

Challenging Adaptability

Analysing the Governance of Reindeer Husbandry in Sweden

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Department of Political Science
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ISBN: 978-91-7601-045-7

ISSN: 0349-0831

Department of Political Science, Research report 2014:1

Cover photo: Anna-Maria Fjellström

An electronic version of this thesis is available at <http://umu.diva-portal.org/>

Printed by Print & Media, Umeå University

Umeå, Sweden 2014

To all my loved ones

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List of papers

The thesis builds on the studies undertaken in the four appended papers listed below. In the text the papers are referred to using Roman numerals.

- Paper I Löf, A. 2010. Exploring adaptability through learning layers and learning loops. *Environmental Education Research*, 16(5): 281-295 DOI: 10.1080/13504622.2010.505429
- Paper II Löf, A. *manuscript*. Locking in and locking out: Critically analysing governance in Swedish reindeer husbandry. Resubmitted to *Critical Policy Studies*.
- Paper III Löf, A. 2013. Examining limits and barriers to climate change adaptation in an Indigenous reindeer herding community. *Climate and Development* 5(4). 328-339 DOI: 10.1080/17565529.2013.831338
- Paper IV Löf, A. *manuscript*. Can technology bring on a revolution? A study of transformation in the governing system of reindeer husbandry in Sweden. Submitted to *Ecology and Society*.

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Abstract

We live in a complex, interconnected and constantly changing world. Human driven global climate change is now a local reality that reinforces the inherent need for adaptability in human systems. Adaptability, the capacity to adapt to disturbance and change and navigate system transformation, can be understood as a function of socio-political interactions. The capacity of governing systems to deal with novel challenges through novel forms of interaction is a key issue in the governance literature, but which is only beginning to be explored. We therefore know little of how global change will impact the local level and how institutions and governing systems will respond.

The need for adaptability is likely to be more pronounced for tightly coupled human-environmental systems. Indigenous and natural resource dependent communities in general, and in the Northern hemisphere in particular, are among the most exposed to ongoing and projected climate change. In Sweden, reindeer husbandry is an Indigenous Sami livelihood and extensive land-use practice highly exposed to weather conditions and increasing competition over land and resources. Whereas herders struggle to deal with the challenges that now confront them, the practice is also known as resilient and sustainable, having withstood large-scale social, ecological and economic change before.

The aim with this thesis is to explore adaptability from a governance-theoretical perspective in the case of Sami reindeer husbandry in Sweden. The thesis thereby contributes to the emerging literatures on governance and adaptability and addresses empirically identified needs.

Theoretically, the thesis draws on Kooiman's interactive governance framework, which offers a multidimensional approach to governance analysis where structural aspects are addressed through modes (self-, co- and hierarchical governing) and intentional aspects through governing elements (images, instruments and action). While conceptually encompassing, the framework has rarely been employed in empirical analyses. In advancing an operationalisation of the framework based on governing orders (operational, institutional and meta-order), the thesis thereby makes a theoretical contribution.

Designed as a qualitative case study, the thesis explores how reindeer husbandry is governed and how governing has changed over time (institutional and meta-order); how the governing system restricts or facilitates adaptation and transformation (operational order); and how a governance-theoretical perspective can contribute to our understanding of adaptability. Methods include document analysis, focus groups, interviews and participatory observation. Studies focussing the operational order have

been conducted in collaboration with Vilhelmina North reindeer herding community in Västerbotten county, Sweden.

The results show that only marginal change has occurred over time and state actors still dominate governing interactions. The governing system is riddled with inconsistencies among governing elements and particularly problematic is the lack of coherence between different meta-order images and between different actors. This gives rise to divergent and conflicting views as to ‘what’ the system of reindeer husbandry is and explains some of the observed governing inaction and limited problem-solving capacity of the governing system. Herders are currently highly restricted in their opportunities for adaptation and transformation and the governing system therefore acts restricting rather than facilitating on adaptability. By adopting a governance-theoretical approach, adaptability as a system quality has been decomposed and challenged and the important role of governing images and power in determining adaptability has been highlighted. It has called attention to questions such as who is forced to adapt, how images and governing interactions are constructed, and how different socio-political actors can exercise influence over the governing system and interactions taking place therein.

The thesis calls for more critical and empirical research on adaptability and argues that future studies need to situate and balance adaptability against other fundamental values and rights. In the case of reindeer husbandry, efforts are needed to create a better internal fit between governing elements as well as between involved socio-political actors. This could enable more equal governing interactions with other land-users and thereby contribute to mitigating conflicts as well as increasing adaptability.

Abstrakta (North Sami)

Mii eallit váttis, oktiičadnon ja olles áiggi rievdamme máilmmis. Olbmuid sivalaš globála dálkkádatrievdadus lea dál báikkálaš duohtavuohta mii nanne dan sisorru dárbbu heivehanmunnái olmmošlaš vuogádagas.

Heivehanmunni, náka heivehit ráfehuhttimiidda ja rievdadit ja navigeret vuogádaga rievdadeami, lea dás vuosttažin ipmirduvvon dego doaibma sosiopolitihkalaš ovttasdoaimmas. Dat bidjá stuorra gáibádusaid ášahusaide ja stivreme vuogádagaide mat árbevirolaččat leat dominerejuvvon stáhtavuodđuduvvon njuolggadusas. Kapasitehta dan stivreme vuogádagas gieđahallat ođđa hástalusaid ođđa hámiid bokte ovttasdoaimmain lea čoavddaášši dieđalaš girjjálašvuodain, muhto hárve empiralaččat iskon. Danin mii eat dieđe nu ollu got rievdadanproseassa boahťá ipmirduvvot báikkálaš dásis ja got ášahusat ja sii geat muddejit vuogádagaid bohte reageret.

Dárbu heivehanmunnái lea universála, muhto dáidá leat stuorit oktiičadnon vuogádagaide humana-birrasis. Eamiálbmogat ja luondoriggodatsorjavaš servodagat dávjámusat ja nuorta eananspáppas erenoamážit, leat dát geat gillet eanemusat dálá ja einnostuvvon dálkkádatrievdadusain. Ruotas boazodoallu lea eamiálbmotealáhus ja geavahit viiddes eatnamiid ja praktihkalaččat gillet dálkkis ja lassánan gilvalemis eatnamiin ja návccain. Danin boazobargit orrut rahčame čoavdit daid hástalusaid mat sis leat, ja ealáhus lea maid dovddus leat falli ja bistevaš, maŋŋil go leat gierdan stuorra sosiála, ekologalaš ja ekonomalaš rievdadusaid.

Áigumuš dáinna dutkosiin lea iskat heivehanmuni hállddahusteorehtalaš oainnus mii guoská sámiid boazodoalu Ruotas. Dutkkus lea danin veahkkín dan šaddame hállddahushápmečállosiidda, konseptualiseremis heivehanmunis ja čujuha empiralaš identifijerejuvvon dárbbuide.

Teorehtalaččat dutkkus lea huksehuvvon Kooimana interaktiivalaš rámmahálldahussstivremis. Dat fállá mángadimenšuvnnalaš strategiija stivrenanalysii gos struktuvrralaš aspeavttat gieđahallot sierra muttuid bokte (ieš, ovttas- ja hierárkkalaš stivremat) ja mearriduvvon aspeavttaid stivrejeaddji elemeanttaid bokte (govat, reaidut ja doaibmabijut). Go váldá vuhtii visot daid čuovvovaš doahpagiid de rámmat eai leat geavahuvvon empiralaš analysain. Dutkkus lea danin maid veahkkín ovddidit strategiija lassánan bijuide dan interaktiivvalaš stivrenrámmas stivrengatnigahttiide (operatiivvalaččat, institušuvnnalaš ja meta-ortnet stivren).

Hábmejuvvon dego kvalitatiiva dieđalaš dutkan, dutkkus iská got boazodoallu lea stivrejuvvon ja got stivren lea rievdan áiggi mielde (institušuvnnalaš ja meta-ortnet); got stivrenvuogádat rádje dehe geahpida heiveheami ja rievdamma (operatiivvalaš ortnega); ja got

hállddahusteorehtalaš geahčastanguovlu sáhtta leat veahkkin min ipmárdusas heivehanmunis. Vuogit siskkildit dokumeantta analysa, guovddášjoavkkuid, jearahallamiid ja oassálastti áicá bokte. Iskamat deattuinn operatiivvalaš ortnegiin lea čadahuvvon Vilhelmina Norra čearuin Västerbottena leanas, Ruotas.

Boađus vuoseha dušše ahte smávit rievdadus leat šaddan áiggi mielde ja stáhtalaš doaimmaheaddjit stivrejit hálldaheami. Dat stivrejeaddji vuogádagas leat dasa lassin ollu vuosttálašvuodat daid stivrejeaddji osiin. Erenoamáš váttis lea heivehanvátni gaskkal meta-order govain, gaskkal ja doaimmaheddjiid seagus, mii buktá sierralágán vuosttálaš ipmárdusaid "mii" vuogádat boazodollui lea. Dát čilge oasi dan observerejuvvon passivitehtas ja ráddjeduvvon návccat čoavdit váttisvuodaid. Dan dálá ráhkadusas stivrenguogádat doaimma ráddjehahtti eanet go geahpideaddji heivehanmunnái. Dan operatiivvalaš ortnet, vejolašvuodat heiveheapmái ja rievdamii leat oalle ráddjeduvvon. Dohkkehit stivrema teorehtalaš oaivila lea dagahan biđgema ja hástaleaddji heivehanmunni vuogádahkan kvalitehtii ja dainna deattuhii dan dehálaš rolla stivrema govain ja fápmu mearridit sihke heiveheami ja rievdama. Lea boahtán ovdan gii lea bággejuvvon heivehit, go govat ja stivreninterakšuvnnat leat ráhkaduvvon, ja got sierra sosio-politihkkalaš oassálastit sáhttet váikkuhit dain stirenguogádagaid ja interakšuvnnaid mat čadahuvvot das.

Eanet kritihkalaš ja empiralaš dutkan dárbbahuvvo ja boahttevaš iskamat dárbbahit veardidit balánsaheivehanmuni maid iežá vuđolaš árvvuid ja vuoigatvuodaid vuostá. Ferte rahčat vai galgá sáhttit ráhkadit buoret siskkáldas heiveheami stivrenosiin ja daid sosio-politihkalaš oassálastiin geat leat mielde. Dát dagahivčče eanet dássásaš stivreninterakšuvnnaid iežá vuogádagaiguin ja dan bokte lea veahkkin vai riiddut eai šatta nu stuorrát ja lasiha heivehanmuni.

Svensk sammanfattning

Vi lever i en komplex och sammanlänkad värld som är i ständig förändring. Under senare tid har, av människan orsakade, miljö- och klimatförändringar blivit verklighet på många platser runt om på jorden. Om detta vittnar inte minst FN:s klimatpanels, IPCC:s, senaste rapport. För att illustrera den enorma påverkan som människan har på vår planet har forskare börjat tala om en ny geologisk tidsålder, Antropocen, där människan är den drivande kraften på en global skala.

Detta ställer frågan om anpassningsbarhet på sin spets. Anpassningsbarhet (eller adaptabilitet som är det begrepp som avhandlingen använder) förstås här som förmågan att anpassa sig till störning och förändring, inklusive att hantera grundläggande förändring i ett systems dynamik. Vi är del av komplexa adaptiva system och måste därmed kunna hantera osäkerhet, dynamik och såväl linjära som icke linjära förändringsprocesser. Adaptabilitet förstås här därför i termer av *både* anpassning och transformation. Vi kan förmoda att behovet av adaptabilitet kommer att vara särskilt uttalat i de typer av system och sammanhang där människan är direkt sammankopplad med och omedelbart beroende av naturresurser. Av samma anledning har urfolk och naturresursberoende samhällen runt om i världen identifierats som särdeles utsatta för globala miljö- och klimatförändringar. Det gäller särskilt det norra halvklotet där modeller visar att klimatförändringar kommer att ske snabbare och vara mer omfattande än på de flesta andra platser. I Sverige är rennäringen den näring som anses vara bland de mest utsatta för pågående och förmodade klimatförändringar.

Renskötsel bedrivs idag på nära hälften av Sveriges yta. Renskötselrätten tillkommer samerna, Sveriges och Europas enda urfolk, och är baserad på urminnes hävd. Detta är en stark rätt som går att likställa med äganderätten. Renskötseln organiseras i samebyar (i Sverige finns 51 stycken) och för att kunna utöva renskötselrätten krävs medlemskap i en sameby. Eftersom renskötsel bedrivs på stora områden och på mark som ägs av både privata och statliga aktörer är det inte ovanligt att konflikter uppstår kring olika typer av nyttjanden, behov och värden kopplade till betesmarker och andra naturresurser. Denna typ av konflikter har tenderat att öka till följd av det ökande trycket mot Sápmi, samernas traditionella hemland. Eftersom renskötseln också är extremt styrd av väderförhållanden och tillgången på betesresurser anses rennäringen sårbar för pågående förändringar. Sammantaget pekar detta på att adaptabiliteten inom rennäringen kan antas vara låg. Samtidigt har en bild präglad av resiliens och motståndskraft länge omgärdat renskötseln. Man menar att renskötseln har visat en särdeles god förmåga att hantera just storskalig förändring av olika slag. Detta indikerar,

till skillnad från ovanstående förståelse, en hög grad av adaptabilitet. Även om dessa två beskrivningar kan tyckas motsägelsefulla visar avhandlingen att det finns belägg för båda. Framförallt understryker denna spänning det empiriska behovet av att undersöka adaptabilitet inom rennärings- och vittnar om att rennärings- är ett teoretiskt intressant fall som kan tänkas bidra med insikter gällande både hinder och förutsättningar för adaptabilitet.

De frågor som avhandlingen tar sitt avstamp i, den globala miljö- och klimatproblematiken, är av sådan komplex och sammanlänkad natur att enskilda aktörer inte kan anses ha vare sig kunskap, förmåga eller legitimitet att på egen hand lösa dem. Den typ av adaptabilitet som avhandlingen främst intresserar sig för ses därför som en funktion av sociopolitiska interaktioner som utspelar sig mellan en mängd olika aktörer, skalor och nivåer. Kortfattat kan man säga att denna syn på adaptabilitet ställer stora krav på institutioner och styrningssystem eftersom dessa traditionellt sett har präglats av en mer ensidig statlig, hierarkisk styrning. I litteraturen berörs denna spänning i uttrycket "från government till governance". Governance (ungefär nya styrningsformer) saknar en bra översättning i den svenska litteraturen men kan förstås som en komplex process av interaktioner mellan olika typer av aktörer (statliga, icke-statliga och marknadsbaserade) som syftar till kollektiv problemformulering och problemlösning. Frågan om hur våra styrningssystem kan hantera nya typer av utmaningar genom nya former för interaktioner har börjat röna ett stort intresse inom den samhälls- och statsvetenskapliga litteraturen men empiriska undersökningar med detta fokus är än så länge inte vanliga. Vår kunskap om hur globala förändringsprocesser kommer att utspela sig på den lokala nivån och vilken roll styrning har i denna process är därför begränsad.

Syftet med den här avhandlingen är därför att utforska adaptabilitet utifrån ett governance-teoretiskt perspektiv med rennärings- i Sverige som fall. Avhandlingen ämnar därmed bidra till den växande governance-litteraturen, den teoretiska förståelsen av adaptabilitet som koncept samt med efterfrågad empirisk kunskap i ett fält som för nuvarande präglas av en mängd utmaningar.

När avhandlingsarbetet startade var frågan om adaptabilitet i ropet men inte väl utforskad. Sedan dess har litteraturen ökat i omfång, inte minst inom klimatforskningen. Den rena anpassningslitteraturen har mer och mer börjat skilja på gradvis anpassning och transformation, det vill säga grundläggande systemförändring. Rent empiriskt är dock relationen mellan anpassning och transformation relativt outforskad. Anpassningsfrågor har rönt betydligt större intresse och uppmärksamhet, och den forskning som har varit fokuserad på transformationer har nästan uteslutande varit tillbakablickande. Detta angreppssätt skiljer sig från den här avhandlingen som istället utgår ifrån att anpassning och transformation kan ses som

alternativa policy- och styrningsstrategier. I avhandlingens terminologi omfattar alltså begreppet adaptabilitet såväl anpassning som transformation.

Teoretiskt sett utgår avhandlingen ifrån Kooimans interaktiva governance ramverk. Det möjliggör en flerdimensionell analys av styrning som fokuserar både på strukturer och intentioner. I enlighet med Kooimans terminologi förstås strukturer i termer av styrningsformer (*modes*) och styrningens idémässiga dimension och intention omfattas av så kallade styrningselement (*elements*). Styrningssystem kan, idealt sett, delas upp i tre olika typer av styrningsformer: självstyre (*self-governance*), samstyre (*co-governance*) eller hierarkiskt styre (*hierarchical governance*). Styrningselementen omfattas i sin tur av bilder (*images*), instrument (*instruments*) och praktik (*action*).

Trots att ramverket är konceptuellt omfångsrikt, har det sällan omsatts i praktiken. Avhandlingen gör därmed ett konkret bidrag till den interaktiva governance-litteraturen, och till styrningslitteraturen överlag, genom att arbeta fram ett analytiskt ramverk för operationalisering av hur styrningens strukturer och intentioner bättre kan förstås och undersökas i praktiken. Operationaliseringen bygger på att identifiera styrningselement på olika nivåer – den så kallade operativa problemlösande nivån (*operational order*), den institutionella nivån som utgörs av regelverk och arenor för interaktioner (*institutional order*) samt metanivån där styrningens normer och värderingar formuleras och upprätthålls (*meta-order*) – baserat på de ideala styrningssätten (för en fördjupning, se papper II). Eftersom styrningslitteraturen generellt sett är snårig och många forskare pekar på svårigheter att empiriskt studera fenomenet governance så är detta ett viktigt bidrag avhandlingen gör.

Utrustad med dessa teoretiska och analytiska verktyg besvarar avhandlingen följande frågor:

- 1) Hur styrs rennäringssektorn idag och hur har styrningen förändrats över tid?
- 2) Hur påverkar styrningssystemet möjligheterna för anpassning och transformation?
- 3) Hur bidrar ett governance-teoretiskt perspektiv till vår förståelse av adaptabilitet?

Med hjälp av en kvalitativ och fallstudieorienterad forskningsdesign utforskas adaptabilitet i de olika papprena både empiriskt och teoretiskt. Studierna spänner över nationell och lokal nivå, den sistnämnda genom en fallstudie av Vilhelmina norra sameby i Västerbottens län. Med andra ord så omfattar avhandlingen styrningens samtliga nivåer – den operativa, institutionella och metanivån. Metoderna inkluderar såväl dokumentanalys

som intervjuer, fokusgrupper och deltagande observationer. De studier som fokuserar den operativa nivå, och således på renskötselns utmaningar och möjligheter i praktiken, har genomförts i nära samarbete med Vilhelmina norra sameby utifrån en så kallad kollaborativ metod.

När det kommer till resultat vill jag i den här sammanfattningen lyfta fram tre huvudsakliga slutsatser som är tydligt kopplade till avhandlingens forskningsfrågor och övergripande syfte. Den första rör hur rennäringen styrs. Analysen visar att styrningen av rennäringen till stor del präglas av motsättningar, politiskt icke-agerande, hierarkisk styrning och att styrningssystemet är statiskt, med lite förändring över tid. Den tydliga tendensen mot fortsatt hierarkisk styrning är anmärkningsvärd med tanke på det normativa skifte som styrningslitteraturen i stort, och naturresurslitteraturen i synnerhet, har genomgått.

En grundläggande problematik återfinns i aktörsinterna motsättningar, i det här fallet hur staten som är den dominerande aktören, konstruerar styrningens element. Detta gäller samtliga element (bilder, instrument och praktik) men är särskilt synligt i analysen av styrningsbilder. Detta visar på att det finns inkonsekvenser i hur rennäringen förstås och behandlas – den ses till exempel både som en unik kulturell yttring och som en industri vilken som helst.

Ett annat problem är att skillnaderna är stora i hur rennäringens aktörer och statliga aktörer uppfattar rennäringen som praktik, hur den ska styras, vilka problemen och lösningarna är, samt vem som ska ha inflytande över att definiera detta. Förutom att dessa skillnader påverkar styrningssystemets problemlösningskapacitet, finns det också andra normativa mätstickor gentemot vilka denna utveckling bör ställas. Här talar jag huvudsakligen om urfolks, och därmed samernas, rätt till självbestämmande. Självstyre (i termer av self-governance) kan ses som en begränsad del av självbestämmande. Självbestämmande innefattar ett folks rätt att själva bestämma över sin politiska status och sociala, ekonomiska och kulturella utveckling. FN:s Deklaration om Urfolksrätt (UNDRIP), som Sverige undertecknat, understryker dessutom urfolks rätt till kontroll över traditionella marker och naturresurser. Att rennäringen som politikområde därför borde vara ett föremål för ökat självstyre är tämligen självklart. Avhandlingen visar dock att det i dagsläget saknas förutsättningar för självstyre inom rennäringen och, liksom tidigare forskning visar, att det även saknas förutsättningar för samstyre och samverkan med andra aktörer under jämlika former. Med tanke på rennäringens extensiva natur är detta särdeles problematiskt.

Avhandlingens andra slutsats rör styrningssystemets begränsade problemlösningskapacitet i termer av adaptabilitet. Studierna i denna avhandling visar att möjligheter till både anpassning och transformation är starkt begränsade och vidare att detta kan ses som en direkt konsekvens av

hur styrningssystemet är utformat. Det saknas återkoppling mellan olika nivåer inom systemet men också med andra interagerande styrningssystem (såsom skogsbruket). Det vill säga, eftersom rennärings utövas extensivt sker ett ständigt samspel med andra markanvändare och intressen. Även om klimatförändring upplevs som problematiskt identifierar renskötarna *inte* klimatförändring som det största hotet mot renskötseln. Tvärtom menar dem, fanns bara möjligheten att implementera kort- och långsiktiga strategier – såsom att flexibelt nyttja och bibehålla ett varierat och sammanlänkat landskap – skulle många hinder kunna överkommas. Det som snarare begränsar anpassningsmöjligheterna är den konkurrerande markanvändningen och renskötarnas avsaknad av påverkansmöjligheter på hur styrningssystemet är utformat. I dagsläget saknas med andra ord reella arenor och verktyg för samverkan. Även rättighetsaspekterna skulle behöva förtydligas och stärkas. Sammanfattningsvis är renskötarnas direkta möjligheter att agera begränsade, och makten över den situation och de sammanhang som de befinner sig i och tvingas agera utifrån är än mer begränsad.

Adaptabilitet har därmed visat sig vara en högst komplex fråga som enstaka aktörer knappast har förmåga att hantera. Genom att utforska adaptabilitet utifrån ett governance-perspektiv har avhandlingen bidragit till att belysa den avgörande roll som styrningsbilder och makt har för möjligheterna till anpassning och transformation. Resultaten visar att den aktör (som i fallet med rennärings är svenska staten) som har makten att definiera bilderna av vad det är som styrs också formar förutsättningarna för adaptabilitet. Detta tar sig uttryck i termer av vem som tvingas till anpassning, vilka instrument aktörer har tillgång till, hur de kan agera och vilka anpassningsåtgärder som är möjliga att genomföra, samt hur de själva kan vara med och forma detta utrymme och dessa förutsättningar.

Sammanfattningsvis efterlyser avhandlingen vidare empirisk och kritisk forskning kring adaptabilitet. Forskning, liksom politisk styrning, bör ta hänsyn till och balansera behovet och kostnaderna för adaptabilitet mot andra fundamentala värden och rättigheter. En rekommendation i det specifika fallet med rennärings är att genomföra en politisk översyn av styrningssystemet för att i större utsträckning möjliggöra att governance, i termer av gemensamt problemlösande och problemlösande, kan ta konkret form. Styrningssystemet behöver även balanseras mot andra system (som skogsbruk, vindkraft, gruvnäring och så vidare) för att möjliggöra förutsättningar för mer jämlika interaktioner och samstyre över de resurser som nyttjas gemensamt. Så är inte fallet idag. Priset betalar än så länge de enskilda renskötarna och samebyarna.

Preface and acknowledgements

Now is the time of *gijredaelvi*, the spring-winter and the last of the eight Sami seasons. Soon we enter into May when the reindeer calves are born and the year starts anew. It therefore feels somewhat symbolic to be writing these very last words in my thesis at this particular time. After nearly six years of hard work, it is finally time to let this baby go and start anew.

I could not have done this journey without the help and support of many people along the way. I am grateful to you all. First, I want to thank all members of Vilhelmina norra sameby who have shared your knowledge, time and experiences with me. I could not have completed this thesis without your collaboration. Thank you! I specifically want to thank Marita Stinnerbom, who has helped me in every possible way and taught me a lot, thank you so much!

Then there is of course the team of supervisors that have tried their best to keep me en route during the course of work. Camilla, my deepest thanks for being a great supervisor and friend! Even though I will never quite understand how you manage to juggle all projects, papers and PhD-students all at once, you have always had time for discussions and conversations, long or short. I also want to thank your family for letting me stay over, and even trusting to let a Stockholm-girl like me into the reindeer corral. Carina, thanks for helpful advice and insightful readings, particularly in the beginning of my PhD. Patrik, even though I know you sometimes wondered what you as a historian were doing supervising a political scientist, I have always trusted your judgement and I am grateful that you let me tap in on your immense knowledge in the historical field. Many thanks also to the bigger project team of which this PhD was part; especially to Jon Moen, Isabelle Brännlund, Åsa Össbo and Tim Horstkotte for great discussions and fun times. Most of my empirical data was gathered as part of a collaborative research project funded by the Sami parliament and I therefore particularly want to acknowledge the project team – Karin Baer, Marita Stinnerbom, Per Sandström and Camilla Sandström. I am also grateful to have received funding for this PhD from FORMAS, and additional funding for trips and conferences from Gösta Skoglund's fond and SSEESS.

Thank you also to friends and colleagues, past and present, at the Department of Political Science for many great discussions; in the higher seminar and out on the balcony. Specifically I want to thank Johanna Johansson, Marie Olsson, Anna Zachrisson, Sara Carlbaum, Janne Jämte and Elsa Reimerson – I am grateful for your friendship and, as always, brilliant comments and support. Thanks also to Katarina Eckerberg who convinced me to apply for this position and who always has been generous with knowledge, ideas and, not least, hosting dinner parties for the 'green

corner’ – a great group that made my time in Umeå so much more inspiring. Other people that I want to thank include everyone at Cesam where I have always felt welcome and NorrSam in particular for providing such an important arena and fun place to be! I have learnt so much from our discussions. Thank you also to Lisa Westerhoff, Sirkku Juhola and Johanna Liljefeldt who became great friends and helped me survive the first year!

Some of you have read earlier versions of this thesis and its appended papers and to you I am particularly grateful for providing me with insightful comments and advice – thanks to Anna-Lill Ledman, Johanna Johansson, Anders Steinwall and Anna Palmgren. I especially want to thank Elsa Reimerson and Ulf Mörkenstam who did a great job in reviewing the manuscript for the pre-dissertation. I am also indebted to Christina Boström who helped me out with all sorts of practical matters, thank you for all your help! Thank you also to Mats Borrie for helping me with the maps, to Anna-Maria Fjellström for letting me use your beautiful picture as a front cover and to Miliana Baer who translated the abstract into North Sami on such short notice!

Whereas I formally started my PhD here at Umeå University six years ago, I think it actually started long before then. Spending time in Handöl in Jämtland as a child, gave me the chance to meet with reindeer herders and learn a different story and, perhaps more importantly, a different *history*. The interest and curiosity that was awakened then took me, a few years later, to New Zealand where I spent a year as an exchange student. I am forever grateful to my New Zealand family (Kay, Richard, Matthew and Cameron) for taking care of me and letting me become a member of your *whanua*. I cannot thank you enough! My time at Stockholm Resilience Centre and all the fabulous people there have also inspired this thesis greatly.

Most of course, my love goes out to my family and friends in Stockholm. I have missed you all so much and cannot wait to come home! I’m blessed to have so many fantastic people in my life and I especially want to thank Ylva and Carro –the self-proclaimed party committee. I also want to thank my mum for always believing in me and for providing me with the chance to do what I believe in. Thanks to Marie, Albert, Freja and Elsa for all your support and love, and the endless watering of plants and picking me up when I coming home. To mormor Elsie who always wanted me to become a “doktor”, although maybe of a different kind. And of course to Mats. I really could not have done this without you. You are amazing, my best friend and my rock. I love you.

Annette Löf,
April 2014

Acronyms and abbreviations

CAB	County administrative board (<i>länsstyrelse</i>)
GS	Governing system
ILO	International Labour Organisation
RBP	Land use plans for reindeer husbandry (<i>renbruksplaner</i>)
RHC	Reindeer herding community (<i>sameby</i>)
RMR	Reindeer management right
SES	Social-ecological system
SSR	Swedish Sami Association (<i>Svenska Samernas Riksförbund</i>)
UN	United Nations
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples
VNRHC	Vilhelmina North reindeer herding community (<i>Vilhelmina norra sameby</i>)

Introduction

This thesis explores adaptability from a governance-theoretical perspective in the case of reindeer husbandry in Sweden. In doing so, it addresses several topical issues and emerging theoretical themes, many of which are empirically understudied. This includes for example the impacts of global climate change processes on the local level and the role of governing systems in restricting or facilitating adaptation action. It includes advancing an understanding of adaptability that incorporates also the notion of transformation. It moreover entails analysing the governing of an Indigenous Sami practice that is currently under immense pressure. Whether the reader has an interest in governance, climate change, Indigenous natural resource regimes and/or Sami reindeer husbandry in particular, the thesis will provide some intellectual sustenance. The thesis begins however, by introducing one of its underlying assumptions – namely that how we govern and are governed matters.

How to govern has preoccupied the minds of political thinkers and governors for a long time. In recent decades, the matter has gained renewed interest due to empirical observations of changes in styles and modes of governing, which sometimes is referred to as ‘a shift from government to governance’. In reality however, it is not that simple. The supposed novelty of ‘new’ forms of governing can be questioned and government demonstrates continued importance in many sectors (see e.g. Treib et al. 2007; Bäckstrand et al. 2010b; Torfing et al. 2011; Baker and Eckerberg 2014). However, a distinctive shift *has* occurred in terms of how we think about and theorise governing. We no longer take for granted that the locus of political power resides with the state and governing is increasingly conceptualised in terms of multidirectional interactions rather than top-down steering (Pierre 2000; Kooiman 2003; Kjær 2004; Pierre and Peters 2005; Torfing et al. 2011).

This theoretical development and reconceptualising could be a reflection of the changing character of the governing issues that need resolving. That is, the growing scholarly interest in governance could be seen as a reflection of perceived institutional incapacity and insufficiency of traditional forms of governing in dealing with the nature of many contemporary problems (Duit et al. 2010; Torfing et al. 2011:33). For example, across a wide variety of disciplines there is a growing recognition of systemic interconnectedness across scales (see e.g. Held and McGrew 2000). Interconnectedness essentially implies that our activities may have consequences travelling far beyond our immediate spatial and temporal awareness and, vice versa, that many activities are affected by processes operating at other scales. This, in turn, implies a high degree of complexity and uncertainty which governing systems need to be able to deal with. It is true that our world has always been

interconnected, dynamic and complex but many contemporary challenges are non-analogous and therefore require specific consideration of these dimensions. This refers specifically to the field of human-environment relations.

At a global scale, human impact on biophysical processes has never been greater. Scholars have therefore introduced the term the Anthropocene – the new geological era where humans for the first time in history are the major driving force at a planetary scale (see Steffen and Tyson 2001). This is a powerful statement of human ingenuity. However, we also see evidence of potentially dangerous global environmental and climate change and many ecosystems at the local and regional scale have lost capacity to provide a steady flow of services and goods around which societies have organised (MA 2005b; IPCC 2007; Steffen et al. 2007; Rockström et al. 2009; IPCC 2014).

Issues like climate change therefore have a fundamental human dimension. They are moreover examples of highly political issues with widespread impacts that no single actor alone has the necessary power, capability or authority to solve. On the contrary, interactions across levels and scales, between different actors and between different knowledge systems, will likely be needed in order to address their causes and consequences (Kooiman 2003; Pierre and Peters 2005; Biermann 2007; Duit et al. 2010). In other words, for issues like climate change there may be a need to move towards a more governance-oriented understanding of governing practices. How to deal with the complexity and systemic interconnectedness of many of our time's most pressing socio-political issues has consequently been recognised as a key challenge in the contemporary governance literature (Kooiman 2003; Pierre and Peters 2005; Duit and Galaz 2008; Rockström et al. 2009; Peters 2011; Torfing et al. 2011).

Whereas the literature on institutional change in many other sectors is substantial, our knowledge of the institutional dynamics of environmental and resource regimes is comparatively underdeveloped (Young et al. 2008; Young 2010). In fact, how to deal with ecological and social-ecological complexity across scales is only a relatively recent concern in the field of political science. Several of the emerging approaches have focused on theory development and might classify as prescriptive or typological in the sense that they gravitate towards developing ideal governance typologies or designs. Different relevant viewpoints include the literature on governing complexity (Pierre and Peters 2005; Duit and Galaz 2008; Duit et al. 2010; Loorbach 2010), adaptive co-management, adaptive governance and adaptive institutions (Folke et al. 2005; Olsson et al. 2006; Berkes et al. 2007; Plummer and Armitage 2010; Boyd and Folke 2012), reflexive governance for sustainable development (Voß et al. 2006), earth system governance (Biermann 2007) and interactive governance approaches (Kooiman 2003; Torfing et al. 2011). Whilst these clusters emphasise

different scales of governing, different challenges and slightly different solutions they all share an emphasis on an inherent need for *adaptability*.

The need for adaptability is likely to be particularly pronounced in tightly coupled human-environmental (or social-ecological) systems, also known as environmental and resource regimes (Young 2010). The literature similarly tells us that Indigenous and natural resource based communities will be particularly exposed to ongoing and projected global environmental and climate change (Huntington et al. 2005; Abate and Kronk Warner 2013). In the Swedish context, reindeer husbandry is an example of such a resource regime, which is identified as particularly exposed and sensitive. This thesis therefore turns to exploring adaptability in the case of reindeer husbandry, with a particular focus on adaptability to climate change. To be clear, reindeer husbandry has *not* been selected in order to make generalisations to a defined population (see e.g. George and Bennett 2005; Gerring 2007) but rather on the basis of analytical generalisation (Yin 2009) and empirical urgency. There are many knowledge gaps surrounding the topic and meanwhile the pressure on the reindeer herding lands is dramatically increasing.

Reindeer husbandry is a resource regime with strong human-environment (or social-ecological) connections (Forbes et al. 2006; Tyler et al. 2007; Mathiesen et al. 2013). The practice of reindeer herding (see also chapter four) is dynamic and extensive, taking place over vast areas (estimated figures vary between 30 % (Department of Rural Affairs 2012) and 50% (Sami Parliament 2007)) of the Swedish land surface. Most herds seasonally migrate between the mountainous summer lands towards the Norwegian border and the forested winter lands near coastal areas. Reindeer graze for forage and their movement through the landscape is the result of complex interactions between weather and grazing conditions, reindeer mobility and habitat selection, and herders' decisions.

Reindeer husbandry is commonly considered a traditional and highly adaptive practice, well fitted to its ecological niche (Forbes et al. 2006; Tyler et al. 2007). Reindeer management has been described as “one of the oldest and most resilient forms of livelihood in the [Barents Euro-Arctic] region.” (Forbes 2006:12). Traditional governance structures such as *siida* working groups has promoted flexibility and diversity (Mathiesen et al. 2013) and Sami snow terminology has contributed to successful adaptation (Maggä 2006). At the same time, reindeer husbandry is identified as exposed and vulnerable to climate change, at the circumpolar scale (Jernsletten and Klokov 2002; Forbes et al. 2006; Pape and Löffler 2012) as well as in the Swedish context (SOU 2007:60). As a natural resource based practice in the North the implications of climate change are expected to be particularly severe (ACIA 2005; Oskal et al. 2009; Arctic Council 2013). Scholars have moreover argued that multiple land use conflicts over land and resources

could threaten the entire industry in certain areas (Jernsletten and Klovov 2002). Consequently, this tension deserves empirical address. Should we expect high or low levels of adaptability? From a theoretical viewpoint, this tension adds further interest in the case since it suggests that insights regarding both sources for adaptability, as well as potential obstacles, might be collected.

Reindeer husbandry is also an *Indigenous* Sami practice. This spurs interest in the case from a purely governance-theoretical point of view. That is, distinctive normative shifts with implications for governing practices have occurred internationally. The international system has over the past 50 years undergone substantial change, visible in a distinctive jurisprudence regarding Indigenous peoples.

This jurisprudence, which elaborates on indigenous peoples' rights to self-determination, cultural integrity and control over ancestral lands and resources, provides a platform for indigenous peoples to challenge the affronts of state development. (Aponte Miranda 2013:39)

Even though Sweden has not signed the ILO Convention No.169 on Indigenous and Tribal Peoples (recognised as a particularly important legal instrument) Sweden adopted in 2007 the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). Like the ILO Convention No.169 the declaration reaffirms Indigenous peoples' right to self-determination and specifically in relation to control over traditional lands and natural resources. As a traditional and natural resource based livelihood, as well as a cultural expression, reindeer husbandry should qualify under this principle. However, whether international development has translated to changes in governing practices at the national level has been questioned both scholars as well as by the United Nations Special Rapporteur on the Rights of Indigenous Peoples (Mörkenstam 2005; Anaya 2011; Lawrence and Mörkenstam 2012; Abate and Kronk Warner 2013). This adds further urgency to subjecting the governing system of reindeer husbandry to empirical analysis.

The literature on more general Sami issues is extensive, but few studies have focused the current situation of reindeer husbandry in Sweden from a governance perspective (but see for instance Sandström and Widmark 2007; Keskitalo 2008a). Our knowledge of how reindeer husbandry is governed is therefore limited. In a recent review of reindeer husbandry research in Northern Europe it was moreover recognised that systemic and transdisciplinary approaches which focus on the ability to adapt to climate change constitute *the* major research need and challenge for the future (Pape and Löffler 2012). The Sami Parliament in Sweden has similarly recognised a need for more research on how climate change will impact herding

conditions and what opportunities for adaptation are available (see Löff et al. 2012).

In other words, reindeer husbandry cannot only be assumed to constitute a rich source of information and illustration of the topics in focus in this thesis, but practitioners, policy makers and scholars alike moreover identify the issues raised as pressing. Exploring the nexus of adaptability and governance in the case of Sami reindeer husbandry in Sweden therefore finds both theoretical and empirical grounds.

The initial conceptualisation of adaptability collects inspiration from a so-called 'resilience perspective'. What this means and what the implications are, are discussed in greater detail in paper I and in chapter two, but in short, a 'resilience perspective' directs attention to cross-scale and non-linear human-environment (or social-ecological) interactions and suggests adopting a systems approach to the study of adaptability. It moreover introduces the likelihood of multiple stability domains which challenges equilibristic ontologies. Based on a 'resilience perspective' adaptability is therefore conceptualised as a system trait which requires ability to deal with disturbances both in terms of *adaptation* and *transformation* (see paper I).

This is an important distinction to make which is increasingly being recognised in the literature (see chapter two). General ideas of adaptation are certainly not unfamiliar to the discipline of political science, especially not for those who consult new institutional theory (a predecessor to governance thinking). These scholars have viewed the balance between needs for stability and change as a longstanding institutional and governing dilemma (see for example March and Olsen 1989). However, the explicit focus on dynamic change which follows as a consequence of adaptability does challenge the conventional view and mainstream political and institutional theories which have tended to emphasise stability rather than creation of conditions for dynamic interaction and change (see e.g. Hay 2002). Adopting a 'resilience perspective' can thus be seen as a potential way of rethinking problems, challenges and solutions and consequently contribute in identifying weaknesses and strengths with contemporary governance systems (see for instance the special issue in *Global Environmental Change* 2010:3).

This thesis adopts a governance-theoretical approach where governance is broadly understood as *structured processes where different social and political actors interact in order to formulate common problems or achieve common goals* (see Kooiman 2003; Torfing et al. 2011). Governance thus offers an analytical entry point into exploring cross-scale and socio-political interactions and, as an empirical phenomenon, is believed to hold potential for increasing societal problem-solving capacity.

The promises ascribed to governance are a simple inversion of the problems associated with traditional forms of hierarchical government, which are often accused of being too closed, formalistic, narrow-minded, conservative, rigid, uncoordinated, and exclusive. (Torfing et al. 2011:9)

Governance, in terms of increased involvement and participation of non-state actors, is frequently assumed to generate a host of benefits, for example enhanced legitimacy, efficiency, compliance, transparency and democratisation (e.g. Huitema et al. 2009; Bäckstrand et al. 2010a). These ideas have gained particular foothold in natural resource management and environmental governance, and is reflected both in theory and policy development. In practice however, *how* the supposed transition towards governance has taken place in various sectors and whether or not current governing systems actually produce these expected outcomes remain empirical, and context-specific, queries. Therefore, conceptualised in broadest possible sense, also a critical governance approach underpins this thesis.

Analytically, the thesis draws on Kooiman's (2003) oft-cited interactive governance framework. The framework pays explicit attention to governing agency, structure and outcomes. According to Kooiman (2003) governing processes can be seen as layered across three governing orders, ranging from the operational problem-solving order (such as daily reindeer herding activities), the institutional order (where institutions are maintained) and the meta-order (where governing norms are formulated and maintained). Viewing adaptability as a systemic quality thus entails exploring adaptability at these different governing orders. In addressing the recognised gap relating to empirical assessment of outcomes at the operational order (or local level), both in governance and climate adaptation studies (see paper III), considerable attention has here been rendered the operational order and thereby the perspectives of reindeer herders (paper III and IV). The thesis also addresses how governance structures and processes at higher orders are configured (paper II), how they restrict or facilitate adaptation agency (paper III) as well as opportunities for transformation at the operational order (paper IV). As already noted, in relation to adaptation to *what* particular emphasis is directed the challenges posed by climate change. However, climate change is viewed as one among several potential drivers and the study is therefore not restricted to exploring climate change in isolation.

It is against this backdrop the thesis is situated. Whereas political scientists have paid a great deal of attention to the nature of shifts in governing structures and processes, comparatively less attention has been awarded how governing capacity is becoming compromised due to interplays between inherent dynamics and complexity, and processes of global change. Novel challenges has increased the need for governing models which can deal with complexity (Duit et al. 2010) and this is especially relevant to

consider in relation to resource and environmental regimes (Young 2010). The need for empirical research is pressing and recognised as particularly pronounced in relation to *outcomes* of governing processes – what actually happens at an operational and local level where impacts will be felt? Meanwhile theoretically, scholarship is still in an explorative phase. Altogether, this opens up opportunity for novel and innovative research approaches that can increase our understanding of how we can govern for adaptability and what the specific needs and limitations are.

Purpose of the study

The overall purpose of the thesis is to explore adaptability from a governance-theoretical perspective in the case of reindeer husbandry in Sweden. The thesis thereby aims at contributing to the emerging literatures on governance and adaptability while addressing empirically identified needs. The thesis raises questions concerning the importance of adaptability, how it can be understood and explored in practice and how governing may restrict or facilitate adaptability at the operational order. Primarily the thesis will focus on exploring the following research questions:

- 1) *How is reindeer husbandry currently governed and how has the governing system changed over time?*

The question is explored mainly through a document study (paper II). Using the interactive governance framework, governing is analysed in terms of governing elements (images, instruments and action) and governing modes (self-governance, co-governance and hierarchical governance). Governing orders (operational, institutional and meta-order) are used to create a novel approach for operationalisation of the framework. In order to analyse change and thereby governing dynamics, a historical contextualisation, based on secondary sources, is provided which stretches from the late 19th century until today. The question of whether normative shifts towards more participatory forms of governance are reflected in also governing practices (including the principle of right to Sami self-determination) is addressed in paper II and in the discussion in chapter six.

- 2) *How does the governing system restrict or facilitate opportunities for adaptation and transformation?*

This question is explored through two empirical studies (paper III and IV) which focus on identified needs and opportunities for adaptation and transformation respectively, viewed from a reindeer herding point of view. Through a local level case study of a reindeer herding community¹ in Västerbotten county, Vilhelmina norra sameby (Vilhelmina North reindeer

¹ RHC translates into *sameby* in Swedish. For a discussion on terminology, see chapter 3.

herding community (VNRHC)) focus is consequently directed at exploring the challenges herders face at the operational order of governance. Specifically the study investigates how climate change impacts herding activities and whether key challenges identified can be met through processes of adaptation (paper III), whether transformation may be required and, if so, what instruments can be used and what opportunities are available (paper IV).

3) How can a governance-theoretical perspective contribute to our understanding of adaptability?

Through a theoretical-analytical exploration (paper I) drawing on resilience, governance and learning literature a contribution is made to the conceptual mapping of adaptability alongside the identification of potential mechanisms for adaptation and transformation in governance systems. The issue is then explored throughout the thesis (particularly in paper III and IV and in chapter six) using Kooiman's (2003) interactive governance framework as a point of departure.

Outline of the thesis

The thesis is divided in two main parts. The first part consists of six chapters, which begin by introducing the research problem and aim of the study (chapter 1). It then proceeds to map the analytical approach and research design (chapter 2 and 3). Reindeer husbandry is thereafter introduced in more detail and the study is situated against previous research within the field (chapter 4). The following section summarises the findings from the appended papers (chapter 5). The thesis thereafter proceeds with a discussion on the challenge of adaptability in reindeer husbandry in Sweden and how, in turn, the notion of adaptability might be challenged as a result of the approach undertaken in this thesis (chapter 6). The second part of the thesis consists of the appended papers (I-IV). Published papers have been reprinted with permission. Figure 1 illustrates the orientation of the papers in terms of their empirical or theoretical focus and the order of governance each study focuses on.

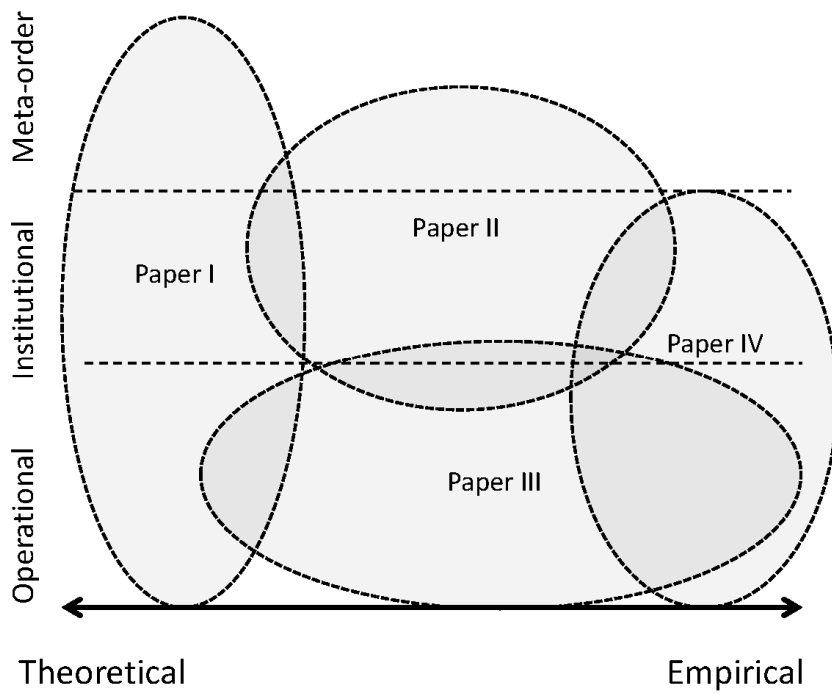


Figure 1. Scope and organization of appended papers in the thesis.

Adaptability and interactive governance

In diverse, dynamic and complex areas of social activity no single governing agency is able to realise legitimate and effective governing by itself. (Kooiman 2003:3)

A major concern in this thesis is governance, and specifically the outcomes of governance. It is assumed that how we organise and interact – how we govern and are governed – matters. It is also assumed that many issues that currently constitute key challenges and need resolving are of a complex and cross-scale nature, and that this applies to even greater extent to governing systems dealing specifically with human-environment interactions. Therefore, when it comes to challenges such as climate change, which is of global origin but with localised impacts, no single actor alone has sufficient capacity for effective governing. *Governance* in terms of problem-seeking and problem-solving interactions across scales and between private and public actors thus seems a necessary requirement to be able to respond to this challenge (Kooiman 2003; Pierre and Peters 2005; Pierre and Sundström 2009; Duit et al. 2010; Young 2010; Peters 2011).

Governance: a prescriptive, response and theoretical approach

At a grand scale, the governing landscape is changing; new actors enter into governing arenas and traditional governing mechanisms are being complemented or supplemented by network oriented arrangements. This process is discernible on all levels and in many sectors; the public, private and semi-private spheres (Kooiman 2003; Bache and Flinders 2004; van Kersbergen and van Waarden 2004) and especially in relation to the fields of environment and natural resources (Bäckstrand et al. 2010a). Some scholars have interpreted this development as a move towards more inclusive and participatory forms of public governing; a “deliberative turn” (Bäckstrand et al. 2010b) which holds potential promise for more efficient, transparent and legitimate governing processes. Governance is along similar lines often treated as a normative prescriptive, advocated on the grounds that broad participation is desirable and a measure of democracy (see e.g. van Kersbergen and van Waarden 2004; Kooiman et al. 2008).

The ‘governance turn’ has also been interpreted in terms of institutional responses and thereby a testament that governing systems too are complex and dynamic systems reacting to a dynamic environment (e.g. Kooiman 2003; Duit et al. 2010). Governance is in this sense viewed from a functional perspective. That is, interdependence, complexity and uncertainty – features of contemporary society and governing challenges – are assumed to require inclusiveness and hence participatory forms of governance at all levels (Biermann 2007). Scholars have phrased this in terms of ‘double complexity’ (Galaz 2012) and a ‘diversity hypothesis’ – that, in order to govern

complexity, complexity needs to be matched in institutional structures (Duit et al. 2010). A related but perhaps more familiar way of reasoning has to do with perceived needs for institutional diversity which has been identified to be of key importance in natural resource management and environmental governance (see e.g. Becker and Ostrom 1995; Ostrom 2005; Young et al. 2008). Governance-oriented forms of governing are thus believed to have the potential to provide more responsive and flexible governing structures, which, through various mechanisms, could improve socio-political problem-solving capacity (Kooiman 2003; Pierre and Peters 2005; Torfing et al. 2011). Governance in the sense of more inclusive, participatory and diverse forms of governing can therefore be assumed necessary requirements in order to deal with complex or ‘wicked’ problems (Rittel and Webber 1973; Kooiman 2003; Pierre and Peters 2005; Biermann 2007; Klijn 2008).

However, these promises deserve a critical address and this brings us to governance as a theoretical approach, which still is viewed with some suspicion. For some scholars governance remains a highly criticised construct and a potentially ‘empty signifier’ (Colebatch 2009; Offe 2009). Debates have also been vivid concerning whether changes in the governing landscape encompasses a hollowing out of the state (e.g. Rhodes 1996) or whether central authority is simply dressing in a new guise, employing different tools (see Lundqvist 2001; Kooiman 2003; Marinetto 2003; Pierre and Peters 2005). The origin of such disputes may however partly be traced back to multiple governance discourses with vague and even contradictory definitions (see Rhodes 1996; Stoker 1998; Kjær 2004; van Kersbergen and van Waarden 2004; Jordan et al. 2005; Pierre and Peters 2005). Thus, the first step in embracing governance as theory must be to clarify what is meant by the term ‘governance’.

At its core governance can be understood as “a set of institutions and actors that are drawn from but also *beyond* government” (Stoker 1998:18, italics added). A governance perspective hence includes both structural and agency aspects and encompasses the full-range of emerging and self-organizing state-society interactions rather than just the purposeful efforts directed at controlling and steering society and societal sectors. It denotes that the public sector may continuously, but need not, occupy an important role in governing activities. In line with interactive governance approaches this thesis conceives of governance as a structured and complex, interactive process between social and political actors aiming to formulate and achieve common objectives (Kooiman 2003; Torfing et al. 2011).

Based on this conceptualisation, what is the likely added value of a governance-theoretical perspective? First of all, it has a broader scope than traditional approaches to governing and thereby directs attention to how different actors interact and collaborate, and to the consequences of those interactions (Torfing et al. 2011). The multidimensionality of a governance

approach has also lead scholars to argue that it is particularly suitable for situations characterised by high complexity, diversity (Kooiman 2003; Pierre and Peters 2005), shared resources, multiple actors, and persistent conflicts (Peters 2011). Characteristics which are all found in the present case of reindeer husbandry. Another potential strength is that problem-solving interactions are placed in focus. As Peters argue:

...an emphasis on governance enables the discipline of political science to recapture some its roots by focussing more explicitly on how the public sector, in conjunction with private sectors or alone, is capable of providing direction to society and economy. (Peters 2011:63)

From a governance-theoretical perspective an important aspect is thus to analyse *how* the state participates in or enables collective action – not refraining from viewing the state as potentially important and influential (see also Baker and Eckerberg 2014). Whereas the state can remain the main governor, it can also act more in terms of a facilitator or coordinator – governing from afar by for instance providing and defining the arenas for collaboration and interaction. Analyzing governance can therefore be said to entail unpacking processes and structures of rule and essentially concerns the balance between state intervention and societal autonomy (Treib et al. 2007). In this sense governance opens for a diagnostic and context-sensitive approach which allows for comparative analyses, or as Kjær holds:

Governance as an analytical framework and as theory directs us to the comparative questions of how, and through what institutional mechanisms, governing occurs in particular settings. (Kjær 2011:106)

There are thus many potential ways in which a governance-theoretical perspective could contribute. It can be applied broadly, offers opportunity to bring agency back into the study of institutions, provides ways to link different settings and levels and, moreover, holds potential to integrate questions of normative and empirical character, such as what is ‘good’ or ‘desired’ governance and whether governing interactions are able to produce these results (Peters 2011).

This said, governance as an empirical phenomenon is here approached not as a given but as a question, as are the outcomes of supposedly new forms of public governance. Adhering to similar logic, some governance scholars have as a main interest to study how the role of the state has (or has not) changed and how the state relates to other actors (e.g. Pierre and Sundström 2009; McNutt and Pal 2011). Others turn focus more towards governance outcomes at various dimensions, for instance the quality of governance and democratic implications (Bovaird and Löffler 2003; Hajer and Wagenaar 2003; Bäckstrand et al. 2010a) or whether and how new

forms of public, or even private, governance are able to create and sustain legitimacy or improve environmental impacts (see e.g. Johansson 2013). When it comes to outcomes of governance processes at the local level, a major focus in this thesis, this is however still in many regards an understudied aspect (Bäckstrand et al. 2010a; but see for example Baker and Eckerberg 2007; Keskitalo 2008; Johansson 2013).

To conclude, in this thesis governance as a *prescriptive* relates primarily as input to the discussion on the right to Sami self-determination and how this is reflected in current forms of governing in reindeer husbandry. Governance as a *function* is approached in terms of collective problem-seeking and problem-solving in the governing system of Swedish reindeer husbandry with analytical focus directed at adaptability to climate change. Governance as a *theoretical-analytical* approach collects its inspiration mainly from the interactive governance framework developed by Kooiman (2003) but can in broad terms be summarised as follows:

Governance theory is in essence a functional theory, arguing that the function of governing must be performed and then determining what structures perform this function, in what manner, and how well. (Torfing et al. 2011:72)

If governance provides one foundation for the study, adaptability provides the other. How adaptability can be conceptualised in more detail is the topic for paper I (Löf 2010). However, since adaptability plays a key role as an analytical concept in this thesis, this chapter proceeds by tracking how and why it was granted such importance.

From resilience to adaptability

It is tempting to argue, as many have, that the world we inhabit is more complex, interdependent and interconnected than ever before. Yet, what is important here is not whether contemporary levels of interdependence are unprecedented historically, but that we inhabit an interdependent world which must be analysed as such. The point is that conventional approaches to the social sciences, based on rigid disciplinary and sub-disciplinary fault lines and demarcations, do not prepare us well for a world of interdependence. (Hay 2002:5)

Interdependence captures the essence of the research problem here pursued. However, as the quote above purveys, this has not traditionally been a particularly strong field of analysis within the social sciences. Therefore this thesis has gathered inspiration from, what is here referred to as, a ‘resilience perspective’. Alternative labels that could have been used are an SES or a complexity perspective (see e.g. Duit and Galaz 2008; Teisman and Klijn 2008; Duit et al. 2010; Young 2010). Whereas these denominators are related, SES was a term coined by Berkes et al. (Berkes et al. 1998) to specifically bring attention to the need to integrate social and ecological

perspectives and stressing that the common tendency of de-connecting the social from the ecological was a major flaw which could render severe consequences for human well-being. Here 'resilience' is however used as it more clearly purveys the conceptual and theoretical heritage underlying the term.

Of lately, resilience has become a fashionable term, both in policy and in academia. It is for instance recognised as a key issue in the contemporary discourse on sustainable development (Sapountzaki 2007). Reviews of scientific studies using the term in relation to ecological, social or social-ecological systems (as opposed to psychological applications where it is also common but used somewhat differently) illustrate a steeply increasing curve over the past two decades (see e.g. Janssen et al. 2006). Colloquially resilience translates as 'buffer capacity' or recovery potential. In the academic literature it is however, broadly understood as *how much disturbance or shock can be absorbed while a system retains key functions*. It is important to note that some perspectives on resilience assume an environment of steady-state equilibrium where resilience is measured as resistance to disturbance and speed of recovery to an 'original state'. This is sometimes referred to as engineering resilience (Holling 1973; 2010). However, in dealing with ecosystem and human-environment interactions, as is the case here, a different conception of resilience is the one most often used. The reason is that ample empirical evidence shows that ecosystem dynamics often plays out according to a different logic than the above described. The 'father of resilience', C. S. Holling, demonstrated the existence of *multiple* stability domains and the non-linear dynamics characterising many ecological processes (Holling 1973). Today this is a common, though not universal, approach in ecology where ecosystems are increasingly understood in terms of complex adaptive systems (CASs).

This fundamental shift in understanding of ecological dynamics has major implications for ecosystem, natural resource and environmental governance and management. Thus, the relevance of these insights and propositions reaches far beyond a 'pure' ecological domain. That is, human well-being is fundamentally dependent on sustained and healthy ecosystems (both for the provisions of goods and services and for absorbing waste and emissions). Currently most global ecosystems are not being used or managed sustainably (MA 2005a) and human agency has been demonstrated a major driver for ecological dynamics, even at the global scale (Steffen et al. 2007). In cases where ecosystems have 'flipped' from one stability domain to another (often less desirable from a human point of view) a common explanation is that human agency has caused a loss of ecosystem resilience which in turn has resulted in a new set of, potentially irreversible, system dynamics (Gunderson 2000). Therefore, more recent applications conceptualise resilience as a social-ecological quality where it seen to encompass also

capacity for self-organisation, learning and adaptation to a dynamic environment. Resilience conceived from this viewpoint thus raises questions about (pro)actively managing and preparing for change – not just retroactively coping. For a more in-depth review of the development of resilience – as a concept and way of thinking – see for instance (Folke 2006; Walker et al. 2006; Walker and Salt 2006).

Contributions and limitations with a resilience perspective

Resilience seems to offer an alternative way of understanding ecological dynamics and human-environment interactions, especially when compared to dominant management paradigms based on principles such as maximum sustainable yield and ‘optimal’ harvesting rates (Holling 1996). However, the question is, how useful is it and what are its limitations?

Whereas potentially risking ‘conceptual stretching’ (Sartori 1970) resilience as a perspective has potential to bridge disciplines, policy and practice (Adger 2000). The study by Wilkinson (2012) shows for instance that resilience as a conceptual frame can transect sectoral and disciplinary interests in practical planning activities and agenda-setting. The strongest contribution, as I see it however, lies in its heuristic qualities. This apprehension also seems to be shared among resilience scholars (Walker et al. 2006; Walker and Salt 2006). As a heuristic, resilience directs our primary attention to systemic interconnectedness – how various social, political and ecological processes and components are linked across spatial and temporal scales; inherent and non-linear dynamics – requiring a focus on dealing with change rather than pursuing stability and recognition that interactions can lead to surprise; and multiple stability domains – the existence of thresholds over which a system can tip into an alternate state. Resilience thinking thus calls for integrated and systemic approaches and favours functions, processes, relations, interactions and feedbacks over isolated snapshots of specific moments (Norberg and Cumming 2008). According to Davoudi (2012:302) this “reflects a paradigm shift in how scientists think about the world” and could therefore potentially contribute with a fresh perspective on the implications of human-environment relations. However, how to translate these principles into research practice in the study of social-ecological systems is not an easy task. For one, the very definition of a social-ecological system requires difficult delimitations and is not a given. The question is, is it even possible to study an entire social-ecological system with all its various functions and components such as different actors and interest groups? What are the desirable functions of multiple-use social-ecological systems – are some more desirable than others – and, if so, who is to determine that?

Other propositions collected from ecological dynamics, such as the adaptive cycle, ecosystem resilience and functional diversity, have also

proven difficult to translate to the social dimension (see e.g. Adger 2000). Ironically it seems that systems that are partly intentionally designed and partly the result of self-organisation (and consequently to which governed systems belong) are too complex for a simple transfer of propositions derived from ecological complexity (Anderies et al. 2004). Rather than taking resilience thinking at face value, this thesis therefore uses it as a heuristic for thinking about social-ecological dynamics and interactions. That is, if we assume that social and ecological systems are inherently linked, and if ecological dynamics are characterised by non-linearity and the potential of thresholds, this in turn requires institutional flexibility, responsiveness and the ability of governing systems to deal with stress in an adaptive manner (Folke 2006). Hence the focus here devoted to *adaptability* (cf. to Adger's (2000) use of social resilience). Whereas explored in more detail in paper I, the understanding of multiple stability domains implies that adaptability consists of two essential functions – the capacity for adaptation and transformation. Therefore, following Walker and Salt (2006) adaptability is hereafter understood as the capacity to 1) *adapt* to disturbance and change and 2) navigate system *transformation*.

A focus on adaptability

When the work with this thesis began in 2008 the use of terms such as adaptation, adaptability, transformation and transformability was still somewhat unclear. Even though studies indicated that there were potential tradeoffs between the capacity to adapt and the capacity to transform (Walker et al. 2004) and that different policy choices therefore might be necessary, the distinction was rarely made.

Of the two, transformation has received considerably less attention in the resilience related literature, even though, in a sense, it condenses the core of the sustainability discourse (see e.g. Folke 2006) and particularly when it comes to climate change policy (Fünfgeld and McEvoy 2012). Supposed mechanisms behind these capacities were also frequently bulked together and captured in general statements of need for diversity, flexibility, learning, feedbacks, monitoring etc. The first study in this thesis (paper I) therefore set out to contribute to the conceptual mapping of adaptability and, using learning, governance and institutional change literature, track possible trade-offs between and mechanisms underlying the processes of adaptation and transformation.

Today the related literature has grown quite substantially. For example, in the climate adaptation literature, which is the most well developed scholarship on (anticipatory and reactive) adaptation, 'transformation' has over the last few years developed into a core concept (Adger et al. 2009; Nelson 2009; Kates et al. 2012; Mustelin et al. 2013). Some scholars conceive of so-called incremental and transformational adaptation to climate

change, where transformational adaptation is related to certain contexts where:

...vulnerabilities and risks may be so sizeable that they can be reduced only by novel or dramatically enlarged adaptations, or changes in their [geographic] locations. These are increasingly recognised in the climate impacts literature as transformational adaptations. (Kates et al. 2012:7156)

Adaptation, as traditionally conceived, is therefore an insufficient discourse. Transformational adaptations are in the literature often regarded in terms of technological adaptations, but the emphasis is slowly shifting towards more socio-political aspects that may “include fundamental changes in institutional arrangements, priorities and norms” (Kates et al. 2012:7156). This understanding reinforces the approach pursued here, namely that adaptability follows as a function of governance. Similarly, there are those who see the idea of transformation as a potential for a radical agenda (rather than conservative in terms of adaptation as returning to the status quo). Consequently, adaptability as conceived from a resilience perspective, might offer an important contribution to the broader adaptation literature (see Shaw 2012). Also at the global scale, in relation to sustainable development and global governance, scholars have similarly argued that ‘incrementalism’ has proved insufficient wherefore transformative structural change of global governance is needed (Biermann et al. 2012). Altogether, the support in the literature for the conceptualisation of adaptability here advanced seems to be increasing.

Backtracking the train of thought thus began in a ‘resilience perspective’, resulted in an analytical focus on adaptability which in turn is seen to require a governance perspective (see paper I, also Shaw 2012). This analytical approach speaks to some of the criticism that have been directed towards resilience thinking (see e.g. Cote and Nightingale 2012). As already noted key concerns relate to the transferability of propositions to social dynamics and contexts. Even though system dynamics may be similar (see e.g. Byrne 1998; Duit and Galaz 2008; Galaz 2012) specific considerations will be required in order to take account of socio-political aspects and theories therefore need to be refitted. Resilience scholars have moreover been criticised for down-playing the role of social dynamics, structures and human intentionality, and ignoring normative and political questions such as ‘whose’ resilience or resilience for ‘what’ (see e.g. Cote and Nightingale 2012; Davoudi 2012). Viewing the consequences of a resilience way of thinking from a more social science oriented perspective, as is the ambition here, could thus provide some remedy. Bibliometric studies have moreover shown that even though resilience is closely related to other concepts such as vulnerability and human adaptation (Gallopín 2006; Smit and Wandel 2006) it has developed in relative isolation from these literatures (Janssen et al. 2006). It can

therefore be assumed that resilience thinking stands to benefit from a closer integration with other perspectives and literatures.

Integration with a governance perspective

It would be wrong to suggest that the ideas that follow from resilience thinking are entirely new. However, thinking in terms of open systems, holistic approaches rather than reductionist, multiple instead of single equilibrium, and focussing on change over stability is not entirely in the mainstream of social and political science. Yet, as many scholars before me have shown, the potential for integration between complexity and resilience on the one hand, and governance theory on the other, seem promising and worth pursuing. Young (2010) argues for instance that the idea of open systems approaches is relatively easily applicable to governing systems:

Environmental and resource regimes – from the local level to the global level – consist of systems in the sense of interconnected elements (e.g. assemblages of rights, rules and decision-making procedures) that are organised around functions or purposes (e.g. managing human activities affecting large marine ecosystems or LMEs for sustainability) and that are differentiable from their environments (which may include other institutions). (Young 2010:379)

Even though the *idea* may seem easily transferable, this does not mean that system boundaries are easily defined or delimited. On the contrary, this is a generic difficulty with all system studies and therefore a critical matter of analytical discretion (Anderies et al. 2004; Young 2010; Davoudi 2012).

Others point to the fact that policy and governing activities *always* have been conceptualised as complex wherefore an inherent openness for the here advanced underlying assumptions should exist (Teisman and Klijn 2008). For instance, already in the 1950's Lindblom perceived of policy making as the 'art of muddling through' (Lindblom 1959) and many policy scholars today view policy-making as a complex phenomenon and not one which plays out according to a linear logic. Yet, complexity as *theory* has rarely been employed in policy analysis (Teisman and Klijn 2008).

Ideas of transformation or fundamental institutional change are also old acquaintances within the social sciences. However, the common use of the term (or related terms such as revolutionary change) has often been used to denote large-scale societal change. The literature on institutional change has also focused primarily on externally triggered (rather than intentional or internally induced) change occurring over relatively short periods of time (abrupt change) conceptualised in terms of punctuated equilibriums, critical junctures and formative moments (see e.g. Rothstein 1992; Thelen 1999; Pierson 2000). These theories on the other hand provide only limited guidance as to why institutions change, and even lesser direction in terms of how change can be managed.

Altogether it is not surprising that several efforts to integrate resilience thinking and, subsequently the need for adaptability, with governance literature. The most well known are perhaps adaptive co-management and adaptive governance, which are both strongly, associated with resilience thinking. Adaptive co-management holds according to Huitema and colleagues (Huitema et al. 2009) four basic institutional prescriptions; collaboration in polycentric governance systems, public participation, an experimental (learning) approach, and bioregional management. Adaptive governance can be seen as an extension of adaptive co-management and entails according to Folke and colleagues (Folke et al. 2005) four similar components: understanding of ecosystem dynamics, combinations of different knowledge systems in management practices which is aimed at learning and responding to ecosystem feedbacks, fostering adaptive capacity to deal with change and surprise (including external drivers), and flexible institutions and networks linked through multi-level governance systems. The major difference between these approaches thus relate primarily to the *scale* of governing.

However, both adaptive co-management and adaptive governance are prescriptive rather than analytic and thus fall somewhat short in comparison to other more developed governance frameworks when it comes to analysing governance contextually. Also, how to integrate the above stipulations into existing governing systems (rather than innovating new ones) is left largely unanswered. For example, to include non-state stakeholders in decision-making, irrespective of level, presents a great challenge and has been referred to as a “wicked problem” in itself (Onyango and Jentoft 2010). There is no simple, nor single, formula for how to go about this – the challenge is contextual. Huitema et al. (2009) therefore underscores that the broader governance literature is particularly relevant to consult in order to better understand the possibilities and difficulties with implementing such prescriptions.

Other integrative contributions include the work on institutional robustness and diagnostic approaches such as the Institutional and analysis development (IAD) framework (Anderies et al. 2004; Janssen and Anderies 2007; Janssen et al. 2007; Ostrom 2007; Ostrom et al. 2007). Based on the recognition that no system can deal with all disturbances the assessment of potential key drivers is here placed centre-stage. Similar to a governance perspective these frameworks claim to bridge previous gaps in research by analysing the operational decision-making level together with institutional and constitutional rules. These frameworks also take account of ecological dynamics as well as internal and external drivers of change.

Whereas important lessons, such as the need for context-sensitive and diagnostic methodology can be collected from here, this thesis turns to Kooiman’s (2003) interactive governance framework. Compared to adaptive

governance it shares many of the strengths of the IAD-framework. For instance, originating from a social science perspective it has a more elaborate understanding of institutions and governing processes and has been recognised to suit empirical governance analyses (see e.g. Pierre 2000). It too has been developed specifically with human-environment interactions in mind, which otherwise is a rare occurrence in political science. That is, it takes into account not only interactions with the governing system but also between the governing system and the resource or so called system-to-be-governed (Kooiman 2003). However, in contrast to a focus on institutional robustness (which can be interpreted in terms of stability) the interactive governance framework focuses capacity for problem-solving and *limits* to problem-solving in terms of governability – (Jentoft 2007). Kooiman's framework also explicitly adopts an open systems approach which has been recognised to be in “basic epistemological agreement” (Johnson 2010:265) with resilience thinking. Additionally it fits better with the broader governance approach which is here taken as a point of departure and it fulfils the requirement that empirical governance analyses benefits from the use of typologies (cf. governing modes) (Peters 2011; Arnouts et al. 2012). Finally, in contrast to the IAD-framework, the intentional and ideational dimension of governing is made more explicit through the focus on governing elements and governing images in particular. Ideas and a discursive dimension has been recognised as essential, though often omitted, in governance studies in general (Torfing et al. 2011) and in explaining policy, institutional and governance change processes in particular (cf. transformation) (Hajer and Versteeg 2005; Löf 2010; Schmidt 2011). Other scholars have also noted the potential for combining interactive governance with resilience especially in relation to adaptation scholarship (Johnson 2010).

Interactive governance – a framework for analysis

As already explained, interactive governance takes a socio-political approach to governance analysis and looks therefore not only at traditional governing authorities but also at which, how and where interactions take place between state, market and civil society actors. Governance from an interactive governance perspective is thus about navigating or steering through collective agency (mediated through institutions) in order to formulate common problems or achieve common goals (Kooiman 2003; Torfing et al. 2011). The state is thus viewed as one among several actors who are involved in governing interactions, either in direct decision-making or through governing ‘from afar’ by “defining and shaping the arenas within which interactions may be occurring” (Torfing et al. 2011:3). As negotiation and compromise are seen as central governance aspects it makes governance less concerned with authority and more directed towards political brokerage – how the state can enable collaboration, self-organisation as well as to steer

(Jentoft et al. 2007). In this sense interactive governance is an expression of subtle governance theory which refrains from ‘hollowing out’ the state (cf. Rhodes 1996) and views instead the state continuously as a (potentially) strong actor but whose role may be undergoing qualitative change.

Even though Kooiman’s (2003) interactive governance framework (or governability framework as it sometimes is referred to) shares the basic underlying assumptions with the interactive governance approach Torfing and colleagues (2011) propose there are some differences. Whereas the latter does *not* include hierarchical governance as a form of interactive governance, Kooiman does view hierarchical governance as a type of governing mode. There is also a specific analytical and conceptual apparatus that follows with Kooiman’s framework that is not always consistent with how concepts are used in interactive governance according to Torfing et al. (2011). Therefore, hereafter interactive governance refers to Kooiman’s conception and the understanding of governing as interactions playing out between structures (governing modes) and intentional processes (governing elements) in governing systems layered across governing orders.

The governing system, system-to-be-governed and governability

A governing system represents the formal and informal arenas where two or more actors (of the same or different spheres; civil society, market or state) interact in order to voice, address or try to solve societal problems. However, the governing system is understood in context with the resource being governed, in other words, the system-to-be-governed. Interactive governance thereby presents a synthetic approach for analysing the relationship between governing subjects and governing objects (Kooiman 2008c).

The inherent characteristics of the system-to-be-governed (conceived in terms of complexity, dynamics and diversity (Kooiman 2003)) together with interactions with the governing system determines the overall governability. Governability is a central component in the interactive governance framework and a measure of the quality of governance – the totality of problem-solving capacity – but also of ‘what *can* be governed’. Governability in other words says something about the status of a system (Kooiman et al. 2008) and its propensity for successful governance (Kooiman 2008a). It is a three-partite composite consisting of the governing system, the system-to-be-governed and the governing interactions. Governability can therefore only be understood “by reference to their [natural resource systems] basic qualities” (Kooiman et al. 2008:2). Governability is a dynamic property and change as a result of governing activities and external drivers. The framework thereby follows recent developments towards more context-sensitive and diagnostic approaches – acknowledging that context matters (Kooiman 2008a).

It moreover means that rather than reducing governability to a technocratic issue (where governing problems can be solved through refitting) inherent and external limits to governability are assumed. These ideas can therefore be connected to the underlying assumptions of adaptability in terms of adaptation and transformation.

The emphasis on systems, governing systems in particular, can be seen as an attempt to capture more realistically the complexity of socio-political governance. Similarly as argued within resilience thinking it is used as a heuristic tool, rather than in any deterministic way. It adopts a so called “open rational systems model” (Jentoft et al. 2007:613) which assumes complex, heterogeneous systems of stakeholder interest groups and networks. Defining a governing system is therefore a relational and subjective exercise – although it can be assumed that “the more people agree on system boundaries the stronger the conclusions will be” (Kooiman et al. 2008:4). In other words, there are no definitive governing system limits.

In capturing the inherent qualities of these systems and how they interact, the ambition with the interactive governance framework is to make “social-political processes analysable and interpretable” (Kooiman 2003:4). More specifically governability and the interactive governance framework “can be seen as a contribution to developing a conceptual context for policy analytical purposes” (Kooiman 2008a:172). This is to be accomplished by the conceptual apparatus Kooiman provides. That is, interactions are seen as the key expressions of governance and these are assumed to have two dimensions – one structural and one intentional. Whereas considered mutually constituting – structure and agency constantly producing each other through dialectical exchange – for analytical purposes Kooiman (2003) suggests that they can be separated into governing modes and governing elements respectively. The objective is not to pinpoint the exact direction of influence, but instead to emphasize the importance of addressing both if we are to understand governing systems and consequently governability. Finally governance is seen to take place not only in direct decision-making but also influenced through more indirect processes and structures. Similarly to the IAD-framework the governing system is therefore seen as layered across three orders.

Modes, elements and orders

Following the above logic a governing system is here understood as the formal and informal arenas where two or more actors (of the same or different spheres; civil society, market or state) interact in order to voice, address or try to solve societal problems. Its structural aspects can be analyzed in terms of modes and its intentional dimension in terms of elements. Modes can thus be seen to represent the architecture in which governing interactions take place and, consequently, concern governing

arenas and actor constellations (cf. Treib et al. 2007). In developing an ideal typology for different types of modes (although in practice it is recognised that different types of modes will always coexist) Kooiman speaks of the three following types: self-governance, co-governance and hierarchical governance.

Governing intentionality is more broadly conceived and encompasses three main elements – images, instruments and action.

They [governors] have images about what their governing is about, they apply instruments to reach what they want to accomplish, and they use a certain amount of action (potential) to bring these instruments into place. (Kooiman 2003:9-10)

Governing images – which represent an ideational or discursive dimension of governance – is seen to be of particular importance (Jentoft 2007), providing the “how and why” of governance interactions (Kooiman 2003:29). Images also include fundamental assumptions about human-environment relations (Kooiman 2008a). Ideational and normative aspects are recognised by other governance scholars as well to be integral components for empirical governance analyses as well as for making governance function in practice. As Pierre explains:

Given the voluntary, non-complying nature of contemporary governance, the normative structures are integral to governance because they offer legitimacy and political support to the existing model of governance and the interests pursued there. (Pierre 2000:241)

But what exactly is a governing image? According to Kooiman it can include anything from visions, wishes, goals, judgments, knowledge, presuppositions, hypotheses and facts (Kooiman 2003:29) and what constitutes a relevant focus is up to the researcher to decide in each respective case. In relation to the stated importance of images and their ubiquitous nature this answer seems somewhat unsatisfactorily. Moreover, as discussed by Torfing et al. (2011: 74) in governance processes goals will be formulated at many different levels and are not likely to be uniform neither between nor within interest groups and participating actors – so how will we know which ones to focus on?

Consulting empirically conducted governability analyses only provides partial guidance to this conundrum. For example, it has been argued that the key question is not whether images are present or not but instead how *explicit* they are (Kooiman et al. 2008). This in fact relates to all elements and consequently, when images, instruments and action are not clearly defined the overall governability is expected to be low (Chuenpagdee et al. 2008). Yet, concrete operationalization efforts have been surprisingly absent. For example, Kooiman and colleagues (2008:6) simply contend that

the *Tragedy of the Commons* is “undoubtedly the most influential image governing fisheries”. In my view, this application does not purvey the claimed essence of images in governing interactions and renders it rather a blunt tool; unable to capture potential inconsistencies between different actors and levels. A suggestion for how this can be addressed is proposed in the framework for operationalisation explained below.

Instruments are seen as the policy tools or ‘the means to get there’ (Kooiman 2003; Ratamäki 2008) and can include ‘soft’ tools (such as information-based) as well as ‘hard’ (such as regulatory) policy tools. Action is seen as the link between images and instruments and how agency can be mobilised through different means.

The governing system is finally seen as layered across three orders spanning from the operational, problem-solving first order (e.g. daily reindeer herding activities), the institutional and organizational second order (where collective agency and institutions are maintained) to the normative meta-order where governing norms, values and principles are collectively formulated and decided upon (that is, what governs the governors) (Kooiman 2003; Kooiman and Jentoft 2009). In figure 2 I have tried to illustrate how I perceive that these different governing dimensions come together. Whereas it is not an ideal picture, it demonstrates the complexity and overlaps between different analytical concepts. The governing system can as such be conceived in terms of an onion with many different layers.

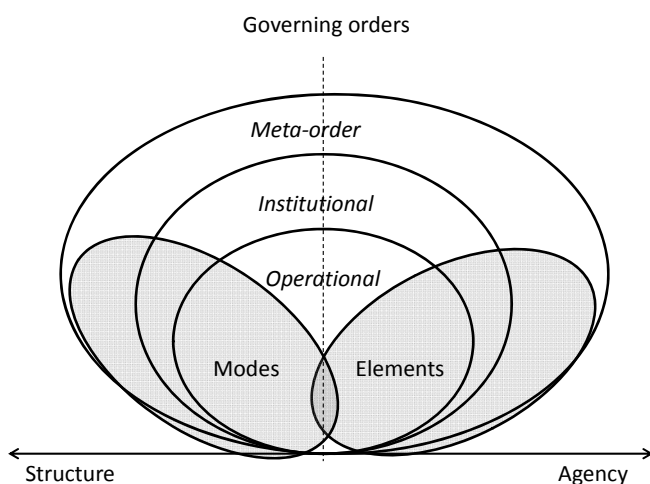


Figure 2. Conceptualising the governing system and the relationship between governing elements, modes and orders

Limitations and operationalisation

The aim with the interactive governance framework is to develop it into a multidimensional framework for governance assessment – enabling evaluation of the ‘quality’ of governance from different perspectives (Kooiman 2008c). My contribution is to do so with a focus on adaptability. However, as already indicated operationalisation has thus far been underdeveloped and is considered a critical aspect in order to advance the use of the framework in future studies (Kooiman 2008a; Mahon et al. 2010; Song and Chuenpagdee 2010). Despite claims of the governing system being been the most developed part of the framework (Kooiman 2008c), I maintain a position that the intentional dimension has in fact been rather shallowly addressed, which the foregoing example on governing images exemplified. Moreover, Song and Chuenpagdee (2010:237) argue that their exploration of governability in the case of Lake Malawi fishery represents “the first empirical study aiming to operationalise governability in a real-world case”. This says something about the challenges in using the framework empirically, but also about its explorative potential. Altogether, the framework is relatively uncharted which has lead scholars to point out the lack of methodology (Mahon 2008) and contend that processes of making the framework operational are complex and difficult (Kooiman 2008b), partly as a consequence of the “nearly limitless” opportunities available (Song and Chuenpagdee 2010:237).

There is thus no readily available methodology for assessing governability. It has however, been suggested that governability analyses should include assessment of the prevalence of features such as complexity, diversity and dynamics (relating to the system-to-be-governed), responsiveness of modes (relating to governing interactions), a fit of elements (relating to the governing system) and the quality of orders (relating to the governing system and governing interactions) (Mahon 2008).

In concurrence with other governance scholars (Anderies et al. 2004; Onyango and Jentoft 2010; Torfing et al. 2011) the importance of addressing governing practices across *orders* or levels is here identified to be of key importance. Due to the challenges associated with operationalisation this thesis has paid particular attention to how the components of the governing system can be explored empirically (see paper II). Without going too much into detail I propose that governing orders can be used to detail and conceptualise the understanding of governing elements. These can thereafter be coupled to ideal modes of governance resulting in a matrix (see table 1) which can be used to search for and typify expressions of governing images, instruments and action. Together with a critical discussion following in chapter six the thesis thereby attempts to make a contribution to the interactive governance framework as well as to the broader literature on how to analyse governance empirically.

Ideal governing modes					
Governing elements		<i>Operational principles based on governing orders</i>	Self-governance	Co-governance	Hierarchical governance
	Images	<i>Principle for understanding the system</i>	Independence	Interdependence	Dominion
		<i>Organizational principle</i>	Open participation	Semi-structured participation and representation	Closed participation and representation
		<i>Goals and objectives</i>	Internally defined	Negotiated and deliberated	Centrally planned
	Instruments	<i>Identified capacity for governing and problem-solving</i>	Bottom-up	Horizontal and vertical coordination, market based	Top-down
		<i>Legitimizing mechanism</i>	Voluntarism	Partnerships	Authority control
		<i>Means and resources</i>	Information based self-regulation, monitoring and sanctioning	Voluntary schemes and framework legislation, Evaluation	Detailed regulation, administration, inspection and surveillance
		<i>Legitimate knowledge</i>	Stakeholder knowledge	Multiple knowledge sources	Expert knowledge
	Action		<i>Self-management organization, and -determination Mobilization</i>	<i>Coordination Organization Deliberation Negotiation</i>	<i>Regulation Implementation Coercion Juridification</i>

Table 1. A framework for operationalisation

Another shortcoming of the framework relates to explaining change. Although Kooiman talks about the dynamic character of governing systems and different modes (and combination of modes) that may characterise governing there is little reference made to how and why governing systems undergo change. Perhaps this is also related to a more encompassing

characteristic, that there overall are sparse declarations of causality. Rather the framework is proposed as a way to analyse complex governing interactions from a multidimensional perspective, open for various evaluative variables. Once more, the focus on adaptability can thus contribute to fill a gap. The thesis furthermore draws on institutional change and organisational learning theory (Argyris 1982; March and Olsen 1989; March 1991; Berkhout et al. 2006) in order to complement the understanding of adaptation and transformation processes at different governing orders (see paper II, III and IV). This also addresses the argument made by Jentoft et al. that aspects of vulnerability – in addition to complexity, diversity and dynamics – are critical to consider in relation to governance and governability although thus far an understudied aspect in this specific literature (Jentoft et al. 2007).

Another area of potential concern relates the role of power. In general, power has tended to be neglected in governance studies and therefore important to bring back into the analysis (Torfing et al. 2011). Offe (2009) argues for instance that the governance literature tends to prioritize political aspects in terms of ‘*power to*’ rather than ‘*power over*’ other actors which regretfully “is strongly deemphasized” (Offe 2009:551). Consequently more critical approaches to governance analyses have been called for (Bäckstrand et al. 2010a). Even though power is not explicitly addressed in Kooiman’s (2003) framework, it is omnipresent and implicitly addressed through identifying for instance which governing images are given precedence and how governing structures allow opportunities for different actors and interests to interact. Torfing et al. (2011) has suggested a multidimensional perspective on power fitted with interactive governance, which includes addressing power in terms of ‘*power in*’, ‘*power of*’, ‘*power over*’ and ‘*power as interactive governance*’. They argue that it is important to:

...consider all the different ways that that interactive governance and power are related in order to fully understand the essentially political character of interactive governance. (Torfing et al. 2011:49)

These categories are, unfortunately, not exactly distinct and I have therefore chosen to remain with a classic, although somewhat simplified conceptualisation of power focussing on ‘*power to*’ and ‘*power over*’ (see also paper III). This conceptualisation reflects an underlying understanding of how power can be conceptualised but is not in any way intended as a comprehensive frame for power analysis.

In short, ‘*power to*’ is here understood as the more direct and intentional exercises of power (for example power to act and ability to influence other actors). ‘*Power over*’ encompasses more structural and discursive conceptions and has to do with the power that actors can exercise over the

situations in which they find themselves. Direct exercises of power between actors draw mainly on Luke's (1974) seminal conception of the three faces of power. This has elsewhere been referred to as 'power over other actors' (see paper III (cf. Offe 2009)). Structural or indirect conceptions of power attends to the, later added, fourth face of power – how institutional structures create meaning and how actors' perceptions and interests can be influenced thereby. It could for example concerns what is referred to as valid or legitimate knowledge (see also table 1). Power over interactive governance also relates to how for example governments can exercise power over governance through structuring arenas for interaction and regulating access to them. These different aspects on power are seen as complementary rather than opposing and represent an attempt to capture 'the political' aspects of governance rather than assuming it as an exclusively deliberative and collaborative exercise.

Conceptualising adaptability from an (interactive) governance perspective

Above I have tried to present how the interactive governance framework is conceptualised in this study and how it is to be operationalised. Whereas a general introduction to adaptability has been presented, the connections governance theory and to the interactive governance framework remains to be clarified.

In generic terms adaptability can be understood as the ability to make "adjustments in a system's behaviour and characteristics that enhance its ability to cope with external stress" (Brooks 2003:8). Adaptability is consequently perceived as collective trait which results from individual and collective action and multi-level interactions. If the system of interest has a human dimension adaptability consequently becomes a *social-political function*. It can thereby be seen both as a major governance challenge as well as a governance prerequisite (Walker et al. 2004; Adger et al. 2009; Plummer and Armitage 2009; Löf 2010). Limits to adaptability can be ecological (originating from the system-to-be-governed, value-based or of an institutional and governance character (originating from the governing system)). This understanding underscores the importance of considering the role of *context* in exploring aspects of adaptability. In the words of Cote and Nightingale:

Analyses of the capacity to adapt to change must be framed within an understanding of cultural values, historical context and ethical standpoints of the kinds of actors involved (Cote and Nightingale 2012:6).

That is, adaptation is by default context dependent and in order to enact solutions local capacity and agency is needed (Mustelin et al. 2013:191). This emphasis corresponds well also with recent developments in governance research pointing towards the need for more situated, contextual and diagnostic approaches (Ostrom 2007; Ostrom et al. 2007; Young et al. 2008; Grindle 2011). These scholars seek not the ‘optimal’ governing model but ask instead what the particular characteristics of a sector, a resource or an entity is that need to inform how it is approached in governing terms. Hence, they join a long-standing disappointment with policy in taking scale- and (natural) resource-related matters into account (e.g. Folke et al. 2005; Cash et al. 2006). What is called for is instead more situated analyses and diagnostic approaches based on the recognition that “there is no single way of coping with complexity” (Kooiman 2003:197; see also Ostrom 2007, Young 2002). However, scholars recognise a lack of empirical studies which focus outcomes in terms of actual adaptation action (O’Brien et al. 2006; Smit and Wandel 2006; Berrang-Ford et al. 2011). Attention to how governing structures and processes either work to facilitate or restrict such action is also recognised an understudied topic (Ford et al. 2011) even though there are some exceptions (see e.g. Keskitalo 2009; Keskitalo and Kulyasova 2009). In a recent stock-taking exercise and forward-looking viewpoint, it is claimed that despite many conceptual and theoretical developments in the field “the actual process of adaptation remains messy and confusing in its conceptualisation and practical application” (Mustelin et al. 2013; see also Adger and Barnett 2009).

Some other key issues also need to be made explicit when it comes to adaptability: the importance of scale and its normative underpinnings. That is, both how a system is delimited in space (whether for instance geographically or politically) and time determines whether a process qualifies as an adaptation or transformation. In order to understand adaptability there is thus a need to account for scales (see e.g. Cash et al. 2006) of activities, planning, interactions and decision-making. In this thesis adaptability is explored in the governing system of reindeer husbandry. More specifically it suggests an exploration of adaptability across all three governing orders – from the operational order (e.g. decision-making where herders solve daily issues) to the institutional order (where the institutional arrangements are maintained) to the meta-order of governance (the normative foundation for governing activities).

Analysing adaptability thus requires attention to all of these orders (cf. Adger (2000) and his conception of social resilience relating to communities and institutions)). To exemplify, at the operational order it would entail the ability of herders to adapt to stress and disturbances and thereby solve the problems they face in operational activities. This thus directs focus towards actual adaptations– or ability to transform practices if adaptive measures are

unable to provide remedy. At the institutional order it can be seen to relate to how responsive the institutional structures are to signals from the operational and meta-order. It thus concerns whether institutional structures and processes are open to or resist change. At the meta-order the analysis focus on the importance adaptability is given as a governing norm – whether it is recognised as a need or not, or whether other governing norms take precedence. Operational aspects are investigated in paper III and IV, institutional and meta-order aspects in paper II and III. Most focus is awarded the operational order as this is where problem-solving takes place in practice, where the impacts of climate change will be felt and where previous scholarship has noted significant gaps in the literature.

It is now evident that adaptability, just as resilience, is a highly normative concept. Just as not all resilience is benign – there are regimes which are highly resistant to change but which are not desirable for one or many reasons – this thesis presents a provocative argument that neither is all adaptability. It *depends*. For instance, which actors are expected to adapt or transform – at what costs – and which actors are not? In other words, these issues need to be explored in context and contrasted against normative principles. What is reasonable? These aspects relate to so called vulnerability transfer – that is, if we truly adopt a systemic perspective it consequently means that actions taken by some actors may be at the expense of others. This problem is more pronounced when it comes to social resilience (see e.g. Sapountzaki 2007). That is, aiming to maintain certain systemic functions risks losing the perspectives of the individual, minorities and diverse interest groups. Adaptability which is more geared at dealing with drivers thus to some extent, although not completely, circumvent this problematic. In this thesis, I have made a conscious decision of focussing on solely reindeer husbandry and the current situation for reindeer herders (although interactions with other interests and governing systems are addressed to some extent in paper IV).

As presented in more detail in chapter four, whereas reindeer husbandry is a relatively well-researched field, surprisingly few studies take the perspectives of reindeer herders as the main point of departure. Instead it is the relationship with other competing land-uses that often is in focus (see e.g. Sandström and Widmark 2007; Keskitalo 2008b; Keskitalo 2008a; Widmark and Sandström 2012). Also in relation to a colonial past (and present as some scholars maintain) where the majority society's perspective has been the rule rather than exception research has in my view (see chapter three) particular obligations to balance the perspectives presented when it comes to studies concerning the Indigenous Sami. Consequently, this represents somewhat of a lapse from the systemic methodology otherwise advocated. That is, even though focus is directed at exploring adaptability in the governing system of reindeer husbandry this must be regarded in terms

of an open system which due to its extensive character is interlinked with a number of other governing systems and land-use practices (see e.g. Moen and Keskitalo 2010).

In other words, when it comes to exploring issues related to adaptability the seminal paper of Smit and Wandel (2006) stating the importance of addressing adaptation in terms of 'for whom' and 'to what' and thereby how vulnerability can become transferred between different groups and interest reinstates its importance. Perhaps even the general conception that reindeer husbandry has always been an adaptive practice (and continuously is emphasised as such (see paper II)) deserves a more critical address?

In relation to the preceding discussion and the case of reindeer husbandry some basic principles deserve to be made explicit. As is further explained in chapter four, reindeer husbandry is a unique practice which is tied to specific geographic areas. As the governing system has developed over time (see paper II) the bundle of Sami Indigenous rights have been intimately tied to the ability to practice reindeer husbandry. Hence reindeer husbandry cannot easily be compared with other industries operating on the same lands. Reindeer herding is moreover recognised as an important bearer of the Sami culture and Sami identity – and many Sami youth dream of a future in reindeer herding (Nordin 2007; Nordin Jonsson 2012 see also paper III and IV). Thus, there are rights-based, cultural, ethical and normative reasons that must be taken into consideration in adaptability analysis. Reindeer husbandry as practice is moreover protected in the Swedish constitution and the Swedish government has stated its responsibility to secure that reindeer husbandry can be practiced in the future (Department of Rural Affairs 2012). Altogether, this suggests that herders require capacity and tools to deal with the challenges they face – preferably in terms of adaptation – at the operational order. Transformation (or transformational adaptations) in the general understanding of Kates et al. (2012), comprising new occupations and new geographic locations, can for the same reasons not presently be considered viable options. If adaptation is not possible at the operational order this in turn suggests that transformation at higher orders of governance may be necessary.

Research design, methods and material

In its exploration of adaptability, this thesis draws on several methods and approaches. The underlying theoretical and analytical frameworks place certain basic demands. That is, theory and concepts can be considered as containers, which convey how we look upon the world and what is knowable. It is therefore necessary to take initial departure from the worldview inherent in the theories underlying the study. In other words, the emphasis here on complexity, interconnectedness and interplay of human agency across scales and levels requires specific considerations in terms of research design and methods. First, it calls for a systemic approach. I interpret this in terms of a focus on processes and relations and by taking several levels, or orders of governance, into account. Second, it requires context-sensitive, and thereby in-depth, methods of exploration. Third, the research question concerning opportunities for adaptation and transformation requires a specific focus on understanding actors' intentions and perceptions. Together these considerations firmly situate the thesis in a qualitative research tradition where a fundamental aspect is precisely the focus on complex phenomena and interpreting and understanding the meaning agents experience or ascribe certain phenomenon or their reality (Ritchie and Lewis 2003). For the study of governance, adopting a qualitative approach over a quantitative alternative has been recommended also by other scholars (Torfing et al. 2011:71-84). Notwithstanding, the challenge of empirically investigating governance should not be understated as "measuring interactive governance processes is extremely difficult" (Torfing et al. 2011:81).

A qualitative case study approach

The thesis adopts a case study approach. The case study research method is particularly applicable when seeking in-depth understanding of social phenomena where context plays an important role (Gerring 2007; Yin 2009; Bryman 2012) and, in other words, therefore highly relevant for this thesis.

The case selected for exploring adaptability empirically is reindeer husbandry in Sweden. The introductory chapter has already provided the underlying reasons for this selection. In order to explore a phenomenon a basic requirement is that it somehow can be observed. Whereas this thesis departs from the understanding that adaptability is of general importance in human systems, it likewise assumes that global environmental change and climate change in particular may act to accentuate the need for adaptability and that it therefore may cumulate in closely linked human-environmental or resource regimes, such as reindeer husbandry. In relation to climate change reindeer husbandry has moreover been identified as particularly

exposed and vulnerable in being a natural resource based livelihood in the Northern hemisphere where change rates are expected to vastly exceed the global average. In terms of case characteristics, reindeer husbandry therefore fulfils with ease the basic requirements. The case is however particularly intriguing. Two parallel and intuitively conflicting narratives surround the practice. One narrative in which reindeer husbandry is identified as exposed, vulnerable and thereby with an assumed low adaptability. Another narrative describes reindeer herding as resilient, having withstood large-scale social, ecological and economic change and thereby implying high adaptability. Theoretically, this suggests that reindeer husbandry as a case might provide insights into sources, or opportunities, as well as limitations to adaptability, which further add to our interest in the case. Finally, throughout the thesis I argue that reindeer husbandry in Sweden is interesting to explore also based on more empirical reasons. That is, reindeer herders are experiencing difficulties in dealing with the challenges that confront them and the pressure on Sápmi, from many directions, is increasing. This thesis aims to provide some empirical knowledge that can describe and help to alleviate the situation at least somewhat.

This said, this thesis does not strictly follow traditional case study methodology where the outstanding aim is to generalise to a greater (and specified) population (see e.g. George and Bennett 2005; Gerring 2007). Even though reindeer husbandry, as argued above, is an example of a resource regime, the study should not be mistaken for arguing that findings therefore will be generally applicable. Reindeer husbandry is for example an Indigenous practice based on immemorial use and therefore do not easily compare to other land-uses. Although some of the findings may be transferable to reindeer husbandry in our neighbouring Nordic countries there are also notable differences in the institutional framework and in how Sami and reindeer herding matters are governed between Sweden, Norway and Finland (see e.g. Henriksen 2008; Kuokkanen 2009; Josefsen 2010). In other words, this study is more of an *explorative* character aiming to generalise to theoretical propositions rather than a population, what Yin (2009:15) calls ‘analytic generalisation’.

Defining the ‘system’ and some delimitations

The governing system of reindeer husbandry constitutes the key unit of analysis in this thesis. The term resource regime (cf. Young 2010) is used somewhat synonymously and the term SES also occurs in the text. Whereas an SES intuitively entails a broader conceptualisation of system components, there are those who have argued that an SES can be understood as a:

...subset of social systems in which some of the interdependent relationships among humans are mediated through interactions with biophysical and non-human biological units. (Anderies et al. 2004, online unnumbered publication)

This definition applies also to the governing system of reindeer husbandry. Individuals have invested resources and established infrastructure for dealing with reoccurring interactions and dealing with environmental disturbances and dynamics.

Even though the governing system of reindeer husbandry is the system in focus, exactly what this entails still needs to be investigated empirically and this is done in more detail in paper II. For a resource regime as reindeer husbandry it can however be noted that it is somewhat difficult to separate the governing system from the system-to-be-governed since the human and environmental processes are so intertwined. For example, if our interest instead was in fisheries the system-to-be-governed would constitute the fish populations and their ecosystems whereas the governing system would entail the socio-political actors involved in related governing activities (see Kooiman 2008b). When it comes to reindeer husbandry this division is more difficult. The herders themselves are part of the system-to-be-governed and the reindeer cannot easily be separated from their herders. Likewise the herders are part in the governing system (which of course the reindeer are not). This means that this thesis will address aspects relating to the system-to-be-governed but pay most attention to the governing system. Consequently, it will only be possible to draw limited conclusions regarding governability. At least if we understand governability as a three-partite composition consisting of the governing system, the system-to-be-governed, and their interactions (Kooiman 2003; 2008a).

A more serious delimitation relates to the foregoing discussion on interconnectedness *between* governing system – what in the resilience literature is referred to as nested systems and panarchy (how adaptive cycles at different scale levels tap into each other). Previous scholarship on reindeer husbandry demonstrates strong interconnections with other land-use activities and the forestry sector in particular (Horstkotte 2013; Widmark et al. 2013). Reindeer husbandry and forestry can even be understood in terms of “interlocking panarchies” (Moen and Keskitalo 2010). Whereas the thesis addresses the relations to other governing systems and actors to some extent, for example through an open methodological approach in paper III (see also Löf et al. 2012) and by looking at governing interactions within and between governing systems at the operational order in paper IV, this has not been the primary interest for the thesis. This delimitation needs to be kept in mind for when the results are discussed.

Finally, even though this thesis looks at reindeer husbandry from a systemic perspective in terms of taking relations into account and how

different orders of governance relate to each other, the empirical research focuses mainly one form of reindeer herding (mountain herding) and the operational order is explored in one particular case.

As explained in more detail in chapter four, there are three distinctly different organisational forms for herding activities and large differences between and within RHCs concerning herd sizes, grazing resources, competition over land, internal organisation and the pressure from external drivers. A question which is not addressed in this thesis is the relationship between reindeer herding and non-reindeer herding Sami, or Sami (or even non-Sami) with so-called '*skötesrenar*' (reindeer which someone else owns but that are managed by a reindeer herder) (see for example Nordin 2002; Jernsletten 2007). Instead, the thesis builds on fieldwork conducted with a mountain reindeer herding community in Västerbotten county, Vilhelmina North RHC. Even though a majority of the RHCs in Sweden are mountain RHCs, both historic and current conditions vary extensively between the three major reindeer herding counties (Norrbotten, Västerbotten and Jämtland).

Whereas the investigation of the institutional and meta-order in the governing system applies to all RHCs in Sweden, the foregoing discussion suggest that the results emanating from the studies at the operational order may not be entirely transferable or applicable. As I explain below, I have therefore used additional means in order to investigate how particular and how general the findings at the operational order are for reindeer husbandry at large in Sweden. This includes multiple processes of deliberation and dissemination, such as discussing and meeting with herders from other RHCs and participating in and presenting results at national meetings.

Historically contextualised document analysis

The research question – *how is reindeer husbandry currently governed and how has the governing system changed over time* – is addressed through a desktop-study. Historical contextualisation is necessary in order to say something about governing dynamics (see Treib et al. 2007; Owens 2010), but also in order to understand the current situation. Previous research within the broader field of Sami politics and policy has convincingly demonstrated that the present cannot be disconnected from the past (Mörkenstam 1999; Lantto and Mörkenstam 2008; Päiviö 2011; Lantto 2012).

Drawing on both existing data and previous research (that is, primary and secondary sources) the study analyses governing over time beginning in the late 1880's and stretching until today. The historical contextualisation draws almost exclusively on secondary sources. Within the scope of this thesis, it was not deemed possible to consult all original sources and archives. For the historical contextualisation previous scholarship (notably the work of Patrik

Lantto (2000; 2012) who is the only scholar who has investigated the at the time responsible regime, the Lapp Administration) was therefore subjected to an analysis based on the analytical framework developed in paper II (see also table 1 in the previous chapter). To a limited extent committee reports, ordinances and other original and occurring accounts were also used to illustrate and triangulate the findings.

The analysis of the contemporary governing system draws on multiple sources and data collection is characterised by an iterative approach. After identifying the governing system's key actors and arenas, empirical material could be identified. Sources include committee reports, legislation, policy documents, parliamentary interpellations, press releases, public speeches and other official statements where images, instruments and action could be expected to be found. The material was subjected to a word search (reindeer husbandry, reindeer herding, reindeer herd*) and then analysed qualitatively based on the analytical framework in table 1. The analysis began with identifying images and then proceeded to locating instruments connected to these images, followed by an analysis of how images and instruments were put into use and acted (or not acted) upon.

Participatory and collaborative research methods

The research question – *how does the governing system restricts or facilitates opportunities for adaptation and transformation* – is more distinctly interpretive in character and gravitates towards the operational order. Consequently, in order to investigate this issue involvement of key stakeholders (that is, reindeer herders) is required. At the international level increasing involvement of reindeer herders in research processes is a growing trend (see e.g. Forbes 2006; Hukkinen et al. 2006; Oskal et al. 2009; Riseth et al. 2011). One argument for doing so is that such transdisciplinary approaches are necessary in order to come up with policy relevant research. Another argument is that more participatory research is required in order to understand the complex realities that herders face. This is familiar from the methodology proposed for conducting so-called 'resilience assessments' where participatory methods are employed in order to identify thresholds, drivers and dynamics and in order to increase our understanding of human actions (Haider et al. 2012). It is based on the recognition that assessing resilience:

...requires engagement of a knowledgeable group, including practitioners and all other stakeholder groups, to identify issues and problems. (Resilience Alliance 2007:14)

This thesis makes no attempt at engaging all stakeholder groups (I am not even sure that is possible). The commitment made is however to engage as far as possible in collaboration with herders and VNRHC in order to be able to provide as accurate descriptions and perspectives as possible.

More generally, participatory research and participatory assessment methods have been recognised basic requirements for future-oriented research (for instance in assessing future adaptation and transformation options (see papers III and IV)) and for dealing with inherent uncertainties (Biermann 2007). Community-based and participatory research, also known as collaborative research, takes many forms but in essence focuses the experiences and needs identified from ‘the-bottom-up’. It is frequently applied in climate change research and has been called an action research approach for exploring impacts on livelihoods (Ensor and Berger 2009). The purpose with collaborative approaches is thus, essentially, to identify ‘indigenous’ (as in inherent) capacities, knowledge and practices of coping with past and present climate-related hazards. The benefits include being able to give voice and recognition to the highly contextual challenges that communities face and, similarly to the discussion above, to combine multiple sources of knowledge in order to identify practical adaptation options and feasible policy interventions and alternatives (Smit and Wandel 2006; Tyler et al. 2007; Ford et al. 2010; Ford et al. 2012).

Collaborative local level case study

In order to address how adaptation to climate change takes place or is restricted at the operational order the thesis draws on a local level case study, conducted in the vein of collaborative research. ‘Collaborative’ here means that community members were involved in all stages of the research process – from design, data collection, validation of results to initial analysis and dissemination (see also Forbes 2006). In a sense, it is therefore more a partnership than a case of participation. Below, when referencing to this project (see Löf et al. 2012) I sometimes refer to ‘us’ or ‘we’ and thereby meaning the project group (consisting of members from VNRHC and researchers from two universities).

In Sweden there are 51 reindeer herding communities (RHCs) – 8 concessionary RHCs, 10 so called forest RHCs and 33 mountain RHCs (see also chapter four). The Swedish term for RHC is *sameby*, which literally translates to Sami village. We find somewhat different translations of the term in English texts. Some use Sami village but this indicates a highly localised settlement, which do not reflect the Swedish meaning of the term. Others use reindeer herding district (see also paper III) which indicates a larger area but says nothing about social components. In this thesis and in paper II and IV the term community has therefore been used. It illustrates

both a connection to a region but also indicates that it follows a certain social (and economic) organisation.

Paper III and IV build on studies conducted in VNRHC. The community was selected primarily due to an internally recognised need to increase the knowledge on climate change impacts and opportunities for adaptation. Community support and interest are important criteria for succeeding with collaborative research approaches (Tobias 2000; Rist et al. 2006; Hudson et al. 2010). VNRHC responded to a grant call from the Swedish Sami parliament, issued as part of the Swedish government's climate adaptation commitment, and was granted funding for a climate adaptation project (see Löf et al. 2012). The project ran for three years (2009–2011) with the aim to investigate climate change impacts on reindeer herding and opportunities for adaptation, focussing particularly on the possibilities of combining traditional knowledge, remote sensing and GIS-technology.

VNRHC belongs mainly to Västerbotten county in northern Sweden (see figure 3). It is a mountain herding community where herders migrate between the so called all-year-lands west of the cultivation line (mountainous areas on the Norwegian border) and forested winter grazing lands towards the coast where grazing is allowed between October 1st and April 30th (SFS 1971:437). The RHC is divided in two groups that operate separately throughout most of the year. In 2011 VNRHC had 61 members and consisted of 20 reindeer herding companies. Compared to other RHCs, the number of reindeer per herding company is high (Sami Parliament 2010), as is the size of the winter herd nearing around 10,000 animals. Income from reindeer husbandry (including hunting and fishing) varies throughout the year (peaking at slaughter) and additional sources of income are often needed or are, for other reasons, sought. The need for additional incomes varies considerably between different RHCs and is mainly a reflection of how herding activities are restricted institutionally or by other land-users.

VNRHC can be considered a pioneer in terms of adoption of land use planning instruments. It was one of the first RHCs to develop so called Land Use Plans for Reindeer Husbandry (RBPs) (Löf et al. 2012), initiated in collaboration with researchers and the Swedish Forest Agency in the year 2000. RBP is a tool for land use planning and communication (primarily with forestry) but is also an operative tool for herding and strategic planning activities. In a way, the RBP digitalises herders' traditional knowledge by describing for instance key functional areas and how and when grazing areas are used. VNRHC was also one of the first movers on GPS-collars which enable the herders to track the reindeers' positions (transmission interval determined by the herder, depending on season). The GPS-collar is primarily an operative tool but also a means to add information to the RBP (see paper IV). For instance, several years of positions describe accumulated habitat

selection linked to different weather and grazing conditions. The unique record of GPS-positions (collected since 2005) played a decisive role in applying for and receiving funds for the community-initiated project on climate impacts and adaptation (see Löf et al. 2012).

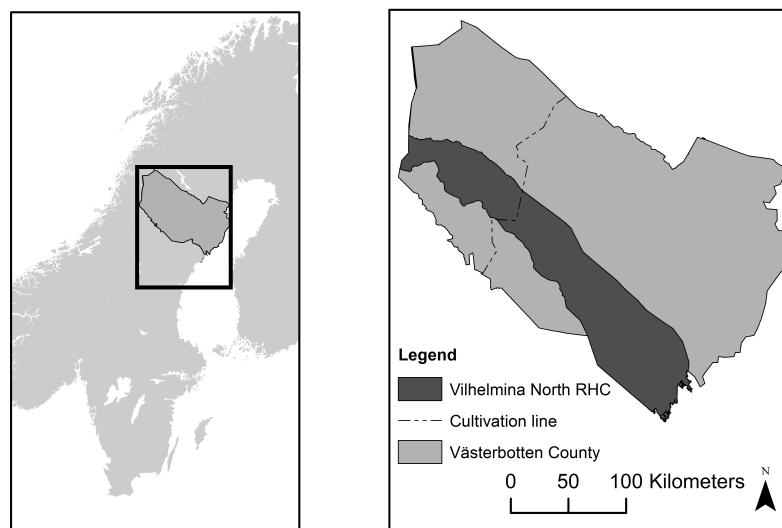


Figure 3. Map of Västerbotten county and VNRHC

Data generation and collection

The local level case study draws on multiple sources of evidence – interviews, focus groups, direct and participatory observation, workshops, conversations, written records (such as journals) and GPS-positions collected from reindeer. In brief, focus groups were used to develop understanding of the system and its drivers, interviews to get more in-depth understanding of key issues, workshops to validate the interpretation of results, identify possible important omissions and move the analysis forward (for a similar approach see Hukkinen et al. 2006). Remaining sources were complementary in order to increase the understanding as far as possible.

In total 6 semi-structured interviews (whereof two phone interviews) and 7 focus groups were conducted, 6 with herders (3 with each respective winter group) and 1 with the youth in VNRHC. We organised 2 full-day community workshops in *Gäjka* (Dikanäs) Västerbotten. All participants were financially compensated (based on a standard amount) for the time devoted. Between the years 2008-2013 I have also attended and participated in multiple meetings and training workshops (for instance in GIS-technology and RBP-

development) both within the community and in national meetings where representatives from all RHCs were invited. I have also taken part in practical reindeer herding activities such as helping out at the fall separation.

Climate change in a multiple stressor context

In order to explore adaptability one needs to define adaptability *to what*. As noted, climate change is a major challenge identified by both researchers and the community in question. It therefore constitutes a main focal point in the thesis. Whereas Indigenous peoples are identified to be among the most adversely impacted by ongoing and projected environmental and climate change (Abate and Kronk Warner 2013) they are rarely, although increasingly, considered in academic, policy and public discourses on climate change (Salick and Ross 2009). Viewing Indigenous peoples like the Sami and Sami reindeer herders as primary actors in global change monitoring, adaptation and mitigation can therefore provide important insights to the global change literature (Salick and Ross 2009).

However, rather than examining climate change as a sole driver, the thesis employs an open diagnostic perspective (see for instance the resilience assessment methodology (Resilience Alliance 2007; Arctic Council 2013)). This approach has elsewhere been referred to as adopting a social vulnerability perspective (Keskitalo 2008a; Adger et al. 2009; Keskitalo and Kulyasova 2009). What it does is essentially to direct focus at addressing the underlying and systemic factors that contribute to vulnerability. The perspective aligns well with a governance approach since it recognises that adaptation will be contingent on underlying social, economic and political structures and processes. Social vulnerability approaches moreover emphasises that adaptation is unlikely to be taken in response to climate change alone. Hence, by placing climate variability as one among several drivers in a multiple-stressor context the case study provides opportunity to analyse the processes, structures and perceptions that shape vulnerability, barriers and limits to adaptation, based on empirical observation and deliberated in community discussions (cf. Ford 2009). These aspects are explored in more detail in paper III.

Validating research quality

A common way of establishing and assessing research quality relates to the principles of reliability and validity. In short, this refers to the replicability of the study, its generalisability and whether what has been investigated was in fact what was intended. A similar, but alternative, way of establishing and assessing research quality better fitted to qualitative research approaches has been framed in terms of trustworthiness and authenticity (Bryman 2012).

The developed framework and principles for operationalisation (see paper II, III and IV) is a first step towards securing trustworthiness. The themes

investigated in the semi-structured interviews and focus groups have been reported in each respective study (paper III and IV). Interviews and focus groups were recorded and transcribed verbatim before they were subjected to thematic analysis.

Validation has been an important part of the research process and has occurred in at least three different ways. First, several different sources of information have been consulted in order to provide as full a picture as possible. This is sometimes referred to as triangulation. Triangulation is here understood not in the sense of checking the ‘truth’ in data, but according to a more interpretivist tradition which views triangulation mainly as a tool to validate the researcher’s interpretations, extend the understanding and provide as rich account as possible of the phenomenon of interest (see e.g. Ritchie and Lewis 2003). In this particular case it has occurred through consulting and comparing with findings from other studies dealing with similar aspects and, importantly, through community collaboration. Focus groups and workshops in particular have contributed to this end. A large majority of community members in VNRHC (youth, elders and spouses, active and retired herders) have participated in one or several occasions. This relates back to internal aspects of trustworthiness – whether the results mirror the lived experience of community members.

In order to address the issues of how valid the findings could be for reindeer husbandry more generally in Sweden, throughout the research process we have participated in conferences, workshops, meetings and conversations with reindeer husbandry actors, other RHCs and concerned authorities. We have also reported our findings in Sami media. To give an indication of the extent of our engagement we have discussed and deliberated our findings from the climate adaptation project in the following locations in Sápmi: workshops and presentations in *Geavtse* (Ammarnäs), *Guovdageaidnu* (Kautokeino) and *Vualtjere* (Vilhelmina), *Upmeje* (Umeå); conferences in *Jåhkåmåhkke* (Jokkmokk) and *Upmeje* (Umeå); and meeting with herders in *Ábeskovvu* (Abisko). We did not attempt any systematic comparison but our experiences reaffirm, together with research from other parts of Sápmi, that whereas specific drivers can be quite localised, the overall problem description is shared among herders from all of these, and more, locations.

Ethical considerations

Ethics in research can entail several things. It can mean what topics to – or not to – do research on, and who is subject to inquiry. However, a growing recognition of research ethics has to do with the involvement of those being researched in the research process (Bryman 2012).

In research, indigenous communities and peoples have often been regarded as objects rather than subjects and research has been (and still is)

used as means of oppression and exploitation (Tuhiwai Smith 2012). Whereas I as a non-Indigenous researcher can never provide an ‘insider’s’ perspective, collaboration with and reflection over methodological considerations can in my view render research more useful, ethical and respectful. Due to the shared history of oppression and continued colonisation I find that particular ethical obligations apply when it comes to Indigenous related research. In the words of Lawrence it is necessary to:

...be reflexive, participatory and collaborative, if, as a non-Indigenous researcher, one is to engage with the colonial relations that have historically structured, and in many cases continue to structure, relationships between Indigenous and non-Indigenous societies. (Lawrence 2009:xxv)

It is noteworthy that in contrast to many other countries with Indigenous populations, Sweden lacks specific ethical guidelines for conducting Sami related research. The topic has however been raised at the Sami Parliament, the SSR is currently underway with developing guidelines and scholars have begun to note and criticise this deficit (see Ledman 2012a; Ledman 2012b; Nilsson 2012). For now however, this requires us to look beyond the Swedish context towards international practice. New Zealand is one country where developments have moved considerably faster. The ethical guideline document *Te Ara Tika* (Hudson et al. 2010) provides a comprehensive overview of recommendations for research in relation to the Indigenous Māori. These recommendations are in fact similar to the considerations and approaches informing the work with this thesis. Collaboration, partnerships and giving back to the community are considered some of the cornerstones (see also Porsanger and Guttorm 2011 for a Sami perspective).

The study has also followed more generically formulated principles for ethical research, such as prior and informed consent (parental consent for the youth), and anonymity and confidentiality in terms of how data has been handled. A major concern when it comes to research on small sized communities is however, that anonymity can be difficult to achieve in practice. These general guidelines have also been developed to protect individual integrity rather than collective rights. This final point reinforces the understanding that specific ethics may be required when researching practices that uphold ethnic, collective and Indigenous identities.

Ethics in practice: giving back

Much research that explicitly deals with ethical considerations in Indigenous contexts is often of a decolonising character (Lawrence 2009; Ledman 2012a; Tuhiwai Smith 2012). The theoretical framework employed here is neither of postmodern nor decolonising character. However, this does not mean that it cannot *act* in a decolonising way. For instance, by asking questions such as – what is desirable and for whom, who has the potential to

act, and who has the power to define – methods can in a way be seen as decolonising (Tuhiwai Smith 2012). As a perspective, resilience has no tradition or connections to decolonisation. Yet, with the emphasis on transformation it could be used to promote a more radical agenda.

...resilience should be viewed as having the potential to develop as a more radical and transformational agenda that opens up opportunities for political voice, resistance, and the challenging of power structures and accepted ways of thinking. (Shaw 2012:309-310)

Another important component in practical research ethics is the principle of giving back to the community. For example, we have with permission from the interviewee, provided them and the community with digital and text copies of the conversation. A majority of the interviewees are elders and this documentation therefore provides a valuable source of historical documentation of land-use practices and lifestyles. We have also been sensitive to needs voiced among community members. We for example arranged a workshop with the youth on interviewing techniques (in order for them to be able to better document traditional knowledge and language and enable enhanced knowledge transfer between generations) and organised as part of one of our workshops a role-play exercise on consultation with forestry.

In my view, ethics in practice also refers to how applicable research is. In addition to the research focus for our collaborative project (Löf et al. 2012; Löf 2013) emanating from within a reindeer herding community, and was funded by Sami Parliament, many other actors have shown interest in our work. We have consequently met with media, municipalities, the county administrative board, the climate portal (SMHI) and the national group of regional climate adaptation coordinators. The interest indicates that there is a major need for hands-on research that addresses questions about climate change and climate change adaptation in practice.

In sum, the ethical considerations that have informed this study can be framed in terms of conscious reflection, consideration to human values such as integrity and right to self-determination, and research values such as honesty, non-bias and being meticulous.

Reindeer husbandry in Sweden

Reindeer herding or reindeer keeping has in different forms been practiced across the circumpolar North by, mostly, Indigenous peoples since time immemorial. The Sami is an Indigenous people who still practice reindeer herding across Sápmi – the traditional Sami homelands that currently comprise parts of Sweden, Norway, Finland and the Kola Peninsula in Russia. This said, the question of Samihood is highly complex (Beach 2007).

The more information we have about Sami culture, the more complex the question of “Samianness” becomes, and there are no simple answers. (Broadbent 2010:3)

There are at least nine different Sami languages and ethnicity in Sweden is partly based on self-identification. In Sweden reindeer herding is however basically restricted as a Sami practice. Herding is moreover commonly considered a traditional and highly adaptive practice (Forbes et al. 2006; Tyler et al. 2007). ‘Traditional’ indicates a set of (Indigenous) formal and informal institutions having evolved over centuries, against which the majority society’s formal administration is often poorly fitted. Moreover, reindeer herding has historically as exemplified above transected national and administrative borders which complicates the matter further. ‘Adaptive’ generally implies a highly dynamic, flexible and extensive land-use adjusted to local conditions, seasonal changes and natural migratory patterns of the reindeer. That reindeer husbandry has survived large-scale economic, ecological and socio-political changes is also taken as a testament of the ability to adapt, and it has been used as an example of a resilient practice where the social organisation is well-fitted to the ecological conditions (see e.g. Forbes et al. 2006).

Whereas the assumed inherent ability of herders to adapt still is underscored in present policy (see paper II), adaptive capacity has not always been considered benign. When reindeer herding became a formal policy area in the late 19th century governmental rule was directed at strictly controlling herding practices since herders were considered unable to do so themselves. Regulation was constructed so as to maintain herding practices according to what the state considered to be ‘traditional’ and ‘desirable’ (see paper II) (Mörkenstam 1999). Thus allowing herders to adapt to changing circumstances was consciously opposed. Viewed against a historical perspective it thus seems that there is an inherent dilemma concerning the adaptability of and within reindeer husbandry – both in terms of what is viewed as desirable and in terms of the conditions provided.

As a pastoral system the availability and abundance of pasture and grazing resources are critical. For most RHCs winter grazing is recognised as the critical factor (Sami Parliament 2010) – the bottleneck (as is also the case in

VNRHC even though this seems to not always have been so) (Löf et al. 2012)). In Sweden the number of reindeer have fluctuated between 150,000 and 300,000 animals in the winter herd depending mainly on weather and grazing conditions and predation pressure (Sami Parliament 2010). In 2008/2009 there were 1700 female and 2800 male reindeer owners of which approximately 900 were heads of/responsible for herding groups. Herd sizes vary considerably and on average there are more reindeer per herder in Västerbotten county, somewhat less in Jämtland county and considerably less in Norrbotten. Reindeer husbandry is economically and culturally important for the Sami, although it only constitutes a dent in the national economy.

An Indigenous practice and livelihood

In Sweden today, reindeer husbandry is an extensive land-use practice focused largely on meat production. The right to keep and herd reindeer is institutionalized in the so called reindeer management right (RMR) belonging collectively to the Indigenous Sami. The right is protected in the Swedish constitution and considered a strong usufruct based on rights prescribed since time immemorial (Allard 2006). However, in order to exercise the RMR membership in a so called Reindeer Herding Community (RHC) (*sameby*) is required (SFS 1971:437). In practice this excludes a majority of the Swedish Sami and categorizing Sami as 'reindeer herding' and 'non-reindeer herding' has created severe conflicts within the Sami community. A RHC is both a geographic area (where the community has usufructuary rights to grazing) and an administrative/economic association made up of the RHC's members' individual reindeer husbandry companies (SFS 1971:437). In total there are 51 RHCs, most of them (33) larger so called mountain RHCs, some (10) forest RHCs which do not migrate from mountain to coast but are more stationary, and eight concessionary RHCs with a particular set of rights, including that non-Sami can own (but not herd) reindeer.

Since each RHC has a maximum number of reindeer allowed, decided externally by the county administrative boards (CABs), the number of reindeer herders is thereby also limited. For example, in Vilhelmina North RHC (VNRHC), the community in focus in this study, the maximum number of reindeer is 8,400 (excluding yearly calves) and has remained unchanged since 1946. Meanwhile increased motorisation, increased living standards and in some instances decreased market prices for reindeer meat demand large(r) herds to make ends meet (Reinert 2006; paper IV; Nordin 2007). Not everyone willing to practice herding as a livelihood is therefore able to. In fact, only a minority of the Swedish Sami are full time herders. For family provision most herding households need additional incomes, for instance

part time seasonal employment and spouses employed in other sectors (Nordin 2007; Ledman 2012a).



At a reindeer separation in Gäjka, fall 2008. Herders fasten a GPS-collar on a female reindeer in order to track her position for the months to come. Photography: Annette Löff

The RMR applies to state as well as privately owned land but is spatially limited to the so called traditional reindeer grazing areas, corresponding roughly to the northern half of the country (SFS 1971:437). However, borders are disputed – both internally (between RHCs) and in terms of the “outer” limitations (with state actors and private land owners). Whereas sparsely populated, the area holds about 40% of the productive Swedish forestry which renders conflicts between forestry and RHCs common (Sandström and Widmark 2007). Moreover, competition over land and resources is rapidly increasing due to other industrial activities such as mining, wind- and hydro power; carried out by actors with considerably more economic resources. Consequently, intensified pressure, increasing conflicts and an uneven distribution of power characterize the current situation (Sandström and Widmark 2007; Keskitalo 2008b; Lawrence 2009; Össbo and Lantto 2011). Conflicts often concern mobility in the landscape and access to and quality of grazing in particular (for example, human development and infrastructure create barriers in the landscape and diminishes its usability). Also, during winter reindeer mainly feed on lichen which due to modern forestry has seriously declined in quality and availability over the past century (Kivinen et al. 2010). According to several RHCs and the main interest organization for reindeer husbandry, the Swedish Sami Association (SSR) (Svenska Samernas Riksförbund), herding activities are highly constrained, even collapsing, under this cumulating pressure of multiple drivers and perceived limited ability to exert influence (Blom et al. 2011; Löf et al. 2012; RHCs chairmen et al. 2012; SSR 2012)

To many Sami, reindeer herding is more than a livelihood, is also it's a way of life (Nordin 2007; Nordin Jonsson 2012; paper IV). It has been practiced in various forms in Sápmi for centuries or even millennia (Pape and Löffler 2012). It thus has important cultural and identity aspects that need to be considered.

... and a carrier of rights

The ability for Sami to exercise internationally agreed upon Indigenous peoples' rights is intrinsically connected to reindeer herding (see paper II). The case therefore clearly ties into Indigenous politics and rights where distinct normative shifts have occurred in the governing landscape over the past few decades. For example, when Sweden in 2007 adopted the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) the international principle of all peoples' right to self-determination, especially in relation to control over traditional lands and natural resources, was reaffirmed. A similar development is discernible generally for natural resource management and environmental politics. That is, although remaining contested in the literature it is frequently assumed that increased participation of non-state actors in governing could make governing

practices more democratic and increase legitimacy, efficiency and compliance (Huitema et al. 2009; Bäckstrand et al. 2010a). Testing these assumptions is not within the scope of this thesis, however, it is interesting to note that these developments have been particularly pronounced fields which cross-cut in the case of reindeer husbandry. Whether or not normative shifts have been accompanied also by changes in practices is a topical issue but this thesis is nonetheless limited to reindeer husbandry – it does not explore Indigenous political issues in general in the Swedish context.

Previous research

Reindeer husbandry *per se* is not an understudied topic. On the contrary, many scholars have engaged with the field. However, quite a lot of research take on a historical perspective (e.g. Brännlund and Axelsson 2011; Össbo and Lantto 2011). The majority of contemporary oriented research comes from the natural sciences and has focussed on mainly pasture and ecosystem conditions (Forbes et al. 2006). The social and political science oriented research is far less, especially in the Swedish context. There are a number of relevant studies that focus more generally on Sami policy issues and politics. Of notable importance are the studies by Sammeli (1971), Mörkenstam (1999; 2005), Lantto (2000; Lantto and Mörkenstam 2008; 2010; 2012), Lawrence (2009) and Johansson (2008). The authors examine, respectively, the relationship between the Sami people and the Swedish state, the construction of Sami identity through Sami policy, how the Sami mobilised against the Swedish state and in-depth analyses of the so called Lapp administration, issues of self-determination and continued colonisation of Sami lands, and whether the Sami are treated as an Indigenous people or a minority and the consequences thereof. However, no studies have as a primary focus or in detail investigated how reindeer husbandry is currently governed. At least this applies to the Swedish context, these questions have been more thoroughly researched in a broader Arctic perspective (see e.g. Reinert 2006; Jernsletten 2007; Tyler et al. 2007; Eira et al. 2008; Vistnes 2008; Riseth 2009; Reinert et al. 2010; Mathiesen et al. 2013).

This said, there are several studies that explore the contemporary situation for reindeer husbandry. For instance, there are studies on the conflicts between reindeer husbandry and other land-use practices (Forbes et al. 2006; Sandström and Widmark 2007). Importantly, climate change related research has also grown considerably over the last few years in a circumpolar perspective (Tyler et al. 2007; Keskitalo 2008a; Moen 2008; Oskal et al. 2009; Reinert et al. 2009; Riseth et al. 2009; Furberg et al. 2011; Pape and Löffler 2012; Mathiesen et al. 2013). However, here too, little focus has been awarded to actual adaptation action. Adaptation is seen as localised and contextually dependent and therefore follows as a result of enabling institutional structures. Most of the research above relate to a Norwegian

context where governing structures are quite different from the Swedish context (for a review of governance in Norway see Ulvevadet 2012). Thus, there is a need for more climate oriented research which pays specific attention to governing structures in the Swedish context. This is also recognised in a recent review of research progress and challenges with respect to reindeer husbandry (Pape and Löffler 2012). The authors conclude that despite much knowledge having been generated over the past half century, this is still insufficient to answer to the challenges that currently face reindeer herders. More specifically they call for synthetic and systems oriented approaches which consider both ecological conditions and socio-political ones – and especially important they find adaptation to climate change (Pape and Löffler 2012).

Overview of appended papers

Paper I

This paper provides an attempt at synthesising and structuring this conceptual mapping and understanding of adaptability by adding insights from governance theory and using learning layers and learning loops as bridging concepts. As the overview demonstrates, the resilience–learning–governance interface provides some fruitful insights for the conceptual and theoretical understanding of adaptability, adaptation and transformation in resilience theory. Whereas resilience answers to why the adaptation–transformation distinction is important in the first place, learning provides the necessary link between the individual and system level, while governance brings further insights into the different potential mechanisms available for institutionally implementing adaptation and transformation. This exploration points to the need to develop a framework for understanding adaptability that: (1) identifies social–ecological systems in terms of structure, process and outcome, and particularly self-reinforcing feedbacks; (2) adds an institutional framework including formal and informal decision-making arenas; (3) explicitly addresses norms, values and ideas; (4) emphasises power, negotiation and facilitation; and (5) emphasises the importance of deliberate learning and transformation strategies.

Paper II

Drawing on Kooiman's (2003) interactive governance framework this article critically analyzes governance in the case of Sami reindeer husbandry in Sweden. Situated against a historical contextualization, focussing the relationship between governing images, instruments and action, the study explores how reindeer husbandry is governed, how governing has changed over time and whether policy and scholarly narratives of new forms of governing are reflected in governing practices. The study concludes that in contrast to narratives of increased participation and Indigenous self-determination, governing remains mainly of hierarchical nature and is characterized by paradoxes. The governing system's elements are poorly fitted internally as well as against the views of reindeer husbandry actors, and over time only marginal change –in governing structures and meta-images – has occurred. Thus, still today, reindeer husbandry actors are locked out from essential governing functions and locked into a system proving hard to change.

Paper III

Based on recognized gaps in adaptation research the article begins by identifying the need to empirically investigate the ‘governance of adaptation’. Drawing on Kooiman’s interactive governance framework, the study examines through collaborative methodology how adaptation agency and the space for adaptation is constructed and restricted in the case of an Indigenous reindeer herding community in Sweden. Findings demonstrate that climate change and variability is currently a matter of concern. The greatest problem, however, is the diminishing space for adaptation due to accumulated pressure of predation and competing land-uses in combination with herders’ lack of direct and indirect power to influence the actors and institutional factors currently limiting adaptation options. This study carries relevance not only for reindeer herding communities in Sweden, but also for the general adaptation literature in demonstrating that limits and barriers to adaptation can be essentially political; requiring the making of hard choices and hence active governmental intervention. It also shows that marginalized groups, even in contexts where adaptive capacity is considered high, are likely to remain highly vulnerable with restricted adaptation opportunities unless deliberate structural and institutional transformation are initiated.

Paper IV

In facing both global and climate change and the escalating industrialisation of the North, the adaptability of reindeer herders across the circumpolar region is increasingly being challenged. In Swedish Sápmi where reindeer herding is practiced by the Indigenous Sami the situation can be described as severe. Adaptation options are restricted due to interacting and competing land-uses as well as the current governing system. This paper therefore departs in recognition of the need to explore the potential for transformation of the governing system and governing interactions with other land-users. In doing so the paper draws on interactive governance theory coupled with a broad literature on transformative change. Particular attention is given the role of new information technology in terms of GPS-collars on reindeer and GIS-based Land Use Plans for reindeer husbandry as potential instruments for initiating and enacting transformation from below. However, the study demonstrates that despite recognition among herders of the need for transformative change and despite the transformative qualities of new information technology the asymmetrical relations between actors and lack of institutional support prevent change from moving beyond the operational order. Contrary to providing a vehicle for governing system transformation the study instead brings attention to the risk of increasing vulnerabilities among herding communities and the possible consequence of devaluing

Indigenous knowledge in the long term. The study concludes by bringing attention to the need for enhanced coordination between and within interacting governing systems and supporting the view that adaptability and transformation is essentially about power and being able to restructure governing relations and interactions.

Analysing an adaptability challenge and challenging adaptability

This thesis set out to explore adaptability from a governance-theoretical perspective in the case of reindeer husbandry in Sweden. The purpose was thereby to contribute to the emerging governance literature, the theoretical conceptualisation of adaptability as well as to address empirically identified needs in reindeer husbandry. This final section is devoted to this discussion.

The starting point for the thesis was the assertion that adaptability is important as a governing norm if we understand the world as characterised by increasing interconnectedness and inherent complexity, dynamics and diversity. In recognition of ongoing and projected global environmental change, it was assumed that for closely linked human-environmental systems, such as reindeer herding, the need for adaptability will be particularly pronounced. The thesis moreover identified reindeer herding as an intriguing case for studying adaptability. It is an Indigenous practice with renowned resilience – having withstood and adapted to large-scale social, economic and environmental change. There is consequently a narrative surrounding the practice suggesting that adaptability is, or at least *has been*, high. Meanwhile a parallel narrative recognises reindeer husbandry as exposed, sensitive and vulnerable. As this discussion will demonstrate, these dual narratives are not necessarily incompatible even though, at a first glance, they may appear so. These narratives however, reflect the need of investigating adaptability further in this particular case and moreover open up for the possibility that lessons concerning both sources and obstacles to adaptability might be collected from the investigation.

The here advanced conceptualisation of adaptability is inspired by a resilience perspective, and consequently entails both aspects of adaptation and transformation (Walker and Salt 2006). The thesis moreover makes a particular point of situating adaptability as a function of governance, or socio-political interactions. With this in mind and based on the findings from the appended papers I will now turn to address the aim of the thesis by answering to the initially posed research questions: 1) *how is reindeer husbandry governed and how has the governing system changed over time* 2) *how does the governing system restrict or facilitate opportunities for adaptation and transformation* and 3) *how can a governance-theoretical perspective contribute to our understanding of adaptability?*

How is reindeer husbandry governed and how has the governing system changed over time?

This research question is of a broad relevance. If we assume that adaptability is a function of governance, a first step in analysing adaptability should

naturally entail investigating current forms of governing. Whereas previous research has paid attention to the related, but broader fields of Sami policy and politics, the governance of reindeer husbandry was prior to this thesis relatively unexplored in the Swedish context. The second part of the question relates to governing dynamics and is important to address for at least two reasons. In order to say something about the propensity for change comparison over time is necessary. Furthermore, in view of supposed and desired shifts towards new forms of public governance, exploring and comparing governing over time will increase our knowledge of the current direction as well as provide insights into opportunities and limitations for such a proposed development.

Drawing on Kooiman's (2003) interactive governance framework paper II explores this question in detail but the discussion also collects insights from paper III and IV. Overall, the results reveal a highly complex and partly paradoxical mixture of governing modes and elements in the current governing system of reindeer husbandry. Whereas diversity per se need not be a problem, several inconsistencies materialise which deserve to be further discussed. First, there are *inconsistencies* in governing elements, especially among governing images, which result in competing understandings and definitions of governing issues. There is also a lack of explicit governing objectives and goals. Together these findings could account for some of the observed *inaction* in the governing system. Second, despite that reindeer husbandry has undergone a process of modernisation and a "new" governing system was said to develop through the 1971 reform, the empirical investigation shows that change over time in fact has been rather marginal. The governing system is therefore seen as characterised by *inertia* and mainly state-dominated *hierarchical* governing. Viewed against the recognition of the right to Indigenous self-determination and the distinctive normative shifts towards new forms of public governance, particularly visible in the literature on natural resource management, the prevalence of top-down governing and resistance to change is somewhat surprising

Inconsistencies in the governing system and governing inaction

Hierarchical, co- and self-governance are ideal and theoretical constructions, therefore not expected to be found in reality. Notwithstanding, the governance analysis of reindeer husbandry reveals a highly complex and diffuse picture. It is noteworthy that inconsistencies in governing elements exist not only between actors (although problems related to this are discussed further below) but also in how state actors perceive and construct the governing system (see table 2).

The governing system of reindeer husbandry As viewed by state actors					
Governing elements		<i>Operational principles based on governing orders</i>	Expressions of self-governance	Expressions of co-governance	Expressions of hierarchical governance
	Images	<i>Principle for understanding the system</i>	Unique Sami cultural practice	Industry among others	Needing to be controlled
		<i>Organizational principle</i>	(Limited) right to self-determination	Equal treatment	Representation in advisory delegations, membership in RHC
		<i>Goals and objectives</i>	Ecologically, socially and culturally viable practice	Coexistence with other land uses	Prevent overgrazing
	Instruments	<i>Identified capacity for governing and problem-solving</i>	Operational problems to be solved by RHCs	Dialogues and consultations with authorities and other interests	Institutional and meta-order top-down governed
		<i>Legitimizing mechanism</i>	Adaptive practice	Good will	RMR, perceived lack of internal capacity
		<i>Means and resources</i>	RBPs (Land use plans for reindeer husbandry)	Consultations and certification schemes	Detailed regulation (RHA), quotas and monitoring
		<i>Legitimate knowledge</i>	-	-	Expert knowledge
	Action		<i>Limited administration by the Sami Parliament</i>	<i>Consultation</i>	<i>Investigation, consultation and inaction</i>

Table 2. Exemplifying how the governing system of reindeer husbandry is perceived and constructed by state actors (based on paper II).

That is, the analysis of governmental policy documents conducted in paper II reveals that reindeer husbandry is understood as needing to be controlled through detailed legislation, monitoring by state actors and the state determining the principles for organisation (for example the requirement of membership in a RHC). The right to Sami self-determination is at the same time growing in strength as a parallel image, mainly in response to international demands. Whereas the right to self-determination *can* be interpreted as rather encompassing, the study proceeds to demonstrate how state actors interpret and implement Sami self-determination mainly through the transfer of limited administrative responsibilities to the Sami Parliament and leaving RHCs in charge of problem solving at the operational order. This limitation and reimagining of self-determination is constructed against and made legitimate by the image of “equal treatment” (see table 2). That is, even though reindeer husbandry is considered “a unique cultural practice” it is also imaged as an industry among others. The principle of equal treatment thus prevents the state from, in its view, “privileging” reindeer husbandry over other interests. In other words, neither reindeer management nor self-determination rights are seen as absolute but viewed as conditioned. The state appears to give itself the mandate to determine how. A quote cited in paper II further exemplifies:

The Sami parliament is an obvious result of the long-standing Sami aspiration for increased influence and the Swedish state's willingness to give the Sami increased self-determination. (Prop. 2005/06:86, p. 27)

Interestingly, the idea of the state's benevolence is the same rhetoric that flourished in Sami policy and politics in Sweden over a century ago. In terms of goals and objectives, the only ones explicitly stated are that reindeer husbandry should remain an ecologically, socially and culturally viable practice (see table 2). The practical implications of this remain undeveloped. However, the Department of Rural Affairs does conclude that ecological sustainability as a goal entails preventing reindeer overgrazing. It is therefore suggested that the CABs remain responsible for determining and monitoring the number of reindeer allowed in each RHC (see paper II). Consequently, the state identifies problems as originating *internally* whereas formulating solutions in terms of continued governmental control.

The understanding above is *not* shared among reindeer husbandry actors, which brings us to the next type of inconsistencies found: those *between* different socio-political actors. That is, contrary to the above description, reindeer herders perceive herding as a way of life, not an industry. Rather than the organisational form of RHCs, modelled after economic organisations, the Sami traditional way of organising herding are flexible *siida* constellations. Reindeer husbandry actors currently find the

survival and future of reindeer herding compromised by increasing encroachments on grazing areas (paper III) and poorly fitted institutional frameworks (paper II, III and IV) (*externally* originating problems). For example, rights are perceived as insufficiently determined and supported, whereas the dialogue-based instruments available to RHCs are insufficient for the type of interactions and problems they deal with. Another problem that arises is that state and market actors do not seem to consider the traditional and practical herder knowledge to be legitimate, at least not by itself (paper II and IV). Altogether, these are signs of serious governing issues. The state views reindeer husbandry as an industry that needs to co-exist and adapt to other industries whereas herders view it as a lifestyle and fundamental right. In short, the governing system displays a lack of coherence as to “what” the system-to-be-governed actually encompasses, what the problems are, how solutions should be formulated and by whom. On a similar note, the analysis of the governance of adaptation (in relation to climate change) finds that a lack of goals and diffused and unclear responsibilities between different actors in the governing system hampers action at all levels (paper III). Without goals, governing activities are difficult to evaluate.

Identifying collective goals is especially important for governance studies because they constitute the standards against which the outcomes of policymaking must be judged. (Torfing et al. 2011:72)

It is therefore my conclusion that key governance functions – such as formulating common problems and achieving common goals – are currently not operating well. Whereas problematic in itself, it could also explain the high level of (political) inaction observed in the governing system (paper II).

Prevalence of governing system inertia

The governing system is not only characterised by current inaction but also inertia at a broader system level. In empirical governance studies it is not uncommon to find that pre-existing governance arrangements may be resistant to change and characterised by path dependency which consequently may result in governing that contradicts well-being in the long-term (see Johnson 2010). There is a whole literature devoted to institutional inertia and path dependency (see e.g. Thelen 1999) so, generally speaking, this is not surprising to find. For the same reason, scholars argue that governance must be analysed in context and that expressions of governance take place within evolving paths consisting of several institutional layers added on top of one another (Torfing et al. 2011:19-20). In the Swedish context the governing of today can be seen as historical deposits, some of which can be traced back hundreds of years in time (Petersson 1998). This

has proven valid in the case of reindeer husbandry. Even though scholars have previously recognised inertia and path dependency of Sami policy and politics (Mörkenstam 1999; Pääviö 2011; Bengtsson and Torp 2012; Lantto 2012), the extent to which it is found here is still surprising.

This said, the governing system has undergone some structural change. Governing arenas have expanded and non-state governing actors (for example the SSR and RHCs) have gained formally recognised positions in the governing system and thereby increased influence. However, as the previous discussion shows, change has not translated into governing action and many governing elements remain rather constant. The foregoing discussion also demonstrates that even though governing system dynamics are not immune from international pressure and development, governmental actors have actively *resisted* change. While severe critique from Sami actors, RHCs and international organisations has been voiced regarding the present state of governing and the pressure RHCs find themselves under (Anaya 2011; Blom et al. 2011; Sami Parliament 2013) the governing system has remained locked into the same path. The interpretive and definitional power of governmental actors, visible for example in how images are constructed (see table 2), partly explains this “resilience” (see also Mörkenstam 2005). Kuokkanen (2009) similarly argues in her analysis of the progress of Sami self-determination through the Sami Parliaments in Norway and Finland, that profound change and meaningful self-determination is unlikely to be reached as long as Sami actors are forced to collaborate *with* the state on arenas defined and delimited *by* the state.

From a resilience perspective, the observed inertia might indicate an increasingly entrenched governing system; the system is relatively static despite that it is subject to increasing and highly varied external pressure and drivers (environmental, social and political). The consequences are felt at the operational order. Observed limitations to adaptation and transformation are supported by reports that talk of potential RHC collapse (e.g. Blom et al. 2011). In other words, what we find is a governing system with diminishing problem-solving capacity (and thereby diminishing governability) which seems to be storing vulnerability. Such a system could near a release in the adaptive cycle followed by a reorganisation, or if not responded to in time, a collapse of the system (see also paper I). As Young argues:

The longer institutions remain in place, the more brittle and crisis prone they apt to become. Sooner or later, stresses will overcome the stress management capacity of regimes, paving the way toward the occurrence of changes that are non-linear and often abrupt. (Young 2010:379)

...and gravitation towards hierarchical governance

A final note on the governing system of reindeer husbandry is that it still gravitates towards hierarchical governance (the right-most column in table 2) and especially towards national level state actors and governing through detailed regulation and monitoring. Whereas Kooiman (2003) might qualify this as prevalence of hierarchical governing interactions, it can in fact be questioned whether it at all qualifies as a case of (interactive) governance (Torfing et al. 2011). An argument speaking in favour of this is that governance should include interactions based on exchange, co-constructions of goals and problems (images) and, at least to some extent, be based on voluntary participation in governing interactions. That is, ideally:

...the strong and resourceful actors are constrained in their exercise of direct power by the exit power of weaker actors. Deploying all your strength and resources to put pressure on weaker actors will often appear to be counterproductive as participation in interactive governance is voluntary and the pressurised actors are free to leave the network. (Torfing et al. 2011:56)



A public servant from the CAB oversees when the reindeer herders from VNRHC perform the yearly reindeer count, Gäjka 2008. Photography: Annette Löf

However, exit is not a viable option for RHCs or for individual herders (paper IV). Grazing rights are tied to geographically delimited areas. Even though the potential for establishing grazing agreements with private land owners on lands outside of the traditional grazing area is currently under investigation, borders are today relatively fixed. The price for quitting

altogether is high and may be an irreversible decision. Leaving the occupation and lifestyle as a herder could practically result in depriving yourself and your children of the reindeer herding right and thereby to traditional lands and resources. There is also a risk of loss of identity, cultural and social values. This institutional imbalance explains why herders feel constricted in their action and why voluntary based instruments such as the RBP and limited right to consultation are insufficient instruments for solving current governing issues and problems (paper III and IV). Like Keskitalo (2008b; 2008a) has noted, it is difficult it not impossible to solve problems in local level interactions which in fact originate at the political or institutional level.

In sum, the governing system of reindeer husbandry displays multiple inconsistencies and is characterised by inaction and inertia. The governance analysis of this case does not support the narrative of a shift from government to governance, although theoretically it would be the expected outcome. This is particularly interesting in the light of established rights to Indigenous self-determination. The Sami Parliament issued at its opening session in the fall 2013 a statement expressing fierce criticism of the continued colonisation of Sápmi, the Sami homelands, where on-going mining exploitation among other activities are seen as:

...obvious violations against human rights and the Sami rights as an indigenous population to govern their own culture, their lands and their living environment (Sami Parliament 2013)

The right of all peoples to self-determination, including Indigenous peoples, is commonly understood to encompass the right to freely determine their political status and freely pursue their economic, social and cultural development. The UNDRIP moreover emphasises the right to control over traditional lands and resources. Overall, the right to self-determination is closely connected to culture, land, traditional livelihoods and resources and therefore should, naturally include also reindeer husbandry (Henriksen 2008; Kuokkanen 2009, see also the UN Covenant on Social and Political Rights, Article 27). Henriksen expands on this matter:

As a first principle Sami leaders are seeking recognition of the unqualified right of the Sami people to self-determination. However, in practical terms, the aim is to ensure Sami autonomy and self-government in matters relating to their internal affairs, including their own economic, social and cultural development. The right to exercise control over traditional Sami lands and natural resources is regarded an integral part of Sami self-determination. (Henriksen 2008:30)

The above quote indicates that self-determination is broader than self-governance, and that self-governance over traditional Sami lands and natural resources can therefore be considered a minimum requirement (see

also Koivurova 2008). However, this minimum requirement is not met in the current governing system of reindeer husbandry in Sweden (see also Lawrence and Mörkenstam 2012). Related research from our neighbouring Nordic countries reaffirms this finding, although the Sami situation in Norway is somewhat more politically advanced (Henriksen 2008; Kuokkanen 2009; Ulvevadet 2012). When principles, meant to protect established rights, certain values, minorities or underprivileged groups, are *not* supported in national legislation it may further reinforce a vulnerable or exposed situation. International experiences indicate a similar unfolding; even though international law has developed considerably with regard to Indigenous rights, research has shown that states have resisted this development, that implementation and practice have lagged behind and that insufficient national legislation often adds to Indigenous peoples adversity (Koivurova 2008; Abate and Kronk Warner 2013).

How does the current governing system restrict or facilitate opportunities for adaptation and transformation?

This research question looks closer into how the governing system restricts or facilitates opportunities for adaptation and transformation and does so with a focus on the operational order. In other words, this question addresses the consequences of governing on the ground. Following from the conceptualisation of adaptability as consisting of the ability to adapt *and* to transform (see paper I) the question is addressed in two studies, one focussing adaptation with a primary emphasis on adaptation climate change (paper III) and the other focussing the possibilities for transformation (paper IV).

Limits and barriers to adaptation

A collaborative study conducted together with VNRHC demonstrates that reindeer herders have a restricted portfolio of adaptation options (Löf et al. 2012; paper III). Whereas there are strategies that they can employ, such as supplementary feeding, moving earlier or later, utilising different grazing areas or letting the reindeer roam entirely free in their search for forage, strategies come with increased costs and the ability to put them into use is becoming increasingly restricted due to other land-uses. Altogether, the situation is characterised by increasing and cumulating pressure from multiple drivers that has placed herders in an adaptation squeeze. Other reports from reindeer husbandry actors and RHCs support this finding (Blom et al. 2011; RHCs chairmen et al. 2012). This is problematic seeing that the politics and governance of climate adaptation at the national level is virtually non-existent and responsibilities are fragmented. In other words, climate change adaptation is considered a societal rather than political concern and, in this particular case, the responsibility has been devolved to

the individual herders and RHCs. With hardly any instruments at hand in order to deal with this challenge agency has therefore become restricted. What is interesting is that herders do not perceive climate change as the major problem. In fact, even though they report many observations of climate change (see Löf et al. 2012) and although reindeer herding is one of the most weather-conditioned and sensitive land-uses, they see climate change as a problem they likely *could* deal with. That is, *if* they had access to more and more diverse and connected grazing areas that they could use more flexibly. The major problem is instead the cumulative effects of when climate change, predation pressure, and competing land-use activities (e.g. mining, forestry, wind power) interact. The cumulative pressure has led to increasing fragmentation (due to for instance developing infrastructure, hydropower, wind power parks and large clear-cut tracts) and decreasing mobility and flexibility, what traditionally have been the sources of resilience in herding activities. Limited opportunities to act directly, and more importantly, limited opportunities to exercise influence over how interactions with other actors occur is what seem to have locked herders in VNRHC into this maladaptive trajectory. As herders themselves explain – they can only address symptoms at the margin and not mitigate the underlying causes of vulnerability (see paper III). In order to illustrate this paper III introduced the idea of barriers and limits to adaptation. In short, barriers are understood as obstacles to agency in terms of restricted ‘power to’ whereas limits are understood as obstacles to adaptation in terms of ‘power over’. The study finds that in the case of VNRHC what currently restricts adaptation are limits rather than barriers.

Transformation

The study of transformation (paper IV) takes its departure in the above recognition of limited adaptation opportunities as well as in the observed political unwillingness of change (paper II). The paper consequently explores the potential for transformation arising from the operational order and becoming layered in the governing system. More specifically it investigates new information technology (GPS-collars on reindeer and Land use plans for reindeer husbandry (RBPs)) as potential instruments for initiating and transferring change.

The study reveals that herders do recognise a need for transformation of the governing system of reindeer husbandry. But the study also demonstrates the need for transformation of the governing interactions with *other* interests and interacting governing systems. New information technology has provided helpful tools for operational herding activities and enabled better communication with for example forestry. However, there are of yet no signs that any transformative potential or change strategies are likely to move beyond the operational order. The primary reason is the

asymmetrical power relations that exist between reindeer herders and most other land-users, and which are institutionally reinforced through the inconsistencies in the governing system and the poor fit with other governing systems. Contrary to providing a vehicle for governing system transformation the study instead brings attention to the risk of how GPS-based RBPs can increase their vulnerability in the long term and possibly transfer vulnerability to other RHCs (for example those lacking GPS-collars) in the short term. That is, whereas the RBP can be seen as a way to formally integrate and make traditional knowledge legitimate in the governing system (thereby result in a possible transformation of governing images and opportunity to increase the fit between images), in interaction with new GPS-based technology it seems to have worked in the opposite direction as herders explain how GPS-positions are needed in order to present credible arguments. As a consequence, traditional knowledge could over time become further devalued.

The study concludes by bringing attention to the need for enhanced coordination between and within interacting governing systems and supporting the view that adaptability in general, and transformation in particular, is essentially about power in terms of being able to restructure governing relations and interactions. Similar findings have emerged from other recent studies.

While active transformation of the system may in some cases be the only logical way forward, the combination of institutional inertia and political control by non-Arctic entities set up barriers to significant change. (Kofinas et al. 2013:90)

The potential for transformation originating elsewhere in the governing system seem limited since the dominant state actors do not recognise that change is needed. Recent developments have instead reaffirmed that problem-solving is to take place at the local level, through dialogues (see e.g. Ministry of Enterprise Energy and Communications 2013). The responsiveness for signals coming from reindeer husbandry actors is thereby limited as governmental actors maintain the need for ‘collaborative adaptation’ and continued control over the operational order. In my view these findings illustrate somewhat of an adaptability paradox. Already half a century ago, a committee concluded that no new grazing areas were required since reindeer herding *had already managed to adapt* to the expansion of hydropower and therefore surely would manage increased industrialisation in other areas as well (SOU 1966:12). That is, it seems that it is not always desirable to be imaged in terms of an ‘adaptive practice’ since this understanding can legitimise a devolvement of responsibility and obscure the political dimension of adaptation. Rather than dealing with the difficult and hard questions at the meta- and institutional order in terms of who

needs to adapt to what and on whose expense, these questions are simply devolved to the operational order. When herders there need to interact with other industries and governing systems that are better equipped in terms of instruments and have disproportionate control over arena and interaction rules (such as the market through forest certification) fundamental rights and values risk becoming compromised in the process. As illustrated in paper IV and supported by previous research, there is thus a need to critically assess the consequences of Indigenous claims increasingly being transferred towards non-state, mainly market actors (Lawrence 2009; see also Johansson 2013).

Altogether, this raises a need to discuss more critically of whether if, and if so what type of adaptability, is desirable. That is, at the system level adaptability is required but it also needs to be decomposed and considered from various perspectives and actors' points of view as well as balanced against fundamental human rights.

To conclude, it is obvious that in the case of reindeer husbandry the incrementally developed institutional layers have formed paths that today determine the possible options for action and interaction. There are restrictions to adaptability that originate in asymmetrical power relations and a poorly functioning governing system. This thesis recognises in regard of the limited opportunities for adaptation at the operational order that there is a definitive need for advancing thinking in terms of transformation. However, taking ethical and rights-based aspects into account the limits to how much reindeer herding can be compromised or transformed at the operational order also need to be carefully considered. Whereas the governing system therefore may need to be reconstructed, the stated political unwillingness is likely to render this a difficult equation to solve.

How can a governance-theoretical perspective contribute to our understanding of adaptability?

As noted, adopting a governance-theoretical perspective to the study of adaptability has contributed with decomposing adaptability as a system quality and thereby exposed its political dimensions. The analysis has highlighted the role of governing images, the meta-order in particular, and the role of power in facilitating and restricting adaptation and transformation among socio-political actors. If we conceive of adaptability as a specific form of governability (that is, a directed type of problem-solving capacity), the thesis has brought attention to issues concerning internal aspects of inconsistencies and fit in the governing system. The so called "goodness of fit" has previously been suggested one determinant of governability (Mahon 2008) had not been supported through empirical investigation. Interestingly, the notion of fit is familiar from the natural resource management and environmental governance literature (Young

2002; Olsson et al. 2007; Ostrom 2007; Young et al. 2008; see also Kooiman 2003). However, these scholars have primarily pointed to the need of fitting the institutions and governing systems to the resources being governed and their socio-ecological complexity. This thesis points to the importance of taking into account also the internal aspects of fit *within* the governing system and, as paper IV in particular demonstrates, between other interacting governing systems (such as the case between forestry and reindeer herding). The thesis has demonstrated that the state can, and often do, remain a central actor in governing interactions (see also Duit et al. 2009; Baker and Eckerberg 2014). However, in this particular case it has failed in providing the opportunities and arenas for governing interactions in terms of collective problem-identification and problem-solving processes that can solve the governing issues that socio-political actors face. This is evident within the governing system, but internal inconsistencies, lack of political action, unclear rights (for example self-determination and the RMR) and institutions (such as consultations) spill over to the interactions with *other* governing systems and interests. Essentially, this restricts reindeer herders and RHCs from practicing any form of meaningful self-governance of internal matters and from entering into co-governing forms of interactions with other land-users. In other words, although we may need different governing mixes for different types of problems and socio-political settings, these somehow need to be balanced and here the state needs to play a decisive role.

How does the interactive governance framework contribute?

Kooiman's (2003) interactive governance framework has proven useful for addressing the complex issue of adaptability. It has enabled a diagnostic and context-sensitive approach, which can be applied to a range of other cases and settings. This thesis has contributed towards that aim by developing an analytical framework for how to make key concepts in the interactive governance framework operational (see table 1 and 2).

A particular value of the interactive governance framework, compared to other approaches, is the explicit emphasis on the ideational dimension in terms of governing images. By identifying images over orders this thesis has pointed to the importance of not taking a system's definition for given but on the contrary shown that "what" the system-to-be-governed "is" or "should be" can be a matter of negotiation which needs to be addressed specifically in governing interactions. This approach to governance analysis with particular emphasis on the ideational dimension of governance (images) also relates back to the ideas of March and Olsen (1989) which focused the relationship between state structures and systems of norms, values, beliefs and traditions. Moreover, 'conventional' approaches to governance analysis might have overstated the importance of structural aspects and thereby

missed the important content purveyed through the emphasis placed here on governing elements.

Even though power is not explicitly addressed in the interactive governance framework, it has been an important part of the analysis. Two complementary ways of addressing power have here been touched upon. The first concerns *direct* exercises (as in power to act (action), employ instruments and exercise influence in governing interactions (over other actors)) and the second refers to *structural* aspects of power (the power the governing system has over actors (meta-order) and how actors can be part of shaping the interactions and contexts in which they take part (institutional)). The case of reindeer husbandry has demonstrated that fundamental differences and asymmetries compromise governing interactions. Therefore, when stakes differ, when actors cannot opt out (there is no real exit opportunity) and when there are imbalances concerning institutional frameworks and rights there may be limits to self-organising and “voluntary” based forms of governing interactions. In such situations there is a danger in devolving the politics of adaptability to the operational order. As Pierre (2000) asserts, it is important to move beyond the consensual understanding of governance and look more into conflict management and conflict resolution and this will require more active governmental intervention.

Some lessons learnt and ways forward

This thesis has addressed several theoretical and empirical gaps and contributed with important knowledge in terms of how we can conceptualise and investigate adaptability from a governance-theoretical perspective. The thesis has also demonstrated how adaptability is restricted and facilitated in the case of reindeer husbandry in Sweden. Based on the investigation there are several recommendations that emerge, which carry relevance both for future governance and adaptability research and for policy-makers. In particular, the thesis identifies a need to consider:

Clearly defined images and internal consistency between governing elements: The definition of a “system” is not a given and meta-order images therefore need to be made object for governing interactions. If meta-order images are internally inconsistent, or are not shared among socio-political actors, this will impact other governing orders and is likely to result in governing inaction as well as divergent opinions as to what the problems are, how they should be solved and by whom. From a governance-theoretical perspective, there is thus a need to emphasise in particular the function of collaborative image formation at all levels. An aspect that has not been addressed in this study concerns the role of media in that process and is something that future research could investigate further.

Interactions within and between different governing systems: In applying an open system's approach, this thesis has demonstrated that neither drivers nor governing systems can be treated in isolation. On the contrary, the empirical results illustrate that key governing issues are found in how drivers interact and how actors at the operational order are able to deal with the accumulated impacts. When it comes to problems such as climate change, characterised by high uncertainty levels, the need for increased operational flexibility and locally adjusted solutions is pronounced. This in turn calls for establishing mechanisms for learning and for feeding lessons learnt forward into the governing system and therefore at better fit and responsiveness across governing orders. Governing interactions will moreover occur not only within but also between systems. In cases where such interactions are plentiful (such as in interdependent situations) different governing systems need to be matched not only internally but also against each other. Whereas reindeer husbandry related research has looked into specific arenas and instruments for interactions between different land-users (for example consultations between reindeer husbandry and forestry), there is a need for more comparative research in order to understand how different governing interactions between different land-users are structured and how they influence problem-solving capacity in terms of adaptability. There is also an urgent need to increase our understanding of how interactions can be institutionally supported in order to balance the asymmetrical power relations that currently exist.

Identifying limitations of governance and governing capacity: The framework for operationalisation of interactive governance would benefit from comparison with other empirical studies and could advance our understanding of how governing systems facilitate and restrict governability. Whereas certain problems are of a nature likely to require governance-based forms of interactions, this thesis has also illustrated some limitations of assuming governance as self-organising at the operational or local level. Interactions take place against previous institutional and relational structures. If these are asymmetrical, vulnerabilities can be reinforced and basic human rights and values can become compromised. There is thus an important role for the state that remains in the governance equation. In other words, the making of hard decisions needs to be dealt with explicitly and at the political level, and not be left to the operational order or the market to solve. These are important aspects for research to look further into, but apply equally to policy-makers.

Concluding remarks

This thesis has contributed by exploring an empirical adaptability challenge and in so doing, challenged the very notion of adaptability. As here demonstrated, governance can indeed be considered a central aspect of adaptability, but we have also come to learn that governing may not only facilitate but can also effectively restrict and decrease inherent qualities of adaptability. In other words, limits and barriers to adaptation and transformation can be essentially political. This reinforces the view that adaptability needs to be studied in specific socio-political contexts. It moreover underscores the need to problematise and critically assess adaptability as a system trait. If we do not decompose adaptability, its political dimensions may be obscured. For the same reason, this thesis is strengthened in its conviction that there are many benefits in adopting an integrated perspective on adaptability which goes beyond the conventional approach of adaptation to include also transformation. We need to recognise not only limits *to* adaptation but also *of* adaptation. Applying a governance-theoretical perspective, has in my view demonstrated that adaptation and transformation is primarily a question of power; about which actors are forced to adapt, how actors are able to act, and perhaps most importantly, how actors are able to exercise influence over the situation they are in.

Let us now return to the competing narratives of reindeer husbandry as resilient and/or vulnerable. I stated in the introductory paragraph that these narratives are not necessarily incompatible. The answer to why can be found in governing images. As demonstrated, the governing system of *reindeer husbandry* is currently suffering from low adaptability and the consequences are playing out at the operational order. Whereas herders express that they could deal with climate change if they could employ herding strategies (such as using different grazing areas and grazing resources) and husbandry strategies (such as maintaining a diverse and connected landscape) they are currently prevented to do so due to competing land-uses, a lack of instruments and difficulties in exerting influence in governing interactions. In other words, *reindeer herding* has an inherent resilience but as reindeer herding has become imaged in terms of an industry, that is *reindeer husbandry*, resilience has decreased and vulnerability is reinforced by the current governing system.

The question of how to govern has preoccupied the minds of political thinkers and governors for a long time. This thesis has demonstrated that it is relevant still and has pointed to a number of issues that currently limit problem-solving capacity in the governing system of reindeer husbandry. In conclusion, the thesis suggests that key governing functions are not operating well and that herders and herding communities are currently paying the price. With the maintained emphasis on hierarchical governing together with political inaction and resistance to change, the thesis moreover

supports the view that the implementation of Indigenous rights to self-determination can be questioned in the Swedish context. Self-governance can be seen as a minimum requirement for self-determination (see Koivurova 2008) but this would require that Sami and reindeer husbandry actors can be part of interactions at all governing orders and thereby take part in defining the system, its problems and its solutions. Otherwise, it will be difficult to create meaningful and just interactions with other governing systems. This aspect is particularly important for reindeer husbandry and other practices taking place parallel and interdependently with other land-uses.

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SE-901 87 Umeå
www.pol.umu.se

ISBN: 978-91-7601-045-7

ISSN: 0349-0831

Research report 2014:1