by the dominant discourses of community-based management being beneficial for local control and benefits (Ribot *et al.*, 2006) and there is a relatively limited body of work that critically explores the livelihood outcomes of CF. As the implementation of climate objectives, in countries such as Nepal, lands on the contested terrain of CF governance (Nightingale, 2017), the question of what climate objectives mean for CF governance merits scrutiny. Thus the analysis in this thesis rests on two streams of literature: natural resources governance focusing on community forestry and climate governance with specific attention to the implementation of the international objectives.

4.1.1 Unresolved issues of power and local control in Community Forestry

During the last three decades, decentralization has become a dominant discourse in forest governance and CF (broadly speaking, this includes a wide range forest governance practices involving local communities) became a prominent mode of forest governance in many developing countries. A study reports that about 10-12% of the world's forest is being managed under different forms of community based management (Ribot *et al.*, 2010).

Nepal has been regarded as an exemplary case of decentralization in forest governance and about a third of country's forest area is being managed by local communities. CF has become the most prominent model of decentralization over thirty years with a remarkable contribution to the recovery of the once degraded mountains (Yadav *et al.*, 2003; Niraula *et al.*, 2013; Gautam *et al.*, 2003). The improvement in the conditions of forests has contributed towards better provisioning of products and services of local benefits (Adhikari *et al.*, 2004). These positive ecological changes in Nepalese mountains have been attributed to the devolution of rights and authority to manage forests to local communities under CF policy (Pokharel *et al.*, 2007; McDougall & Banjade, 2015; Nightingale & Sharma, 2014). However, the role of ongoing changes in the rural economy and resultant effects on changes in demand of forests for supporting daily lives, has not been adequately acknowledged.

Despites the above mentioned achievements of CF on forest restoration and provisioning of forest resources for local benefits, there have been longstanding concerns about the ability of local communities to exercise power in making decisions regarding management and access (Lund, 2015; Nightingale, 2002; Agarwal, 2001). Further, reports are also critical as to the equitable distribution of CF benefits and point to the issue of the elite capture of benefits (Iversen *et al.*, 2006) and decision making system (Thoms, 2008; Nightingale, 2002). As a result, members from poor economic backgrounds and marginalized groups, such as Dalit, Janajati and women, receive less benefits (Paudel, 1999; Rai Paudyal, 2008; Thoms, 2008; Mahanty *et al.*, 2006).

However, these dynamics are not unique to Nepal and there is a well-established body of literature about the limited implementation of decentralized forest governance and its effect on local control and the benefits (Agrawal *et al.*, 2008; Lund & Treue, 2008; Ribot *et al.*, 2006; Agrawal & Gupta, 2005). While evidence from Nepal shows the positive contribution of CF on ecological outcomes, reports from other countries do not identify consistent effects (Persha *et al.*, 2011; Agrawal *et al.*, 2008; Nagendra, 2003). Studies suggest the outcomes of decentralization are contingent upon local rule-making autonomy (Persha *et al.*, 2011) and discretionary power (Ribot *et al.*, 2010; Ribot *et al.*,

2006; Ribot, 2003). There are different factors at play in obstructing or resisting decentralization, resulting in a persistent influence from powerful actors such as state authorities and the private sector (Schusser *et al.*, 2015; Krott *et al.*, 2014; Peluso & Lund, 2011). Ribot *et al*. (2006) maintains that there is a lack of faith among forestry authorities in local communities' abilities to manage forests, as they regard the communities as having inadequate knowledge and technical expertise on 'scientific forest management'. Reports also suggest considerable levels of influence from government authorities or other powerful actors on local practices of resource governance (Ojha *et al.*, 2016b; Ojha, 2008; Ojha, 2006). In other words the power of local institutions are circumscribed by state authorities through various means such as supervision and management plans (Basnyat *et al.*, 2018; Ribot *et al.*, 2006). This raises the question of why local institutions remain disempowered and their decision making ability is constrained. I argue that this is fundamentally a question of knowledge and power, where as in Nepal's case, forest authorities with expertise on 'scientific forest management' remain influential in shaping local agendas of forest management (Baral *et al.*, 2018; Basnyat *et al.*, 2018; Rutt *et al.*, 2015; Nightingale & Ojha, 2013; Ojha, 2008). In this context, my analysis is primarily concerned with the way knowledge and power play out in shaping CF management practices, which I maintain has largely been increasingly divorced from the local needs of livelihoods and food security.

4.1.2 The international climate objectives

Over the last decade or so climate change has emerged as a new issue in international development, drawing the attention of researchers from various fields. Before issues of climate change were largely confined to the field of international relations and focus of literature was on the way international regimes[9] are formed and implemented (Bulkeley & Schroeder, 2012). The traditional approach saw nation states as the sole contender of power and authority (see Okereke *et al.*, 2009; Sending & Neumann, 2006). In recent years, the climate has been at the forefront of the agenda of international development, and drawn diverse actors beyond the state from international negotiations to local actions.

A critical body of literature has been built to problematize the conventional regime approach and pointing out its inability to capture the dynamics of engagement and influence of non-state actors (Bulkeley & Schroeder, 2012;

[9] Krasner (Krasner, 1983, p. 1-3) defined "[r]egimes as a set of rules, institutions and structured interests that constrain individuals through compliance procedures". Here regime is used to denote the international regimes governing environmental changes.

Okereke *et al.*, 2009). The critique has emphasized the role of diverse actors in shaping climate governance and how non-state actors assert authority and gain legitimacy in shaping climate change-related decisions (see Bulkeley, 2012). This has led to a major analytical shift in the way climate governance has been studied towards identifying the power and influence of diverse actors. Increasingly, the climate governance literature has recognized the governing force of knowledge and discourse in shaping policies and practices across different levels (Lindegaard, 2018; Nightingale, 2017; Bulkeley, 2015; Bulkeley & Newell, 2015; Eriksen *et al.*, 2015b; Wise *et al.*, 2014; Bulkeley & Schroeder, 2012). However, relatively limited attention has been given to understanding the local dynamics of climate policy implementation (Sapkota *et al.*, 2018; Nagoda & Nightingale, 2017; Tschakert *et al.*, 2016; Eriksen *et al.*, 2015b; Yates, 2012). In other words, the body of literature capturing the dynamics of how global programmes translate into local actions is relatively recent. This thesis seeks to engage with this specific body of work, examining the design and implementation of projects under two major international climate policies of REDD+ and adaptation.

4.1.3 The cases of REDD+ and adaptation

REDD+ and adaptation are two major international climate policies being implemented in developing countries. Major actors in the development industry, including multi-lateral organizations such as the World Bank and United Nations Organizations are being involved in this process. Practitioners regard these policies as the new agenda of development and seek to access new resources of funding and knowledge (Lund *et al.*, 2017; Taylor, 2014; Tanner & Allouche, 2011; Schipper, 2007) and aim to mobilize their established networks of local organizations in the process of designing and implementing interventions. This new phenomena is seen by some researchers as the process of making local organizations responsible for the global agenda of addressing climate change (see e.g. Nightingale, 2017; Arora-Jonsson *et al.*, 2016). Arguably, practitioners see the benefits of involving local organizations in meeting climate policy objectives and assert that engaging local organizations helps bring climate funding to local levels (Nightingale, 2017; Gentle & Maraseni, 2012). A number of new climate-related interventions have been designed with promises of improvements in resource conditions and peoples' lives, but their outcomes are not yet clear. Some scholars see climate-related initiatives as development fad and provide critical view about their effects (Lund *et al*., 2017), and other regard it as jeopardizing peoples life (Nagoda, 2015; Groom & Palmer, 2012; Marino & Ribot, 2012) or exacerbate local vulnerability (Nagoda & Nightingale, 2017;

Nagoda, 2015; Marino & Ribot, 2012). Evidence has also started to mount around the negative effects of REDD+ on local rights and benefits (Svarstad & Benjaminsen, 2017; Leach & Scoones, 2015; Benjaminsen & Bryceson, 2012; Beymer-Farris & Bassett, 2012). Similarly, questions have been raised about the effectiveness of the planned adaptation responses from governments or international organizations to address local vulnerability to climate change (Sapkota *et al.*, 2016; Dodman & Mitlin, 2015; Nagoda, 2015). After a brief discussion about the two policy objectives, I will address the literature that concerns the implementation of these two policies.

The REDD+, a policy initiative of the UNFCCC for conserving forests for climate change mitigation seeks to halt deforestation and forest degradation and promote their sustainable management in developing countries through payments made by the developed world. As the programme evolved through the UNFCCC negotiation process, countries have begun preparations to implement the policy by developing national policies and establishing demonstration projects. Through these processes REDD+ has been established as a coherent discourse and programme of climate governance (Buizer *et al.*, 2014; Stephan *et al.*, 2013; Corbera & Schroeder, 2011). As policy implementation materializes, concerns have been raised about the effects with regard to existing practices of using forests for local benefits. Below I provide a summary of the key concerns for CF in implementing REDD+.

First, there have been concerns about 'additionality'; the effectiveness of the mechanism to halt deforestation (Lund *et al.*, 2017; Nathan & Pasgaard, 2017; Fletcher *et al.*, 2016; Sunderlin *et al.*, 2015). Studies are skeptical about the extent to which the interventions under REDD+ can demonstrate additional gain in carbon sequestration, given work already done by CF in recovering forests (Balooni & Lund, 2014). The second concern regards the implication of CF governance. While proponents of REDD+ assert that the flow of money under the programme can help strengthen these institutions (Bradley, 2012), there are growing concerns about the possible negative consequences for the decentralization of forest governance (Bushley & Khatri, 2011; Phelps *et al.*, 2010). Some scholars have warned about the risk of recentralizing power by national forestry authorities under the REDD+ regime (Ece *et al.*, 2017; Phelps *et al.*, 2010; Sandbrook *et al.*, 2010).

The third concern relates to the possibilities of shifting authority and control of resources from local to external actors (i.e. international organizations) (Lund *et al.*, 2017; Nightingale, 2017; Arora-Jonsson *et al.*, 2016; Leach & Scoones, 2015; Peluso & Lund, 2011). Peluso and Lund (2011, p. 677) for example, argued that:

> When people accept carbon forestry, they must recognize, at least by implication, the authority of the institutions allocating land to them, which shifts the term of hegemony and sovereignty, taking away the rights of decision-making power of earlier users.

The climate policy objectives of REDD+, with new rationalities of conserving forests for carbon sequestration and contributing to global mitigation goals, can relocate resource governance (Leach & Scoones, 2015). Leach and Scoones (2015) argue that the underlying logic of REDD+ to commodify nature and assign market value renders it fictive. Some scholars have even seen REDD+ as a form of 'green grabbing' indicating that it may limit the access of local people to forest resources and lessen their ability to make decisions about forests (Fairhead *et al.*, 2012). The fourth concern relates to possible impacts on the livelihoods of people who live in or use forests (Massarella *et al.*, 2018; Nathan & Pasgaard, 2017; Cavanagh & Benjaminsen, 2014; Evans *et al.*, 2014; Fairhead *et al.*, 2012; Sandbrook *et al.*, 2010; Chhatre & Agrawal, 2009).

Another international objective of adaptation has also emerged as a programme within UNFCCC[10] that aims to support developing countries in responding to the impacts of climate change. A discourse around adaptation and the idea of a planned institutional response to climate change (Eriksen *et al.*, 2015a; Watts, 2015; Taylor, 2014; Schipper, 2007) has been embraced by international organizations and donors. Adaptation as a dominant idea and governmental programme of international organizations has been enacted in many developing countries (Eriksen *et al.*, 2015a; Watts, 2015; Reid & Schipper, 2014; Schipper, 2007). However, there is a growing body of literature critical to current adaptation responses, arguing that they are guided by a narrow view of adaptation as a technical or managerial issue (Taylor, 2014; Eriksen *et al.*, 2011). As Taylor (2014) contends, the notion of adaptation used by UNFCCC and the international organizations see vulnerability as determined by an external threat, which people and institutions need to adapt to. Such narrow framing downplays the role of the socio-political dynamics of society in determining peoples' vulnerability (see also Ribot, 2014; Schipper, 2009; Eriksen & O'Brien, 2007; O'Brien *et al.*, 2007; Schipper, 2007). Growing evidence from different countries such as Pakistan (Taylor, 2014) and Nepal (Ojha *et al.*, 2016a; Nagoda, 2015) support this line of thought and suggest that the technical approach of adaptation fails to address

[10] In UNFCCC definition, the **Adaptation** refers to adjustments in ecological, social, or economic systems in response to actual or expected climatic stimuli and their effects or impacts. It refers to changes in processes, practices, and structures to moderate potential damages or to benefit from opportunities associated with climate change. (UNFCCC, 2017 accessed in 27 October 2017 from http://unfccc.int/focus/adaptation/items/6999.php).

the socio-political causes of vulnerability. In this connection, my analysis takes the position that adaptation needs to be conceptualized as a socio-political process rather than just a technical one (Lindegaard, 2018; Eriksen *et al.*, 2015a; Pelling *et al.*, 2015; Eriksen *et al.*, 2011).

In line with this argument, some studies have examined local politics on adaptation (Ensor *et al.*, 2018; Funder *et al.*, 2018; Tschakert *et al.*, 2016; Marin & Eriksen, 2014). My research seeks to add to this literature by focusing analysis on how the dynamics of knowledge and power shape decisions concerning responses to climate change (Nightingale, 2017; Eriksen *et al.*, 2015b; Bulkeley, 2012). The analysis is concerned with how adaptation develops new funding resources and knowledge for the existing actors in the conservation and development industries. Further the analysis is also concerned about the extent to which adaptation related interventions address local needs along with climate related risks.

In Nepal, both of these climate objectives are being implemented, with the intention of building upon the existing institutional mechanisms of CF. As discussed above, the proponents of the projects foresee the benefits of involving the established institutional mechanisms in implementing climate interventions (see Nightingale, 2017; Khatri *et al.*, 2016; Ojha *et al.*, 2013; Paudel *et al.*, 2013; Gentle & Maraseni, 2012). For instance the REDD+ pilot project in Nepal had clear intentions of building on CF and benefitting from the past achievements (Shrestha *et al.*, 2014; Skutsch *et al.*, 2012). Arguably, the implementation of climate policies requires that key decisions be made on the way resources are to be governed and used and climate policy implementation is likely to reshape the existing regimes of CF governance (Nightingale, 2017). The analysis in this thesis draws attention to the question of who is driving the agenda and with what political motivation and how they are able to influence the local agenda of governing forests. Understanding the impacts of climate programs therefore goes well beyond their proximate impacts on local communities. It requires an exploration of how power, knowledge and authority reshape environmental governance at multiple levels.

4.1.4 Politics of knowledge in environmental governance

The literature on the politics of environmental knowledge is concerned with how discourses and knowledge are produced and used in governing resources and environmental changes (Goldman *et al.*, 2011; Kleinschmit *et al.*, 2009; Forsyth & Walker, 2008; Forsyth, 2003; Goldman, 2003). The process of governing resources and environmental changes privileges certain forms of knowledge, considering scientific data and facts over local knowledge, regarding this

understanding as informal and inadequate (Ahlborg & Nightingale, 2012; Forsyth & Walker, 2008; Bryant, 1998; Zimmerer, 1996; Agrawal, 1995). Such categorization allows the actors holding scientific and authentic knowledge to define problems and solutions for addressing environmental changes and managing resources (Forsyth & Walker 2008, p. 11). As Forsyth and Walker (2008) argue, production of environmental knowledge is not politically neutral and is influenced by social and political positions.

Science and expertise as a form of knowledge have profound influence in shaping environmental governance. Scientific expertise has gained hegemony in environmental policies, which often creates a barrier to public debate (Fischer, 2009; Fischer, 2003; Keeley & Scoones, 2003). The categorizations of formal and informal or scientific and traditional, implies that local people lack knowledge (official and formal knowledge), and disempowers them in the practices of managing resources, such as forests (Forsyth & Walker, 2008; Bryant, 1998; Agrawal, 1995). Scientific expertise, as a form of knowledge, therefore helps reinforce authority, rather being authoritative in itself (Forsyth, 2003). In forest management, the knowledge and expertise of scientific forest management can help reinforce the existing power structures and provide or reinforce authority to influence the local agenda (Nightingale, 2005; Malla *et al.*, 2003). This has been evident in governance of community forests in Nepal, more specifically in resource rich region of the Tarai (Nightingale & Ojha, 2013).

Discourses also provide a governing force in shaping resource governance. Discourse(s) are sites of exercise of power and they operate as a form of knowledge (Foucault, 2003; Foucault, 1990) that influences the policies and practices of resource governance (Arora-Jonsson, 2013; Winkel, 2012; Forsyth & Walker, 2008). Discourses surrounding climate change policies of adaptation and REDD+ have also become influential in shaping local agenda of governing resources (i.e. CF) (Ahlborg & Nightingale, 2012). However, it has also been the case that knowledge and discourses are mobilized by organizations and individuals to influence decisions or agendas (Tanner & Allouche, 2011; Nightingale, 2005). In other words, knowledge and discourses provide governing forces for actors in defining problems and solutions in environmental governance (Leach *et al.*, 2010; Kleinschmit *et al.*, 2009; Keeley & Scoones, 2003).

Forestry science, with its history of origin in Germany, influences contemporary forest management practices across the world (Scott, 1998). The 'scientific forest management' has privileged monoculture forestry with an objective of generating revenue (Forsyth & Walker, 2008). This paradigm of forest management has disrupted the multiple functions and benefits of the forest ecosystem that have strong links to livelihoods of local people (Agrawal, 2005;

Forsyth, 2003; Sivaramakrishnan, 1995). It is evident that experts (i.e. forestry professionals) have a profound influence on defining local objectives of forest management in CF (Baral *et al.*, 2018; Lund, 2015; Rutt *et al.*, 2015; Nightingale, 2005; Ojha, 2002) limiting the ability of communities to make decisions (Ribot *et al.*, 2006). The analysis in this thesis is concerned with the way management practices in CF have been shaped by the influences of forestry science and expertise. The analysis is primarily concerned with whose interests the CF objectives represent and what the consequences are for meeting local livelihood and food security needs.

The issue of how CF objectives are shaped and by whose interest, has become more important when interventions under climate objectives are overlaid on CF institutions. Understanding the politics determining who is influential is important in the process of framing problems and solutions for climate interventions and what that means for current management practices and forest use. This is primarily a question of power and knowledge (i.e. who drives the process or influences decisions regarding climate policy implementation) and what it means for reconfiguring CF management practices. Eriksen *et al*. (2015b) maintain that the dynamics of knowledge and power plays an important role in shaping decisions about what constitutes adaptation and who needs adaptation. The operation of power in this sense involves prioritizing some interests over others or hearing some voices and ignoring others, and is an important political question. My analysis is primarily concerned with the implications of such decisions on CF management to meet local needs. This notion of power deals with climate-related interventions as direct outcomes of knowledge and discourse(s) (Tanner & Allouche, 2011), which produces effects (Ahlborg & Nightingale, 2018) that reshape CF objectives and practices related to forest management and use.

4.1.5 The knowledge-power nexus in resource governance

The dynamics of knowledge and power in (re)shaping CF objectives in the changing context of CF management is the analytical core of this thesis. Power, drawing from a Foucauldian perspective, is conceptualized as relational effects, which is (re)produced through social relations. In this perspective, the interaction of knowledge and discourse produces effects on human action; which is, in relation to resource governance, shaping priorities and actions (Ahlborg & Nightingale, 2012; Nightingale, 2005). Knowledge and discourses flow through networks and connections to produce effects. This resonates with Foucault's notion that "power flows through the capillaries of the social body" (Allen, 2016, p. 9). As he states, "power produces; it produces reality; it produces domain of

objects and rituals of truth" (Foucault, 1977, p. 194). Power works through discourses and disciplining institutions (Foucault, 2003; Foucault, 1990) and produces governing forces. Power in the governmentality study operates to shape conduct of people (Dean, 2010). Achieving the governance of resources is about the relationship between governing and ways of thinking or the 'rationalities' of government (Dean, 2010; Li, 2007) in which forms of knowledge and techniques are key in determining actions. The analysis in this thesis is concerned about how certain forms of knowledge and discourse, promoted by governmental or non-governmental interventions, influence the objectives of CF management.

This perspective assumes that power is not something that someone holds, but is something that plays out in social interactions and produces effects (Allen, 2016). Thus, power is understood as effects and is conceptualized as also a 'productive force' (Ahlborg & Nightingale, 2018; Allen, 2016; Nightingale, 2011). Thus feminist scholars have emphasised how power can also operate to bring about changes or challenge domination (Allen, 2016; Butler, 1997). In this sense, power is a relational force and it becomes important to understand the types of interactions or translation of knowledge and discourses and their effects with regards to local agendas of resource governance. This involves the process through which knowledge and discourses are internalized and embraced by individuals and organizations involved in the governance of resources (subjects) (Nightingale, 2011). This is the core of the study of resource governance and responses to the environmental changes using power as an analytic.

Governing resources constitutes an exercising power, involving the political motivation of actors who seek to influence the agenda. Understanding this interaction of knowledge and power requires attention to how dominance is produced in order to influence the agenda of resource governance (Ahlborg & Nightingale, 2018). Knowledge and discourses are actively mobilized towards a specific end (objectives) in influencing agenda of resource governance (Forsyth, 2003; Keeley & Scoones, 2003; Latour, 1984). This is particularly important in Nepal that is characterized by unequal power relations where actors have varied abilities to mobilize or acquire power (knowledge and discourse) (Nightingale, 2005, Ojha, 2008). Knowledge often reinforces authority and the ability to influence decisions in the governance of resources (Eriksen *et al.*, 2015b; Forsyth & Walker, 2008). For example, organizations and individuals with knowledge of forestry science and expertise on so called 'scientific forest management' can influence the local agenda of managing forests in CF (Green & Lund, 2015; Rutt *et al.*, 2015; Nightingale, 2005). My analysis is also concerned with how climate-related knowledge and discourses are mobilized by international and national organizations to gain power and influence, also

defined as authority (see Eriksen *et al*., 2015b) over decisions about the governance of resources and responses to climate change. The analysis is concerned with the way power and knowledge work and its effects on the ground, in terms of forest resource governance (Goldman, 2011). As I discuss in the analytical framework below, the analysis pays attention to how knowledge and discourses are actively translated (interpreted and communicated) to influence CF objectives (Pasgaard, 2015; Latour, 1984).

4.2 Analytical framework

The analysis in this thesis deals with the key analytical questions of: a) What forms of knowledge (and discourses) are evident in shaping practices of management and uses of forest under CF? b) Who mobilizes or promotes knowledge and discourse(s) to influence the agenda and with what political motivation? c) How are certain knowledges and discourses translated through interaction among individuals and organizations? d) What effects do particular translations have on local communities' access to resources? Based on the analysis driven by these questions, this thesis contends that certain knowledge systems and discourses are mobilized by the practitioners of development interventions (both governmental and non-governmental) and influence the local agendas governing community forests. These questions will be explored using existing CF objectives and management practices (Paper I and II) and the way climate policies are downscaled in local contexts (Paper III and IV). As is demonstrated, the climate agenda brings discursive shifts (see Fischer & Forester, 1993) reframing CF objectives towards meeting international climate objectives with the effects of reinforcing an on-going shift towards the monetary benefits of CF management. As I argue, such changes privileges the interests of local elites and development practitioners, further marginalizing smallholder farmers whose livelihood is still linked with forest resources. The analysis is developed through three different strands of inquiry outlined below.

4.2.1 Knowledge and power (re)shaping community forest objectives

The first strand of inquiry concerns how certain forms of knowledge, particularly forestry science and expertise, influence the objectives and priorities of CF management (Lund, 2015; Ojha, 2006; Nightingale, 2005). As discussed earlier, this thesis maintains that forestry science and expertise influences CF management objectives and practices, prioritizing some resources, such as the extraction of logs, and undermines the multiple values of forests for local livelihoods (Agrawal, 2005; Nightingale, 2005; Forsyth, 2003). The analysis

focuses attention on the governing forces of knowledge (science and expertise) in shaping the rules and priorities of CF management.

The examination of climate-related policies maintains that the interventions under both adaptation and REDD+ are the outcomes of specific knowledge frameworks and discourses (Eriksen *et al.*, 2015b, p. 526). The existing actors in the conservation and development industries mobilize forestry knowledge and expertise to define problems and solutions for climate change-related interventions. The analysis is concerned with how ideas and discourse produced at an international level, either through the UNFCCC process or developed by multi- and bi-lateral organizations and NGOs, are translated into interventions to be undertaken through CFUGs (Sanders *et al.*, 2017; Pasgaard, 2015). The notion of translation, to draw from Latour (1984, p. 268), asserts that actors in the interaction are a "chain of agents each of whom translate it in accordance with his/her own project". Latour contends that the interpretation of discourses by some actors in a chain of interactions in accordance to stakeholders' different projects (i.e. objectives). In this thesis, the analysis is concerned with how the knowledge of scientific forest management and biodiversity conservation is promoted by the implementing agencies of climate-related projects and how these objectives are translated into CF management practices. In other words, the analysis is concerned with how knowledge and discourse are underpinned by the climate change objectives of adaptation and REDD+ to become part of CF objectives. In this process of translation, it is important that the ideas and discourses are legitimized or gain acceptance.

4.2.2 Legitimization of interventions and enrolment of local organizations

The second stream of analysis focuses on how legitimacy of the climate interventions are gained by practitioners and how the underpinned knowledge and discourses in climate policies are accepted or internalized by local people. This means the governing institutions not only seek to assert their rights or mandates to govern, but also seek recognition and legitimacy to their agenda (Nightingale, 2017). As Byrne (2015, p. 50) suggests, "legitimacy is key to producing, justifying and consolidating authority". As the cases examined in this thesis demonstrate, the translation or institutionalization of climate policy objectives into local actions also encompass practices to produce legitimacy (Bulkeley & Schroeder, 2012). As Latour (1984, p. 273) notes, "those who are powerful are not those who 'hold' power in principle, but those who practically define or redefine what 'holds' everyone together". This dimension of analysis assumes power as the consequence of an "intense activity of enrolment,

convincing and enlisting" (Latour, 1984, p. 273), which is part of the technology of government (Li, 2007). The new resources of funding and knowledge under the climate change agenda drive actors into relationships or collaboration in the language of the development industry (Lund *et al.*, 2017; Ojha *et al.*, 2016a; Tanner & Allouche, 2011).

The practitioners in the conservation and development industries tend to enrol local organizations into the new discourses of climate change by involving them in the process of the design and implementation of projects. As Nightingale (2017) explores, the process of incorporating the community and institutions into the climate assemblage, also involves the institutions establishing rights to or gaining access to resources, conceptualized as 'recognition'. This process of gaining recognition explains a different aspect of power relations between the governing and the governed. The CFUGs, which became part of the interventions, also have desires to be recognized by gaining new resources of funding and knowledge (Nightingale, 2017; Tanner & Allouche, 2011). This desire ensures that organizations, (or at least their leaders), are enrolled into the new discourses. As the research cases will show, there is a two-way process of establishing recognition, wherein the practitioners in the conservation and development industries also intend to use their established relations with local organizations to institutionalize the interventions. Individuals and institutions are enrolled into specific discourses and ideas underpinned by climate policies of adaptation and REDD+ and give consent or comply with the interventions intended to govern their actions. In my analysis, I draw attention to how local CFUGs perform the ascribed role for adaptation planning and conserving forest for carbon sequestration and mobilize their resources to implement these plans (Legacy, 2017). In the cases of the projects I examine, local institutions are arguably drawn into the climate assemblage where their actions are shaped through the globally circulating discourses or rules of experts (Arora-Jonsson *et al.*, 2016; Ojha, 2008; Nightingale, 2005; Mitchell, 2002).

4.2.3 Consequences of climate policy implementation

The third dimension of the inquiry is focused on the effects of the particular way knowledge and discourses are translated into CF objectives and practices. This strand of analysis is concerned with the working of knowledge and power with regard to governmental and non-governmental interventions on forest management and climate change and how these interventions alter the existing rules and practices. In other words, the interventions on resource governance and environmental changes not only produce desired changes, or objectives of improvements (Li, 2007), but can also have unintended consequences

(Nightingale, 2017; Giddens, 1984). In Section 5.3 of this thesis, I examine the effects of the climate interventions, focusing on the question of how the external interventions in CF or climate change, reconfigure the practices of management and forests use – privileging certain resources such as timber and undermining local interests. The analysis also situates such externally driven processes with the dynamics of ongoing changes in the rural economy resulting into changing demands or valuing of forests.

The analysis then turns to examine the effects of climate interventions on CF governance. It focuses on how the particular translations of climate policies give rise to changes in CF objectives and priorities, and what that means for addressing local common interest of livelihoods, food security and responses to climate change (Nagoda, 2015; Pain *et al.*, 2014). Through this analysis I demonstrate how the technical and bureaucratic nature of climate interventions reinforces the pre-existing disciplinary divisions, in turn divorcing CF management from meeting local needs. As it is too early to draw conclusions about the effects of climate interventions on peoples' lives, my analysis is directed at understanding the discursive shifts in the way people value forests and prioritize management.

In summary, this thesis focuses on the questions of how the local agendas of resource governance are determined through the interplay of knowledge and power to show how certain ideas and discourses are translated into interventions reshaping CF objectives and management priorities. In the process of translation and institutionalization of the climate objectives, local organizations such as forest user groups are enrolled into the new discourse. My analysis also deals with the consequences of these processes, with particular regard to local control and access to resources.

5 Findings

The findings summarized in this section draw from the four papers constituting this thesis. They focus primarily on the changing objectives and management priorities of CF, driven by the demands from outside interventions. The findings also focus on what such changes mean for local interests of livelihoods, food security and responding to climate change. The analysis pays particular attention to the effects of the implementation of international climate objectives of REDD+ and adaptation. The findings are organized into three major blocks. The first block (Section 5.1) draws on Papers I and II and deals with existing CF objectives and management practices and how it has changed over time. The section also evaluates the extent to which the piloting takes into account of these dynamics. The second portion (Section 5.2), draws on Papers III and IV, and investigates the ways in which projects on adaptation and REDD+ were designed and implemented at a local level and with what effects. The third section (Section 5.3) juxtaposes climate policy implementation with ongoing dynamics of change in CF objectives.

5.1 Community forest management objectives and changing dynamics

The initial objectives of CF focused on restoring the degraded mountains in the mid-hills region and enhancing the supply of forest products to meet basic needs (HMG, 1989). These objectives were set in response to widespread concern about deforestation in the Himalayas and the resultant effects of soil erosion and 'desertification' (Ives & Messerli, 1989; Eckholm, 1976). In the 1970s, 'The Himalayan degradation' became a powerful discourse, drawing attention of the Nepalese government and international organizations and calling for immediate responses to the problem of environmental change (Guthman, 1997; Ives & Messerli, 1989). While studies differed as to the causes of such environmental

problems (Metz, 1991; Eckholm, 1976), responses from government and international organizations were largely focused on reforestation in the degraded mountains and involving local people in the conservation of forests (Gilmour & Fisher, 1992).

The CF programme evolved over the three decades, adopting the current form of user group approach through national forest policy reform in 1989. In principle, the objectives of the management and utilization of forests are determined by the community, which requires the approval of the DFO, the local representative of the forestry department. However, in practice, the objectives are influenced by knowledge (i.e. scientific expertise and discourses) beyond the local communities. For example, the initial objective of restoring the degraded hill-forests was influenced by the discourse of environmental crisis in the Himalayas (Adhikari *et al.*, 2007; Gilmour & Fisher, 1992). This led to a major reforestation programme and protection of the forests by CFUGs. It required controlling grazing to protect the newly planted trees and allowing them to grow. Controlling or completely banning grazing in the newly formed CFs led to changes in the management and uses of forests in the mid-hills of Nepal (Paper I).

Backed by the legislative frameworks (i.e. the Forest Act 1993 and the Forest Regulation 1995), CF spread in the mid-hills of Nepal in the 1990s. During this stage of expansion the objective of CF management was largely to restore forests, focusing on planting trees and measures to restore the forest cover (Paper I). The recovery of forests over a decade of CF implementation (Yadav *et al.*, 2003; Gautam *et al.*, 2003) and resulted in improved resource conditions (Adhikari *et al.*, 2007). Such changes in resource conditions have drawn attention towards utilization of forests and generate revenue to the forest user groups (Papers I and II).

Arguably, this shift was influenced by the modern forest management paradigm promoted by experts from forestry departments and international funding agencies. In 2002, the forestry department introduced a mandatory provision of forest inventory (Hull *et al.*, 2010; Ojha, 2002). This provision required CFUGs to undertake periodic inventories of forests and determine the annual allowable harvests of major products, particularly timber. In the revised community forestry guidelines (MFSC, 2009), the department also required CFUGs to use at least 25% of their income on activities related to forest management. Donor-funded projects to support CF programmes in Nepal also promoted scientific forest management in CFs through grant support and by providing training to group members. For example, the Swiss funded project in Dolakha included forest management-related activities as a major focus during late 1990s and early 2000s (Pokharel *et al.*, 2007; Pokharel & Nurse, 2004). The project also established demonstration sites to promote scientific forest

management in community forests. Thus, governmental and non-governmental interventions led towards the scientific framing of community forestry management, with the primary focus on timber production and revenue generation (Rutt *et al.*, 2015; Ojha, 2008; Nightingale, 2005).

The influence of the scientific expertise on CF management objectives and practices has prioritized certain uses and undermined local interests' diverse use value of forests. Forestry professionals (from forestry department and donor funded projects) transferred the professional knowledge and expertise of forest management to CFUGs (Nightingale, 2005). Such interventions shifted CF management practices towards prioritizing biomass growth for timber production and revenue. As a result, local interests were gradually marginalised (Paper I). A review of operational plan (OP) in six CFUGs in Lamjung and Kavre districts showed that grazing rights have been largely suspended in CFs and the collection of fodder regulated. Further, the OP has no concrete plan for promoting the collection of fodder and food in CFs. As maintained in Paper I, such restrictive provisions and limited attention to activities supporting livelihood and food production undermine CF's potential to contribute to these outcomes.

The objective of producing commercially viable timber products and non-timber forest products (NTFPs) has also been the interest of local elites. Consistent with others' finding (i.e. Thoms, 2008; Iversen *et al.*, 2006; Nightingale, 2003), I also found that CFUGs leaders influential in CFUG decision-making process are powerful members of the community (i.e. from higher caste groups, educated and from better-off families). The leaders I interviewed demonstrated an interest in prioritizing actions to generate CFUG revenue from timber, NTFPs and also water resources in recent years (Paper II). Further, the actions of CFUGs have had significant techno-bureaucratic influence (Baral *et al.*, 2018; Ojha, 2006). Though the 1993 Forest Act and the 1995 Forest Regulations provided authority and rights to local communities for management and use of the forests, the CFUGs have never been free of bureaucratic control (Ojha, 2008). The forest department has even greater control in the resource-rich regions of Chure and Tarai where CFUGs harvest timber on a commercial scale (see Figure 6).

In this way, modern forestry science, translated into CF objectives and practices, has influenced local agendas of CF management. As reported in Paper I, forestry officials were of the view that addressing livelihood and food security issues, was not the core role of forestry department and these issues fell under the domain of the agriculture department. Such disciplinary influence has created boundary between forestry and agriculture and has hindered integrated management practices and subsequently the potential of CF to contribute to livelihoods to be fully materialized.

However, findings reported in Paper II suggest that the changing dynamics of the rural economy should not be undermined in the change in CF objectives. The change in the rural economy from subsistence farming towards off-farm activities (including remittances), has led to changing contribution of forest resources in peoples' lives (Paper II). While earlier studies attributed the improved conditions of forests in the Nepalese hills to the CF policy, the findings reported in Paper II illuminate the considerable contribution arising from rural change. It is evident that livestock holdings per household in the mountains significantly declined over last 20 years and people began to grow more trees on private farm land. These land use changes have resulted in a decline in use of CFs for the daily needs of grazing, fuel-wood and fodder.

From the study of 17 CFUGs in Dolakha and Chitwan districts (Paper II), it is evident that CFs have focused on generating revenue from timber (see Figure 6), NTFPs and other ecosystem services such as water. Of the 14 CFUGs visited in Dolakha, most of them were involved in the cultivation and sale of NTFPs. Two of them have even received payment for water sources in the CF, illustrating a shift in value and management priorities in the forests. Such shifts in turn have contributed to a decline in the daily forest uses. Arguably, such shifts in the way people value and prioritize CF management can pose a risk of undermining the role of forests in meeting livelihood and food security needs for those who still rely on farming. In mountain districts such as Dolakha, a substantial portion of the rural population, which is not able to secure income from remittances and other off-form sources, relies on important resources from the forests to earn livelihoods (see Figure 7) (Fox, 2018; Sharma, 2016; Gartaula *et al.*, 2012).

Findings in Paper II raised questions of whether REDD+ implementation have made new demands to change CF management, further marginalising local interests of livelihoods and food security. It is maintained in Paper II that the technocratic and bureaucratic influence of REDD+ risk reinforcing the existing bureaucratic and legal division between farm and forestry, resulting in trade-offs with the multiple uses of forests by smallholder farmers. This may undermine the need of enhancing farm-forest linkages on the ground. Managing CFs to meeting local needs requires a multi-functional landscape management approach, to balance trade-offs and maintain forest-farm linkages (Paper II).

Figures 6 & 7, on the following page:

Figure 6: Timber extraction in community forests. (A) Tarai district of Nawalparasi and (B) Mountain district of Dolakha.

Figure 7: People fetching fodder from community forests in Dolakha. Photos: Kristina Marquardt


6A


6B


7


7

5.2 Implementation of climate objectives and local effects

5.2.1 Framing of interventions and translation of climate policy objectives

The design and implementation of the climate-related projects were examined (in Papers III and IV) based on the question of how the international policy objectives were translated into local contexts. The findings address how the interventions in those projects were framed and how they were realised on the ground (nature of interventions).

The REDD+ piloting examined in Paper III focused on the objectives of implementing REDD+ policy by building on established CF institutional mechanisms. The interventions had two primary motivations. First, the pilot focused on demonstrating additionality (i.e. enhancing carbon sequestration in CF). This required not only that the interventions led to increased biomass in CFs, but also the development of a mechanism to monitor and report carbon outcomes. The pilot included activities such as restrictions on grazing, planting trees and fire protection, as well as the introduction of improved cooking stoves and biogas plants to reduce the consumption of fuelwood. The monitoring mechanisms needed to be suitable for community forestry and follow the UNFCCC guidelines (ANSAB, 2010). The monitoring developed by the pilot project emphasized the participation of local people, although this was limited to their involvement in taking measurements in the forests (Shrestha *et al.*, 2014). The logic for local participation was to keep the cost of carbon monitoring low (as reported in the project reports and mentioned by the staff during field visits). The pilot provided training to the selected members of the CFUGs on techniques for measuring tree diameters, estimating tree height and collecting soil samples. The estimation of the carbon outcomes, which require technical knowledge and skills, were undertaken by the project staff. The results of such measurements were used to determine the REDD+ payment to the CFUGs.

The second objective of the pilot focused on the development of a mechanism for payment to CFUGs and guidelines for the utilization of carbon payments by CFUGs. As stated in the publication authored by proponents of the pilot, the intention was to make REDD+ implementation equitable (Skutsch *et al.*, 2011). The size of payments to individual CFUGs was determined on the basis of carbon outcomes (40%) and social factors (60%). As mentioned previously, the social indicators included gender (population of women), caste (number of Dalit and Janajati households) and class (number of poor households). These social parameters were reduced to a formula to determine the level of payment to forest user groups. Through

this process, the project rendered the multi-faceted social dimensions technical, making the assumption that the REDD+ payment helped address the inequities underlying Nepalese CF. Further, the pilot also required forest user groups to follow these social categories to target beneficiaries. Such targeting was meant to ensure that the payment support improved the livelihoods of the targeted groups of Dalit, women and poor people. The extent to which the payments did is a matter of debate, which I address in the following section.

The international objectives of REDD+ to reduce emission along with supporting local livelihoods were translated into these interventions. This necessitated following the standards of measurement and carbon reporting developed by UNFCCC, which was simplified and developed into a guideline (ANSAB, 2010). The objective of developing such guidelines was to make the forestry science work for local communities and to include local communities in the process. The knowledge and skill required for taking measurements was transferred to project staff and local people through trainings. As reported in Paper III, the pilot's focus on training people so they could perform measurements in the forests. The emphasis on local participation in carbon measurements was driven by the concerns regarding implementing REDD+ in community forestry. Given the smaller and many patches of forests managed by communities, there were concerns regarding keeping costs down in implementing REDD+ in CF (see Newton *et al.*, 2015)[11].

In Paper IV, I examined adaptation interventions in two forestry projects. The projects reflected a continuation of the past interventions funded by the same forest sector donors. Although the projects differed in the design process and involvement of local organizations in implementation of activities, they appeared to have converged with regards to the way interventions were framed. The interventions and approach were determined by past experiences and knowledge of experts or by the organizations involved in the delivery of previous conservation and development projects.

The projects saw adaptation through the lens of forest management and biodiversity and designed the interventions accordingly. The project design assumed that improved forest management or ecosystem conservation increases the provisioning of forest resources, leading to a reduction in peoples' 'vulnerability' to climate change. The claim in Hariyo Ban project documents, runs as follows: "[t]hrough effective management of ecosystem it is possible to currently help mitigate the effect of climate change" (USAID, 2010 p. 3). The MSFP sought to optimize the economic potential of forests and assumed that

[11] This concern was particularly relevant to Nepal where smaller patches (around 100 ha) of the forests in the mosaic landscape were managed as community forests.

increased income would help address the vulnerability of people to impacts from climate change (MFSC *et al*., 2011). In both projects, the notion of vulnerability was equated to poverty and social marginalization and it was assumed that the projects' interventions in forest and community[12] and through farm based income generating activities would address the vulnerability.

The discourses of climate change provided a new game for the practitioners of conservation and development industries in Nepal. In part, the legacy of earlier conservation and development projects seems to have influenced the way the new game was crafted and played out, involving old players (experts and organizations). The interventions in both projects were primarily framed by Nepali and international experts who had worked and were still working in the donor organizations or implementing agencies associated with the projects. The MSFP project document was written by two experts, one who led an earlier project funded by the Swiss Government and the other was an international expert for the project funded by the Department for International Development (DFID). The Hariyo Ban project idea was developed by the donor organizations, but drew largely from the earlier two projects implemented by the two international organizations that co-led the project. Thus, the past experiences of the organizations and experts' knowledge prevailed in the way adaptation-related interventions were framed.

The two projects not only converged in the way adaptation was framed and translated into interventions, they also merged in the way interventions were implemented using CFUGs as a local unit for planning and implementing adaptation responses.

5.2.2 Implementation of interventions and enrolment of local organizations

CFUGs were involved as the local unit to deliver project interventions in all three cases. The projects also involved different local organizations including FECOFUN, as local partners to implement project activities. Through this process, the projects enrolled these organizations in the new development discourse of climate change and used the established network of the practitioners to achieve the project objectives. As discussed in Papers III and IV, the projects had the apparent intent of gaining from the institutional mechanisms of CFUGs to meet their objectives. Further, the projects' strategy to involve other local organizations such as FECOFUN,

[12] In a Hariyo Ban project document, it was claimed that the climate change is posing additional threats to the degradation of ecosystem and biodiversity in one hand and vulnerability of people (USAID, 2010). The project interventions intend to address these threats.

was used to ease the project implementation and gain legitimacy for the particular ways they framed climate interventions.

In the REDD+ pilot, CFUGs were key in achieving objectives. In a publication by the REDD+ pilot, it is asserted that "[t]he presence of established institutions and mechanisms for community forestry management in Nepal provided an enabling environment for REDD+" (Shrestha *et al*., 2014, p. 2428). As mentioned earlier, CFUG mechanisms were also mobilized for meeting the project's objectives of demonstrating carbon sequestration and the allocation of REDD+ benefits to different groups (Paper III).

As examined in Paper IV, the other two projects also engaged national and local organizations in design and implementation. The MSFP adopted a multi-stakeholder process and engaged government organizations. The design process was led by the forestry ministry, who engaged with key civil society organizations such as the federation of NGOs and FECOFUN. Yet, the project interventions and approaches were crafted by the experts. However, in the Hariyo Ban and the REDD+ projects, government and non-government organizations had limited involvement in the design process. As reported in a technical project document (WWF *et al.*, 2011) of the Hariyo Ban, consultation workshops were organized to seek contributions from the relevant stakeholders, but the details of such events are not given. The REDD+ pilot was framed primarily by the consortium partners. However, both Hariyo Ban and the REDD+ pilot engaged FECOFUN as one of the implementation organizations. In both projects FECOFUN played a major role in delivering the project activities at a local level and helping mobilize CFUGs, in order to achieve the projects' objectives (see Paper III and IV). These practices are consistent with the phenomenon in environmental governance practices where actors actively work to establish and sustain recognition (Nightingale, 2017; Eriksen *et al.,* 2015b; Bulkeley & Schroeder, 2012). This process provides the donors and implementing agencies the means to sustain their involvement in the development field.

Within CFUGs, projects worked closely with leadership (i.e. executive committee members of CFUGs) who generally know how to play the game of development interventions. In the REDD+ pilot, the leaders helped mobilize people to implement interventions such as planting trees, guarding forests and so on. While the leaders had an important role in project delivery, they also had interests in being part of the new game. For instance, the executive committee members, primarily the chairperson and secretary, were interested in accessing the new funding. Climate interventions filled a funding gap, particularly in the context

of declining incomes from timber[13] sales in recent years and the ending of earlier development interventions, such as the Swiss-funded project in Dolakha. In Chure and Tarai districts, groups were receiving an average annual income of 1000-2000 US dollar from timber sales. While the climate interventions provided resources and platforms for local institutions and their leaders, what they meant for ordinary people is an important matter requiring scrutiny.

Since climate change emerged as new discourse of international development in Nepal since 2007, FECOFUN has developed networks and acquired knowledge on climate change from the involvement in international and national policy debates. The FECOFUN gained recognition as one of the key players in Nepal's climate policy debates. It has been one of the members of the REDD+ working group and is engaged in a number of policy forums on adaptation. Being part of the delivery of the climate projects has been in the interest of FECOFUN in that it enables the organization to access project resources. As the chair of FECOFUN in Dolakha reported (see quote in the introduction section), REDD+ projects provided the people from FECOFUN the opportunity to acquire knowledge and skills on the new agenda of climate change, which they could use to acquire projects in the future. However, questions should be raised about the possible risk of such involvements, on the organization's position and its ability to raise a critical voice and challenge bureaucratic control of the forests.

However, the role of the forest department in the design and implementation of climate change projects varied. The forest department and DFO played important roles in MSFP design and implementation but they were not directly involved in the two other projects. In Rupandehi, the DFO was part of the implementation of MSFP activities in the scientific forest management scheme and promotion of plantations.

It is important to examine how international climate objectives have been incorporated into local actions and endorsed by CFUGs. However, this process was not driven merely by the intent of donors or projects, but also by the desire of local institutions for recognition and new resources. The leadership, used this discourse to establish the agenda in CFUGs for intensifying conservation. The discourses of carbon revenue and livelihoods benefits of "additional sources of CFUG income without compromising existing uses" (see quote in the introduction) were mobilized by CFUG leadership to reinforce the objectives of enhancing forest biomass. Such new discourses influenced the CF management

[13] In Dolakha and Chitwan, the CFUGs were not allowed to harvest timber for few years from 2010 onwards. In Chitwan the government declared the Chure region as special protection zone and had banned tree felling since 2011. In Dolakha it was a temporary ban by department of forest to mark the International year of forestry in 2011. But as the CFUG leaders in Dolakha reported, they had not extracted timber up to 2014.

practices towards controlling the access to forests with regard to grazing and the collection of poles for construction of animal shelter (Paper III). However, the REDD+ programme did not mean same for ordinary smallholder farmers; instead it brought uncertainties about access to forests.

The climate policy objectives and discourses were endorsed by local communities and have become part of CF management practices. As observed in Dolakha, CFUGs tightened their rules on grazing and increased surveillance in the forests (Papers II and III). They also followed the recommendation made by the project regarding use of the REDD+ payment and the proportional distribution of funds for forest management and livelihoods support. Although some of the activities, such as reforestation and forest conservation were not new to the CFUGs, they intensified these activities with the REDD+ money as required by the pilot programme (Paper III).

In the other two projects, CFUGs undertook local adaptation planning (i.e. development of community adaptation plans (CAPs) and implementation of the activities funded by projects). The four-day workshop organized by the Hariyo Ban project in Lamjung was used to educate people on climate change and prepare communities' responses to climate change in the form of CAPs. Through this seemingly participatory process, the communities endorsed the project's interventions (Paper IV). The projects provided some resources to implement the CAPs developed in CFUGs, to the extent they met the projects' objectives of biodiversity conservation and forest management. The CFUGs mobilized volunteers to execute some of the activities in the CAPs, such as planting trees, digging conservation ponds and so on. In Lamjung (visited in November 2014), groups were asked to seek financial support from village and district organizations to implement the rest of the activities listed in the CAP. In this ways CFUGs were incorporated into the adaptation agenda.

5.2.3 Local effects of the climate policy implementation

In line with other studies (Ojha *et al.*, 2016a; Nagoda, 2015; Taylor, 2014) findings in Paper IV show that the adaptation interventions undertaken by the two projects were largely technical in nature with regard to the process and the substance of interventions. Firstly, the planning process was largely driven by the experts' framing of the climate change problem and solutions (Paper IV). For example, in a group visited in Lamjung, Hariyo Ban provided a sum of roughly $1500 to CFUGs to carry out activities such as tree planting, construction of water ponds and gabion walls for controlling soil erosion and support for income generating farm-based activities. In Rupandehi, MSFP provided a similar amount of money to CFUGs to carry out activities related to

forest management and semi-commercial agriculture. These interventions were primarily guided by the way adaptation was conceived by the projects and the mandate they had as a sectoral project.

The projects' adaptation-related interventions were found to have drifted from what local people would see as adaptation needs. For example, people interviewed in Rupandehi wanted the project to address the frequent damage caused by floods. In Lamjung many villages face the threat of landslides (see Khatri *et al*., 2016). However, the project's interventions did not address those problems. Interventions by the Hariyo Ban in Lamjung were also not fully aligned with the community's needs. For example the project did not cover the area where major landslide problems exist. The project's catchment approach required to cover areas along the catchment of the major river system, which connects Lamjung with Chitwan. In Rupandehi, the control of flood damage was said to be under the mandate of other agencies (i.e. office for addressing water induced disaster).

Further, the projects' interventions were not adequately informed by the ongoing processes of changes in rural life. For instance, support from two projects on farm-based income generating activities had limited relevance for the people who are landless or seeking to move away from farming. The landless Dalit communities, the most marginalized communities in rural Rupandehi, did not benefit from the interventions. Similarly, Hariyo Ban's support in Lamjung for livestock and vegetable cultivation has less relevance to the poor people there who needed money to pay for the cost of foreign labour migration. Considering the fact that remittances have been the major adaptation strategy in rural communities, support to people needing to generate income to pay the cost of outmigration would be the effective adaptation response (also see Sapkota *et al*., 2016). These findings raise doubts about the extent to which the adaptation responses by two forestry projects were able to deliver the promises of addressing livelihoods and vulnerability. Further, as reported in Paper IV, the projects' interventions also failed to address the historically situated power structure and cultural codes, to borrow from Nightingale and Ojha (2013) shaping peoples' vulnerability to climate change (also see Sapkota *et al.*, 2016).

The REDD+ pilot project also promised to support the livelihoods of people in addition to contributing to global emissions reduction. However, the project's targeting strategy only helped deliver money to the targeted groups, and had limited effects on the improvement of livelihoods – contrary to what project reports claimed (see Shrestha *et al.,* 2014). The targeting in Dolakha seemed to have worked better than in Chitwan, since the pilot was built on CFUG's prior experiences of targeting livelihood support under the Swiss-funded project. However, a targeting strategy was new in Chitwan

and, in many cases, REDD+ payment did not reach the beneficiaries. Despite the project's claim, money allocated to poor households did not become available to them. For example, in Kankali CFUG the REDD+ income was invested to dig a fish pond with the idea that the poor Dalit families would be able to farm and sell fish to generate additional income. However, the Dalit households could not afford the initial investments to start the fish farming. The CFUGs then leased the pond to a group of local people and decided that 80% of the profit from fish farming would go to the poor Dalit families. However, according to the CFUG leadership, the fish pond had not yet delivered a financial return and therefore the beneficiaries had not received any money. One of the Dalit men, part of the group the fish pond initiative targeted, said "we have not received even a single rupee from this fish pond. The group has promised to provide us fifty thousand Nepalese rupees last year but we have not received it yet"[14].

Even in the case of Dolakha, where the money reached the targeted beneficiaries, there is doubt that this investment increased their income. Funding was provided in the form of an interest free loan with a pay-back period of six months to two years. A loan of about $15-60 was provided to each of the poorest households to buy animals, invest in vegetable farming and start a small business. During an interview, one poor farmer from the Boldesetidevi (interviewed in November 2014) CFUG of Dolakha district said:

> I got 5000 rupees from the CFUG for buying a goat. The goat died after few months but the CFUG asked me to pay the money back in one year. I had to sell another goat I had. The CFUG sent a letter asking for paying back the money. I do not understand why they have not extended the time to for pay back.

As the above case shows, providing a loan for a market-based activity imposes risks on the recipient of that loan. Not only are such individuals poorly placed to carry additional risk but such loans do not necessarily lead to increased income.

This example shows that the claims of increased targeted income benefits from the pilot project to the poor and marginalized households are partial at best. The project's interventions focused on providing cash support to the target beneficiaries with expectation that it would contribute to an increase in income. However, the project ignored the fact that CFUG members derive diverse in-kind benefits from the CF, which in many cases are vital for their livelihood (Paper II).

The REDD+ pilot seemed to have downplayed the possible effects of the new forest use rules that were introduced under the pilot (Paper III). CFUGs in the

[14] Interview conducted in February 2015 with Dalit man who was selected as one of the beneficiary of REDD+ money.

pilot area emphasised enforcing rules aimed at forest conservation and increased forest surveillance and reduced grazing in CFs. As reported in Paper II, relatively wealthier farmers obtained fodder and other tree products from trees grown on their private farmland and were therefore not necessarily affected by more restricted access to the CF. In a group meeting in Bhittripakha CFUG, farmers commented that the poorer among them needed to access forest for fodder and other products, as their own farmland was small and not large enough to grow trees and fodder. Moreover, they cannot afford to shift to improved breed cattle as many well-off farmers in Dolakha are doing. As quoted in the introduction section, smallholder poor farmers are the ones that suffer most from any kind of restriction on forest use.

These findings indicate the limited effects of the project's interventions on improving livelihoods. Instead, the interventions produced unintended consequences of limiting certain forest uses, such as grazing and collecting poles, regarded as very important by smallholder farmers. Based on the pilot, it is too early to reach conclusions about the material effects of the REDD+ interventions on local access. However, there is evidence suggesting that REDD+ interventions, and the knowledge and discourses embedded within them, have reinforced the way leadership of the CFUG sees forests as a resource for generating revenue more than meeting local needs.

5.3 Implications of climate policy implementation for community forestry

As discussed earlier, climate policy implementation has placed new demands on managing CFs. The mandate to meet international objectives has a consequence to reshape CF management. As findings in Papers II-IV showed, the interventions have reinforced the ongoing shift towards revenue generation, yet, with a different logic from the existing objectives of timber production. The new logic has been driven by the objective of carbon sequestration and climate change adaptation. Evidence has shown the discursive shifts in CF management, which are appearing in local practices of CF management, running the risk of further undermining the local livelihoods interests and may not even address climate-related threats.

Findings presented in Paper III showed that the international agenda of REDD+ had a technocratic and bureaucratic influence reinforcing the existing disciplinary division between forestry and agriculture and detaching forest management from the local needs. Further, the climate interventions are also likely to reinforce the priority of generating revenue from forest resources. Thus REDD+ has put new demands on CF management (i.e. protecting forests or

planting new trees for increasing carbon sequestration). The discourses of forest conservation and carbon sequestration benefits promoted by proponents of the pilot, was found to have been internalized and used by CFUG leadership to reinforce the objective of generating CFUG revenue.

As reported in Paper III, the CFUGs have started to see the forests more for monetary than in-kind benefits through the sale of timber and non-timber forest products. These findings are consistent with earlier studies of the same pilot (Poudel *et al*., 2014). They found increased forest surveillance and the tightening of rules regarding access and use of forests. The commercialisation of the community forests, through REDD+ and other incentives, are thereby likely to be realized at the cost of the livelihoods of the poorest people (Leach & Scoones, 2015; Groom & Palmer, 2012). This findings support the view of some scholars that conservation programmes, such as REDD+, driven by a market logic, can have negative effects on local livelihoods (Sandbrook *et al.*, 2010; Chhatre & Agrawal, 2009).

Arguably, this is the effect of the translation of the knowledge systems underpinning REDD+ objectives and the rationality of enhancing carbon marketing into CF objectives and practices. The CFUG leaders gained certain knowledge and skills required for becoming part of the new game of REDD+, which can run risk of reinforcing their authority within the CFUGs. New knowledge and skills can reinforce the power of elites in shaping CF priorities, further marginalizing the local collective interests of accessing forests for livelihoods and food security needs. As contended in Paper I and II, this approach runs counter to the need for managing forests for multiple benefits and the idea of promoting multifunctional landscape management to deal with the challenges of climate change and food security. The changing dynamics due to implementation of the climate policy objectives of REDD+ can therefore challenge local access, which is consistent with the findings of other studies (Leach & Scoones, 2015; Sikor *et al.*, 2013; Peluso & Lund, 2011).

Further, the climate change policy implementation reinforces the influence of scientific expertise on CF objectives and practices. As is evident (see Paper II) the technical and bureaucratic interventions under the REDD+ pilot programme are likely to reinforce the disciplinary boundary between forestry and agriculture. The climate interventions can also prioritize CF management practices to enhance biomass and carbon sequestration hindering forest-farm linkages (Papers II and III). The technical requirements for enhancing carbon stock and demonstrating results through monitoring mechanisms have enhanced the dominance of forestry science.

Moreover forestry-related interventions implemented as part of adaptation responses may reinforce the influence of professionals (i.e. DFO). Under the

MSFP, the DFO promoted a scientific forest management scheme as part of climate change adaptation. The forestry professionals, such as DFO in Rupandehi, justified the role of scientific forest management for adaptation. There is an emerging concern that the implementation of scientific forest management reinforces the authority of forest professionals and limits the self-decision making abilities of CFUGs (Nightingale, 2005). However, one can question how schemes such as scientific forest management, which promotes even aged monoculture forests intended for commercial purpose, serve adaptation needs. The climate interventions can be seen as part of the ongoing effort of forest bureaucracy to recentralize authority (Ojha, 2008; Ojha, 2006) indicating that climate interventions can reinforce DFO's influence over CFUGs.

While it appears that climate interventions are less meaningful to ordinary members of the CFUGs, they matter more to the leaders who know how to play the game of external interventions. Ordinary people have little knowledge about the REDD+ pilot and those who know, have raised concerns about its possible effects on existing forest use. However, their voices are not strong enough to be heard and considered in CFUGs. In principle, the CFUG leadership and FECOFUN should represent local voices and safeguard their interests. However, FECOFUN has also become part of the new game of climate change, involved in the implementation of project interventions. As I report in Paper III and IV, FECOFUN also appeared to be keen on establishing its recognition to the new development agenda of climate change (Nightingale, 2017). The FECOFUN had gained knowledge and established connections with national and international organizations through its involvement in international fora and the national policy processes. This helped FECOFUN to be recognized as one of the implementing agencies for the REDD+ pilot and Hariyo Ban. However, involvement of FECOFUN in project implementation may have compromised the organization's ability to represent local voices.

Earlier studies suggest that the increasing involvement of FECOFUN to deliver services under donor-funded development interventions could corrupt its activist role and critical position (Ojha *et al.*, 2013; Fisher, 2017). Findings in Papers III and IV, in line with this argument, showed that FECOFUN was uncritical of REDD+ and its possible negative consequences for local rights and benefits. Instead, the leaders of FECOFUN and CFUGs saw REDD+ as an opportunity to generate additional income. This indicates the technical logic of the design and implementation of the project as well as the incorporation of local interests into the international climate agenda. Additionally, this finding suggest the risk that the REDD+ discourse and market logic can be left unchallenged, marginalizing local interests of

livelihoods and food security. Further, the incorporation of local voices into climate discourses has implications for local agencies and collective efforts to counter dominant discourses and knowledge systems underpinned by the implementation of climate objectives such as REDD+ (Beymer-Farris & Bassett, 2012).

The climate interventions also reinforced the growth of bureaucratic practices within CFUGs. The example of the CFUG I visited in Dolakha that sent a letter to a poor farmer asking him to repay the loan he borrowed from the group is one illustration of this sends a strong message about how this can happen.

The enrolment of CFUGs in climate interventions needs to be seen as the continuation of previous practices. Over the past decades, CFUGs, with their established institutional mechanisms and the ability of their leaders to network with external actors, have become the locus for local community development (Nightingale & Sharma, 2014). With an institutional vacuum at a local level created by a volatile political environment in the post-conflict Nepal, CFUGs played an active role as viable local institutions for development interventions beyond their role in forest management (Byrne *et al.*, 2016; Nightingale & Sharma, 2014; Paudel *et al.*, 2013). Climate change projects, such as REDD+ continued this and sought to gain from the CFUG knowledge and institutional structure to accomplish their objectives. Climate policy implementation has shifted the role of CFUGs from forest managers to custodians of global environmental change initiatives. This raises the question what the new responsibility implies for the core function of managing forests and CFUG governance.

6 Discussion

This thesis examined the changing CF objectives and management priorities in Nepal. The implementation of international climate objectives of adaptation and REDD+ that builds on CF institutions was juxtaposed with ongoing dynamics of change in CF management practices. The analysis focuses on how the shifting nature of CF objectives and priorities has been pushed by climate-related interventions and what that means in terms of addressing local needs. The overall analytical focus of the thesis has been on the question of how CF objectives are influenced by the dynamics of knowledge and power, exercised through governmental and non-governmental interventions. The findings and analysis illustrate how knowledge (i.e. scientific expertise and discourses) provide a governing force to (re)shape local priorities of resource management and what such changing priorities mean for the local needs of livelihoods and food security as well as responding to the effects of climate change.

Shifting Community Forestry objectives and the influence of the scientific forest management paradigm

As is evident, CF management objectives that have evolved over the last three decades, have been influenced by the modern forest management paradigm (i.e. scientific forestry) (Scott, 1998). The original objective of restoring the degraded Himalayan Mountains was influenced by discourses of environmental degradation caused by massive deforestation (Guthman, 1997; Metz, 1991; Ives, 1989; Ives & Messerli, 1989). Over the period of roughly two decades between the 1990s and 2000s, the objective shifted towards generating revenue for CFUGs primarily through the promotion of tree biomass for timber uses (Baral *et al.*, 2018; Paudel, 2016b; Rutt *et al.*, 2015). The scientific expertise was translated to local forest users, shaping CFUG rules and practices (Nightingale, 2005). The translation facilitated by the interventions from the forestry ministry and donor-funded projects made some influential people from the community

knowledgeable about managing forests and helped reinforce the authority of local elites in shaping CF priorities (Forsyth & Walker, 2008; Iversen *et al.*, 2006; Nightingale, 2005). The persistent techno-bureaucratic influence in CF rules and practices (Nightingale & Ojha, 2013; Ojha, 2006) has had implications for the effective implementation of decentralized policy with particular regard to delivering equitable outcomes both in terms of participation (procedural aspect) and distribution of benefits (Paudel, 1999; Khadka, 2009; Rai Paudyal, 2008; Nightingale, 2002).

The CF management has restricted certain forest uses, such as grazing, and provided limited attention to managing forests to meet livelihoods and food security needs (also see Dhakal *et al*., 2011; Malla, 2000). Further, CF management priorities have reinforced the disciplinary division in resource management (i.e. forestry and agriculture), hindering the potential contribution of CF to food security and livelihoods. In other words, the scientific framing of CF management (Rutt *et al.*, 2015) has undermined the historical practices of diversified forest uses to meet local needs (Nightingale, 2005). The smallholder farmers, a large portion of the rural population who have not been able to afford to exit farming to join the remittance economy, appear to have suffered from such restrictions. This section of the community includes marginalized groups such as Dalit, Janajati and women who have limited influence on shaping CF decisions (Nightingale, 2006; Nightingale, 2003).

Translation of international climate objectives in the CF context: Influence of past legacies and scientific expertise

The two major international climate objectives of REDD+ and adaption have been overlaid on the established local institutional mechanisms of CF. Consistent with other reports (Lund *et al.*, 2017; Nightingale, 2017; Arora-Jonsson *et al.*, 2016; Pelling *et al.*, 2015; Tanner & Allouche, 2011), practitioners in the conservation and development industries in Nepal have seen the climate policy objectives as new resources of funding and knowledge. The practitioners mobilized their past experiences and established networks with local organizations in new and ongoing projects under the climate rubric. Further, they have actively interpreted and communicated the international objectives of climate policies and associated discourses (Pasgaard, 2015; Latour, 1984) in the process of framing climate-related interventions in order to align their own expertise and past experiences (Lund *et al.*, 2017). Such translation allowed them to make decisions about what constitutes local responses to climate change (Nightingale, 2017; Eriksen *et al.*, 2015b; Yates, 2012). The framing of the local agenda by the projects explains one dimension of knowledge

and power, resulting in pushing the ongoing changes in CF priorities towards conservation or revenue generation.

As Bulkeley and Schroeder (2012) suggest, the process of translating climate policies founded on certain ideas and discourses into local actions, enshrines practices of establishing legitimacy and gaining recognition. The translation of scientific expertise (i.e. on forest management and biodiversity conservation) into climate change-related interventions at the local level involved active interpretation and communication (Pasgaard, 2015; Latour, 1984) by practitioners with certain objectives. The intent, as discussed earlier, was to secure fresh resources of funding and knowledge under the new blanket of climate change (Tanner & Allouche, 2011). The interventions influenced by such scientific and expert framing of problem and solutions of climate change fuelled the process of transformation of local priorities of managing community forests.

Recognition and legitimacy: Implementation of the climate interventions and enrolment of local organizations

Practitioners from the conservation and development industry (i.e. donors and international non-government organizations) seek recognition and legitimacy from local organizations (i.e. CFUGs and FECOFUN) for the design and implementation of the projects (Nightingale, 2017; Mosse, 2005). The process of gaining legitimacy involved different tools (Li, 2007) such as stakeholder engagement and local participation. The MSFP adopted a multi-stakeholder mechanism in the design and implementation of the project and engaged diverse stakeholders, including the forestry ministry and key civil society organizations. The projects also sought consent from communities using different participatory tools such as local adaptation planning exercises. These seemingly participatory processes allowed the practitioners to meet the project objectives and compelled communities to comply with the project interventions (Legacy, 2015).

The FECOFUN was involved in the design and implementation of two of the three case study projects. However, the involvement of FECOFUN as an implementing partner was not only in the interest of international originations, but was also part of the agenda of FECOFUN and its leaders to gain recognition and new resources under climate change. The FECOFUN gained knowledge and established connections with national and international organizations through its involvement in international fora and national policy processes. As maintained by Nightingale (2017) the process of establishing recognition involved a two-way exercise of power, both enrolling national and local NGOs into an international agenda, and the struggle by those same Nepali NGOs for recognition as legitimate partners in this new national agenda (i.e. struggle for recognition) (Nightingale, 2017).

These dynamics of recognition and legitimacy account for the different modes of operation of power in comparison with the governing forces of knowledge and discourses (Foucault, 1990). CFUGs and FECOFUN were enrolled in the climate change agenda with their own desire for recognition and access to resources [end or objectives] (Nightingale, 2017). This illustrates the multi-directional flow and complex interaction between knowledge and power (Nightingale, 2017; Allen, 2016). Power not only operates for oppression or domination but also can be mobilized for seeking recognition and legitimacy (see Nightingale, 2017). This dynamic is consistent with the argument that authority needs to be recognized in order to achieve the governance of resources (Sikor & Lund, 2009) and is applicable to climate governance in particular (Bulkeley, 2012; Bulkeley & Schroeder, 2012). In other words, authority and legitimacy are co-constituted in the process of environmental governance and unfold in a complex manner.

The processes in which the international climate objectives unfolded at the local level overlays the CF institutions and hence has implication for the changing subjectivities of local people and organizations. Through the use of different participatory tools such as project workshops, CFUG assembly and adaptation planning exercises the projects (i.e. Hariyo Ban and MSFP) sought consent from the communities. Through these processes, the communities' position in relation to the interventions would have shifted from forest managers to people needing special treatment to improve their livelihoods (Eriksen *et al.*, 2015b; Manuel-Navarrete & Pelling, 2015). Understanding the implications of climate change policy implementation on the formation of new political subjectivities is outside the scope of this thesis but an important area of further research (Nightingale, 2017; Eriksen *et al.*, 2015b; Nightingale, 2015b).

Consequences of climate policy implementation: How climate objectives (re)shape CF objectives and practices

The above analysis suggests that the governing force of knowledge (scientific expertise and discourses) has (re)shaped the local priorities (CF objectives). The interventions under the climate projects, underpinned by scientific expertise and discourses, become part of CF management practices (Leach & Scoones, 2015). The shift towards the monetary incentives of managing forests drive the CF management further away from its core objectives of addressing local needs and aspirations.

Under the climate policy implementation, the knowledge systems underpinning REDD+ and the rationality of enhancing carbon sequestration has led to a discursive shift from meeting local needs towards managing forests for monetary benefits (Leach & Scoones, 2015). The leaders of CFUG and

FECOFUN gained some level of knowledge and the skills required to play the new game of REDD+ and began see the forest for carbon money. It is likely that the acquired knowledge acts to reinforce their authority (Eriksen *et al.*, 2015b; Forsyth & Walker, 2008). As other studies pointed out, the increased authority of CFUG elites (Nightingale & Ojha, 2013; Saito-Jensen *et al.*, 2010; Thoms, 2008) and external actors (Paudel, 2016b; Sunam *et al.*, 2013; Paudel *et al.*, 2010; Sunam *et al.*, 2010) can threaten existing access and use of forests by smallholders (Nathan & Pasgaard, 2017). This finding reinforces the argument made by earlier studies that the program driven by commercialization and the market might shift the authority over forest governance from local to external actors and may threaten local access to forests (Leach & Scoones, 2015; Sikor *et al.*, 2013; Peluso & Lund, 2011).

Effects to local needs: Addressing livelihood, food security and vulnerability to environmental changes

The adaptation interventions under the two projects, consistent with earlier studies (Ojha *et al.*, 2016a; Nagoda, 2015; Yates, 2012), were largely technical in nature and poorly informed by local contextual dynamics. It was evident that the interventions were primarily based on assumptions about the agrarian nature of the rural economy and its reliance on natural resources such as forests. Such a narrow framing of adaptation failed to take into account the increasing role of remittances in household economy (Sharma, 2016; Sunam & McCarthy, 2015; CBS, 2011) and declining role of forests in peoples' lives (Paper II). Findings from the examination of two adaptation-related projects support the other studies, while REDD+ related interventions risked threatening existing forest access and uses. This observation supports the critical reflection in the literature that the implementation of international climate objectives might have limited effects in addressing the local needs of access to forest resources and the impacts from climate change (Sapkota *et al.*, 2018; Nagoda & Nightingale, 2017; Sapkota *et al.*, 2016; Taylor, 2014). The findings of the assessment of the REDD+ piloting is consistent with other literature that maintains REDD+ objectives, driven from the market logic, can have negative effects on local livelihoods (Ece *et al.*, 2017; Svarstad & Benjaminsen, 2017; Cavanagh & Benjaminsen, 2014; Sandbrook *et al.*, 2010; Chhatre & Agrawal, 2009). Furthermore, there is also evidence of a shift in the way people value and prioritize forest management, with increasing value being placed on commercialization and monetary benefits (Lund *et al.*, 2017; Fletcher *et al.*, 2016; Leach & Scoones, 2015; Fletcher, 2010).

The analysis suggests that the way climate change projects were carried out was not merely an external imposition of policy agenda, as many other studies

reported (Leach & Scoones, 2015; Sikor *et al.*, 2013; Beymer-Farris & Bassett, 2012). Rather the governance of projects (i.e. design and implementation) at the local level also involved a subtle process of enrolling local institutions into the international agenda. Li (2014) has described similar processes with respect to the desire for modernization that influenced the people in the Lauja Highlands of central Sulawesi. The process whereby local people were influenced by developmental discourses and desire for recognition (in this case) (see Nightingale 2017), were assumed as their own aspirations. However the donor funded interventions in Nepal suggest that a narrative of the will to improve (Li, 2007) through the exertion of external interests within REDD+ (Leach and Scoones, 2015) somewhat oversimplifies the intentions. Rather, in Nepal it involved an intertwined process in which global interests and their agenda coupled with the desire of local institutions through their leaders were at play (Nightingale, 2017). The analysis suggests that in addition to unpacking new forms of resource governance such as REDD+ in relation to local rights and benefits, new climate programs interact with broader desires for recognition, authority and subjectivities (Eriksen *et al*., 2015b; Nightingale, 2017). The way climate interventions play out and the resultant effects can run the risk of moving the CF objectives further away from meeting local needs.

7 Conclusion

This thesis investigated the way the international climate objectives of REDD+ and adaptation are designed and implemented and their effects on Nepal's long-standing community forestry. The analysis consisted of three major parts. The first part focused on the first research question examining the changing CF objectives (and management priorities) with particular emphasis on implications for local livelihoods and food security. The second part focused on climate interventions, and was based on the second and third research questions (i.e. how international climate objectives were translated and applied to CF and how these objectives (and discourses) become part of CF management practices). The third section examined the consequences of climate interventions on CF governance with a particular focus on how they can reconfigure CF objectives and practices.

I argued that the CF objectives and management priorities shifted over time (i.e. 1988 to present) from meeting local subsistence needs, towards generating revenue and addressing international climate objectives. The original intentions of managing CF for subsistence needs (i.e. until early 1990s) shifted towards prioritized activities that helped generate income for forest user groups, such as timber and NTFPs (in early 2000) and different ecosystem services, including carbon (in the last decade). As I maintain, the on-going shift towards monetary benefits has been accelerated by the recent developments of implementing climate objectives, which has further marginalized the local needs of livelihoods and food security. I looked closely at these moves over the last three decades (1998-2018) and witnessed part of these moves (i.e. for about two decades) as practitioner (1997-2008), policy activist (2009-2013) and researcher (2014 onwards), the findings presented in this thesis resonate with my personal experiences.

The original objective of CF in the 1990s was to restore the degraded mountains and fulfil local subsistence needs for forest products (Gilmour & Fisher, 1992; HMG, 1989). In 1997, when I was working as an intern in the Swiss-funded community forestry program, the program primarily focused on

supporting the government's strategy to expand community forests and reforestation. On the ground, my job was to monitor nurseries and tree planting undertaken by communities. As findings showed, the reforestation activities demanded communities to regulate some of the traditional uses including grazing in forest lands. While such interventions helped to restore the once degraded mountains and increased provisioning of forest products (Adhikari *et al.*, 2007; Gautam *et al.*, 2003), it resulted in the changing roles of forests in peoples' lives. As I report in this thesis, such changes were influenced by the powerful discourses of Himalayan degradation (Ives & Messerli, 1989) and experts' perceived solutions (i.e. to the problem of environmental degradation) (Nightingale, 2005).

As findings showed during the early 2000s, the CF objectives and priorities gradually shifted away from basic needs and towards generating income for forest user groups. Accordingly, the focus of intervention of the Swiss project also shifted towards helping to generate income for CFUGs and use such income to improve the livelihoods of poor people. Between 1998 and 2002, I was working with the project as a forestry consultant, carrying out forest inventories and developing management plans for community forests. During this period, the project continued its emphasis on developing forest inventory methods, which were later adopted by the government to develop country-wide inventory guidelines. The project also included activities to support CF in forest management (i.e. training CFUG members and establishing demonstration plots). But by 2003, when I joined the project as forestry officer, my role shifted away from inventories and towards activities that helped generate income in CFUGs through timber and non-timber forest products. I was involved in implementing activities related to promoting forest-based enterprises along with forest management. The project also instigated activities aimed at improving the livelihoods of poor people through the forest user groups. The shift in CF management priorities was influenced by governmental and non-governmental interventions on scientific forest management and generating income.

This income-oriented management and need to support the livelihoods of local people have brought about new demands for CFs objectives towards the commercial extraction of timber and NTFPs. Further, as Ojha *et al*. (2016) contend, there were shifts in how forest user groups needed to work with forest authorities, forest product traders (and contractors) and non-governmental organizations. These moves not only increased techno-bureaucratic influence (Ojha, 2006) but also served the interests of local elites to generate income (Iversen *et al.,* 2006). CF was also drawn into a market economy by increased influence from private actors (Paudel, 2016b; Paudel *et al.*, 2010). These dynamics marginalized local interests for managing forests to meet subsistence

needs. This implies that the dynamics of power and knowledge surrounding CF policies and practices drove the forest management priorities away from local livelihoods interests and food security needs. This helped lay the groundwork for climate change interventions, which are further shifting CF away from basic livelihood needs.

The implementation of the two major international climate objectives of REDD+ and adaptation I analysed has been superimposed on CF institutions. I argued that the climate policy objectives have placed new demands on CF, reinforcing ongoing changes towards managing forests for monetary benefits. The REDD+ piloting, consisting of technical and formulaic interventions, took limited account of the changing dynamics and roles of forests in local livelihoods. Further, the examination of adaptation-related projects showed that the responses under the projects were framed from a forestry and conservation perspective, and likely to reinforce the growing influence of scientific expertise in CF management practices (Lund *et al.*, 2017; Ojha *et al.*, 2013) leading to the further marginalization of local needs. These findings reinforced earlier studies, which found that implementation of international climate objectives such as REDD+ underpinned by the logic of commodification of forest for carbon, can override the existing subsistence use of the forests (Leach & Scoones, 2015). Further, the findings raise questions about the extent to which the technical and managerial responses deliver their promise of addressing vulnerability (Eriksen *et al.*, 2015a; Nagoda, 2015).

The way climate related interventions were designed and implemented enrolled local organizations (i.e. CFUGs and FECOFUN) into new development discourses and risked co-opting established institutional mechanisms of CF into the technocratic logic of climate interventions. As the analysis showed, the design and implementation of the projects involved a subtle process of establishing recognition and gaining legitimacy. However, the projects had limited effects in terms of delivering their promises of improving local livelihoods and addressing vulnerability. Instead, interventions under the REDD+ posed the risk of curtailing local rights and benefits. These findings suggest that the climate policy objectives can further reinforce the techno-bureaucratic influence and interest of powerful actors (i.e. local elites, forestry authorities and development practitioners) (Lund & Saito-Jensen, 2013; Saito-Jensen *et al.*, 2010; Iversen *et al.*, 2006) further divorcing CF management from local needs.

Analytically, the thesis focused on examining the governing forces of the dynamic interplay of knowledge and power in (re)shaping local agendas of resource governance and responses to environmental change. The analysis was primarily concerned with the way certain forms of knowledge and discourses get translated into interventions, (re)shaping local priorities in CF management. This

conceptualises power, where knowledge is a product of, as well as an influence on, the resource governance agenda (Ahlborg & Nightingale, 2018). The analysis also drew attention to the question of how scientific expertise and environmental discourses are strategically mobilized by actors (organizations and individuals) towards certain ends (i.e. access to new resources of funding and knowledge under the new blanket of climate change policy). This process of mobilization involved gaining recognition and legitimacy by employing diverse participation and stakeholder engagement techniques. My analysis examined power as a productive force, which is (re)produced through interactions among diverse actors to deepen the understanding of the way local resource management agendas are (re)shaped. For example, scientific expertise and discourses promoted by governmental and non-governmental interventions (under CF and climate change policies) reconfigure the rules and practices of managing forests, prioritizing certain resources such as timber, and others such as units of carbon. The new priorities that demand scientific expertise and skills run the risk of further reinforcing the influence of experts and elites, in turn disempowering marginalized communities.

The findings and analysis presented in this thesis therefore raise critical questions about the way climate-related interventions are undertaken at the local level and their unintended consequences on the long-established decentralization policy of community forestry. The analysis suggests that the local benefits of managing forests (i.e. meeting livelihoods and food security needs) are likely to be subsumed into the international climate objectives involving powerful scientific expertise and discourses. The local voices were found to have been co-opted in the complex dynamics of power and recognition (Nightingale, 2017). Hence there is a need to revisit the way climate-related policies and programs are developed and implemented in the Global South. The current mechanisms of participation have been proven to be inadequate and not fully effective in representing the voices of marginalized actors (Satyal *et al.*, 2018). We need to make the marginal voices stronger in policy (development of national policies and programs) and practices (i.e. CFUG decision making processes). However, the changing objectives and demands for expertise and knowledge traced in this thesis can disadvantage the local communities and further disempower them.

The work presented here therefore shows a significant shift in managing CF away from addressing local needs, to a technocratic logic of scientific forest management. Climate policy objectives provide a new force, further demanding forests be managed to meet climate objectives and thus requiring more technical expertise and knowledge. These forces driving CF management away from meeting local needs remain unchallenged as local voices are co-opted by the complex dynamics of power and recognition. This leads to the question of how

the governing forces of knowledge and power reconfigure the authority of key actors and what that means for the future of CF governance. More specifically, more research is needed on how climate policy implementations reconfigure the power and authority of the key players in forest governance (i.e. FECOFUN and forestry ministry in the case of Nepal) and what will that mean for the future of CF governance in terms of meeting local needs. I will pursue these questions in the future to deepen our understanding of the dynamic changes in CF governance. These questions furthermore require considering the context of the changing nature of local governance in Nepal within stronger local governments as envisioned by the new constitution in 2015. Questions remains over the implications of stronger local governments, with enhanced authority and responsibility, for future CF governance.

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Popular science summary

Climate change sits at the top of the international development agenda. Over the past few decades, most countries in the Global South have embraced the international climate programme by crafting national policies and implementing projects on the ground in increasing scale. In Nepal, two major international climate change programmes – adaptation and REDD+ – have been adopted and various projects under these programmes have been designed and implemented. Yet, concerns are mounting. Both academics and activists have observed that these projects may not address poverty and local vulnerability, rather they may exacerbate them. This thesis, drawing on case studies from three projects in Nepal (one on REDD+ and two on adaptation), investigates the process through which these projects are designed and implemented and explores their effects on the longstanding community forestry governance. The thesis focuses on the extent to which such climate change interventions will affect practices related to the management and use of community forests by local households. I find that the community forest objectives and management practices have changed over time, prioritizing certain resource uses, such as timber extraction as a source of revenue, while undermining the local needs of supporting livelihoods and addressing food security challenges. Climate-related projects that are implemented involving local community forestry institutions, such as community forest user groups and their federation, reinforce ongoing trends towards prioritizing monetary benefits over diverse local benefits of the forests, such as grazing, collection of fodder and fuelwood. It is argued that such changes can further marginalize the local inhabitants who rely on forest resources to sustain their livelihoods. The top-down and expert-led process of design and implementation of the projects are changing the way people value forests, as local priorities shift from subsistence use towards monetary gain and a desire to comply with the international climate agenda. The thesis concludes by calling for a greater attention to local interests and the incorporation of local voices and concerns

in the design of projects. For countries such as Nepal, that are likely to be hard hit by climate change, it is of grave importance to safeguard local interests whilst implementing climate-related projects.

Populärvetenskaplig sammanfattning

Klimatförändringarna ligger idag högst upp på den internationella utvecklingsagendan. De flesta länderna i Globala Syd har under de senaste decennierna omfamnat den internationella klimatagendan genom att utforma nationella policys och genomföra olika projekt i en allt större omfattning. I Nepal har två stora internationella klimatförändringsprogram antagits, nämligen klimatanpassning och REDD +, och under dessa program har flera olika utvecklingsprojekt utformats och genomförts. Ändå är bekymren många. Både akademiker och aktivister har observerat att dessa projekt inte verkar motverka fattigdom och lokal sårbarhet, utan tvärtom verkar förstärker dem. Denna avhandling, som bygger på fallstudier från tre projekt i Nepal (ett om REDD + och två om klimatanpassning), undersöker processen i vilken dessa projekt har utformats och genomförts, och undersöker även projektens långsiktiga effekter för byskogsförvaltning. Avhandlingen fokuserar på i vilken utsträckning sådana klimatförändringsåtgärder kommer att medföra praktisk förändring för de lokala hushållens brukande och användning av byskogar. Jag har funnit att målen med byskogsförvaltning och dess praktiker har förändrats över tid och prioriterar viss resursanvändning över andra. Exempelvis prioriteras timmerproduktion som inkomstkälla, medan lokala behov, försörjningssystem och matsäkerhet undergrävs. Klimatprojekt som genomförs tillsammans med lokala byskogsföreningar såsom grupper med byskogsanvändare och deras förbund, stärker den pågående tendensen av prioritering av monetära vinster över icke-monetära lokala nyttor av skogarna som till exempel bete, foderinsamling och ved. Sådana förändringar kan leda till ytterligare marginalisering av lokala invånare som förlitar sig på skogsresurser för sin försörjning och deras prioriteringar. Den ”top-down” expertledda processen med att utforma och genomföra projekten förändrar hur människor värderar byskogar allt eftersom lokala prioriteringar förskjuts från självförsörjning mot ekonomiskt utbyte, samt en strävan att uppnå den internationella klimatagendan. Avhandlingen drar slutsatsen att det finns ett stort behov av att ge lokala intressen en större

uppmärksamhet, samt att inkludera lokala röster och angelägenheter i utformandet av projekten. Detta är av stor vikt för att trygga lokala intressen i samband med genomförandet av klimatrelaterade projekt i länder som Nepal, som sannolikt kommer att drabbas hårt av klimatförändringarna.

Appendix 1. List of other publications not included in this thesis

Journal articles

Ojha, H. **Khatri, D. B**., Shrestha K. K., Adhikari, B. & Pokharel, K. (under review in the International Journal of Disaster Risk Reduction). Living with the landslide: Investigating institutional limits to adaptation in the Nepal Himalayas.

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Reports, policy briefs and media Op-Ed

Khatri, D. B., Pain, A., Ojha, H., Adhikari, B., Pandey, C. L., Dhungana, H. & Joshi, T. (2016). *Climate change, local politics and institutional responses in Nepal: A synthesis of research findings.* Kathmandu: ForestAction and Southasia Institute for Advanced Studies.

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