

## The resilience of communities and nature-based livelihoods in northern Finland

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**Abstract:** Resilience has become a key concept for assessing sustainability in relation to socio-environmental change in the North. This article considers various case studies in northern Finland relating to reindeer herding, forestry and nature conservation to draw upon lessons learned for resilience studies. Mainstream literature on northern resilience focuses on resilience of local livelihoods to only certain kind of disturbances, such as climate change and resource extraction. However, also conservation efforts may threaten specific livelihoods, but there seems to be a gap regarding assessing resilience in terms of conservation efforts. This article aims to fill this gap by examining resilience of forestry and reindeer herding, important northern livelihoods, to increasing conservation efforts. It is also recommended that resilience studies should be cautious regarding the definition of the system when they are assessing its resilience. We introduce a distinction between community resilience and the resilience of livelihoods communities depend upon.

### Introduction

Over the last decade, resilience has emerged as a fashionable concept and metaphor to analyse the sustainability of integrated socio-ecological systems (see Folke 2006; Resilience Alliance 2012). The resilience of ecosystems broadly refers to the capacity of an ecosystem to tolerate disturbance without collapsing into a qualitatively different state that is controlled by a different set of processes. Resilience as applied to ecosystems or integrated socio-ecological systems has three defining characteristics:

1. The amount of change the system can undergo and still retain the same controls on function and structure

2. The degree to which the system is capable of self-organization
3. The ability to build and increase the capacity for learning and adaptation (Resilience Alliance 2012).

When the resilience of socio-ecological systems is disturbed to a considerable extent the system may flip to another system state controlled by different variables, thus, exceeding a threshold and reaching a tipping point (see Nuttall 2012; Wassmann and Lenton 2012). However, thresholds or tipping points are almost always difficult to define and identify before they are reached and exceeded, because thresholds are dynamic and different actors may understand, perceive and experience them

in significantly different ways (Gunderson & Folke 2007).

In recent years, resilience based studies have been developed and carried out in several localities in the global North. For example Berkes and Jolly (2001) have examined community adaptation to climate change in Sach's Harbour in Canada's western Arctic. Short-term adaptive strategies relate to changing hunted species and where, when, and how these species are hunted. Here it can be suggested that heterogeneity in possibilities to use nature and its resources as the bases for livelihoods enhances resilience. Regarding long-term adaptive strategies, Berkes and Jolly considered local social networks for sharing food and resources as well as co-management institutions to be significant for community resilience. On the other hand, the resilience of northern regions to social and environmental change has been examined by emphasizing that dramatic change is taking place in the North and that northern areas can play a role in understanding the resilience of the global system (Chapin III *et al.* 2004). Furthermore, the Arctic Resilience Report (ARR) is currently in progress. This report was approved by the Arctic Council in 2011 and is planned to be completed by 2015. The ARR is responding to increasing evidence that Arctic areas are facing challenges posed by rapid environmental as well as societal change. The goals of the ARR are to:

- Identify the potential for shocks and large shifts in ecosystems services that affect human well-being in the Arctic.
- Analyse the interactions between different drivers of change, and how

they affect ecosystems' and human populations' ability to withstand shocks.

- Evaluate strategies for communities and governments to adapt (Arctic Resilience Report 2012).

Regarding the ecosystem, community or integrated socio-ecological system, it should be noted that communities are diverse not homogenous units. Thus, in addition to examining socio-ecological systems as a whole (e.g. Holling 1986; Carpenter & Brock 2004; Kinzig *et al.* 2006; Walker & Lawson 2006), a more accurate definition of the system under study would be fruitful. Carpenter *et al.* (2001) state that any study concerned with resilience should answer the question "resilience of what to what?" This means that the system under study should be defined as well as the source and nature of the factors disturbing the system. With reference to disturbances in the Arctic there is a strong trend in both current research and policy to examine and consider climate change as the main challenge to northern socio-ecological systems. However, as the focus of the ARR indicates, there are various other pressures threatening and affecting the sustainability of Arctic socio-ecological systems that should not be left in the shadows of climate change research. Furthermore, anthropogenic environmental change, whether in the form of climate change, land-use or resource extraction, is resulting in pressures on northern communities and livelihoods. However, as we will highlight, resilience assessments need not only to examine the effects of these pressures, but also the side

effects of societal responses (e.g. nature conservation efforts) on the northern communities and livelihoods.

The objective of this article is to examine the resilience of forestry and reindeer herding to nature conservation strategies and policies in northern Finland. For our purposes, we refer to resilience as a *“long term vitality of a community or livelihood in changing contexts and under different pressures”*. We believe that this definition is better suited to examining the resilience of northern communities than ecosystem modelling-related concepts often used in the resilience literature. We share assumptions that self-organization capacity and adaptive capacity are important cornerstones of community and livelihood resilience.

This article briefly outlines background for Finnish nature conservation, forestry, reindeer herding and their relationships. Next some results from our recent research projects regarding nature-based livelihoods and communities in northern Finland are presented. We end by relating lessons learned from our case studies to the resilience literature, and outline some challenges that assessments concerned with resilience face.

## **Nature conservation, forestry and reindeer herding in northern Finland**

The main resource-based livelihoods in northern Finland are forestry, reindeer herding, mining and tourism. On the other hand, nature conservation is important northern land use, but seldom included in

assessing local resilience, even many times conservation objectives may differ from local ones. Thus it becomes important to examine how resilient resource based livelihoods are to the potential pressures posed by conservation efforts. In this article we concentrate on forestry and reindeer herding and their relationships to nature conservation. Nature conservation relates here to two kinds of issues, firstly to protected areas, and secondly to environmental non-governmental organisations' (ENGO) campaigns to leave old-growth forests outside industrial forestry.

Finnish protected areas are managed by Metsähallitus Natural Heritage Services (NHS), separate unit from Forestry enterprise Metsähallitus. Metsähallitus NHS (2012) aims to protect and manage species, habitats and cultural heritage in protected areas and to provide outdoor recreation services for hikers, hunters and fishers. The governance of protected areas is also impacted by European Union's Natura 2000 conservation area network, and also some protected area certification systems, such as PAN Parks and EUROPARC Federation. The development of these international trends has sometimes led to efforts for stricter protection and thus created tensions between protected areas and their user groups. Most of the Finnish protected areas are located in northern Finland, and for example in Forest Lapland the protected areas cover over 40 % of the area. Often conservation has synergies with reindeer herding as conservation helps to preserve important reindeer pastures, particularly old-growth forests. However, recently some contradictions between reindeer herding

and conservation have emerged in relation to pressures for more strictly protected areas and predator conservation (Heikkinen *et al.* 2010; 2012; Sarkki 2011; Sarkki *et al.* 2013). The contradiction between conservation and forestry is apparent when new areas are conserved because the areas under commercial forestry directly decrease.

During the last two decades ENGOs have been an integral part of northern forest disputes pressuring not only Metsähallitus, the state-owned forestry enterprise, but also its customers such as Stora Enso and the paper and publishing companies in central Europe which buy its products (Sarkki & Rönkä 2012). This has led to leaving some forest areas outside forestry. However, it is uncertain how new and often rather small conservation areas affect the vitality of northern forestry. The main goal of ENGOs is to promote leaving remaining old-growth forests outside industrial forestry.

Reindeer herding is a traditional but small-scale livelihood and there are around 5000 reindeer owners in Finland. However, reindeer herding is considered particularly important for Sámi people, but also emblematic for the Finnish North as a whole and as such is used heavily in marketing and image creation, especially in relations to tourism. As such its value is hard to measure. Reindeer herding has had conflicts with forestry, for example in Inari, where some Sámi herders formed a coalition with Greenpeace to gain better possibilities to influence forest-related decision-making, in which herders have had marginal roles to play (Raitio 2008; Sarkki & Heikkinen 2010).

Forestry is defined here as wood harvesting practices, while forest industry encompasses mainly pulp production and the whole chain-of-custody from harvesting practices by Metsähallitus, to pulp production by Finnish forest companies, such as Stora Enso, finally to publishing companies purchasing the paper from forest companies. In northern Finland, the vast majority of forests are owned by the state and are managed and logged by Metsähallitus. Metsähallitus is 150 years old and has well established position in managing state-owned forests in Finland. During the few decades after World War II Metsähallitus and forest industry was considered to benefit the well-being of the whole nation, but more recently mechanisation of forest harvesting practices has decreased jobs in forestry, and the benefits are not anymore diffusing so wide to the society. This has shaken the legitimacy of industrial forestry in Finland (Donner-Amnell & Rytteri 2010). Furthermore, concerns about intrinsic values of nature and old-growth forests started to cause forest disputes between Metsähallitus and spontaneous social movements campaigning against forestry in certain locations. In the 1990's more organized social movements started to gain foot followed by series of forest conflicts between ENGOs and Metsähallitus that continued also in the new Millenium (Raitio 2008). Since the 1990's Metsähallitus also noticed the diversification of societal values associated with forestry, and initiated participatory processes, in which various stakeholders, such as ENGOs and reindeer herders, can participate in

the forestry planning. However, these participatory processes have been criticised for not allowing genuine possibilities for participation, but rather used to justify the decisions. This has led into series of conflicts between ENGOs, reindeer herders and Metsähallitus (Raitio 2008; Sarkki 2011).

## **Resilience of northern livelihoods to nature conservation**

### **Resilience of forestry to nature conservation and globalization**

Firstly, we will outline some developments regarding the closure of Stora Enso's northernmost pulp mill in Finland, at Kemijärvi, in April 2008, which employed some 220 workers and was important for the regional economy and as a source of livelihood for local people beyond those employed directly by the mill. Before the closure, Finnish pro-forestry actors communicated in the media that increasing pressures for forest conservation posed threats to pulp production at Kemijärvi. It was argued that a threshold would be exceeded if additional conservation measures were put into practice, leading to closure of the mill and reducing local possibilities for employment. As thresholds are hard to define before they are exceeded, this line of argument can be considered as a way by which pro-forestry actors attempted gain a stronger position in debates between forestry and conservation.

The real threat to the Kemijärvi mill, however, did not come from conservation

pressures: the factory was shut down as part of the process of reorganizing global pulp production by Stora Enso and moving production to the global South, for example to South America, for cheaper production costs. This highlights that disturbances can be surprising and Finnish pulp mills seem to be much more vulnerable to movements of global capital than to nature conservation.

Here an interesting distinction can be made between forestry as a local livelihood and forestry as an industrial sector with national and global dimensions which overshadow the importance of local aspects of production and social relations. Forestry as a sector is susceptible and vulnerable to trends in the global market economy, but resilient regarding its position in the Finnish political system. The resilience of Finnish forest companies towards, for example, local appraisals is based on their long traditions in Finland as being the key industry previously benefitting various societal groups, national exports, and economic growth. This means that while the forest industry makes necessary decisions to maintain its competitiveness in global markets, these decisions may sacrifice local benefits in favour of "national benefits" that forestry is still often perceived to deliver. This sacrifice was manifested in Kemijärvi when, despite the self-organized resistance of the Kemijärvi community against the mill closure, Stora Enso did not change its plans to shut down the factory. Stora Enso argued that the Kemijärvi mill had to go in order to maintain competitiveness in global markets and for securing the future of other mills in Finland. Interestingly, Stora Enso also refused to sell the mill

to another company to continue pulp production in the area. However, after the Kemijärvi pulp factory was closed in 2008 the resilience of the Kemijärvi community was examined by Rytteri (2010) who argued that heterogeneity in wood production practices and variety of linkages to external markets were factors that enhanced the ability of the community to cope with the rather dramatic closure, helped residents in adapting to the change.

Secondly, ENGOs have pressured Finnish forestry actors (Metsähallitus and other forest companies such as Stora Enso) to decrease industrial forestry in the north and establish new conservation areas. Recent forest debates in northern Finland (e.g. in Inari and Forest Lapland) were resolved in favour of ENGOs, reindeer herding and nature-based tourism, despite opposition from local and regional pro-forestry actors. ENGOs, including Greenpeace and Finnish Nature League, wanted to preserve large areas of old-growth forests from industrial forestry, and this also considered beneficial by reindeer herders as old-growth forests function as important winter grazing areas, especially because of tree lichens. A key reason for the debates turning in favour of the ENGOs and herders was that the forest companies feared conservationist campaigns would disturb their image as ENGOs were claiming that the Finnish forest industry was engaged in unsustainable wood harvesting practices in the north. Thus, the Finnish forest industry can be seen as vulnerable to pressure from their customers who were influenced by the ENGO campaigns. While customers of Finnish forest industry had previously been supportive of harvesting practices in

Finland's northern forests, the activities of ENGOs altered the position, perceptions and attitudes of customers in central Europe and hence created a new kind of pressure for Finnish wood harvesting practices. Thus, resilience of the Finnish forest industry to nature conservation suffered when the ENGOs were able to persuade customers of Finnish forest products to change their stance regarding logging activities in old-growth forests.

### **Resilience of reindeer herding to nature conservation**

The Inari case was also revealing in terms of reindeer herding and the divergence between community resilience and livelihood resilience. There have been long lasting disputes in Inari between reindeer herders and Metsähallitus over loggings in old-growth forests, which provide important winter pastures for reindeer. In 2005 Greenpeace intensified its campaign in Inari and established a campaign camp to Inari to promote conservation of old-growth forests. Greenpeace formed a coalition with some reindeer herders to protect the forests. The intervention of ENGOs, especially Greenpeace, in the Inari debate that had been ongoing between Metsähallitus and reindeer herders, led to a situation where reindeer herders had a stronger position in the debate. The coalition between Greenpeace and herders increased possibilities for effective resistance against industrial forestry. However, at the same time the intervention of Greenpeace in the debate caused serious local friction between reindeer herders in coalition with the Greenpeace and

some other locals resisting Greenpeace and promoting logging. Reindeer herders gained power to fight against forestry while community resilience suffered, as the ENGOs introduced friction between heterogeneous parts of the community. It can be expected that poor local relationships make collaborative decisions about forests and self-organization capacity more difficult in the future, and thus decrease resilience of the community. In the Inari case the heterogeneity of the local community in fact made the community more vulnerable to outside disturbance.

It is not only ENGOs that are causing problems for reindeer herders -- efforts for stricter rules in protected areas can threaten reindeer herding. When stricter rules in protected areas are imposed on herding, as in the Malla Strict Nature Reserve in Lapland, it can lead to reindeer herding communities fighting each other for the remaining pastures (Heikkinen *et al.* 2010). Here not only livelihood suffers but increasing pressure is causing changes in community dynamics which are harmful for self-organization capacity and community resilience. Yet, the Malla case is an exception as in the national parks Finnish law secures rights of reindeer herding and thus increases the resilience of reindeer herding towards potential pressures caused by protected areas. Thus institutional mechanisms can increase livelihood resilience. In addition, protected area certification system PAN Parks has two certified parks in Finland. In Oulanka National Park PAN Parks certification has created considerable pressures for stricter protection and has the goal to protect fragments of unlogged boreal forest from intensive reindeer

herding (Heikkinen *et al.* 2012). However, despite the pressures new regulations have not been implemented, but park management Metsähallitus has managed the tension quite successfully able to maintain the certification, but not imposing stricter rules for reindeer herding (Sarkki *et al.* 2013). Here also legal right for reindeer herding has protected herding from additional restrictions to use the national park by directing stance park management has taken on herding.

In addition to protected areas, species conservation is causing harm to reindeer herding, especially with regard to the protection of predator animals. For example, the number of wolves in Finland has been debated between the EU and Finland – the EU claimed in 2005 that Finland was violating the conservation targets of the EU's habitat directive. After intense debate, the appeal was closed in 2008 when the European Commission finally stated that Finland has not threatened the sustainable level of its wolf population (Heikkinen *et al.* 2011; Hiedanpää & Bromley 2011). However, this debate stresses that international conservation pressures for increased predator conservation exist. The resilience of reindeer herding to predation is rather poor, for example, in southern parts of the Finnish reindeer herding area, where predator populations are expanding from south and east in areas where conservation hunting measures are rather limited and predator density high. Adaptation measures by herders include taking reindeer to home fences during wintertime and by spending more time in forest areas in an effort to supervise their herd, or at least to find the carcasses of reindeer killed by predators

in hope to gain some state compensation payments. These may be successful to some extent, but the presence of wolves in herding areas is difficult for herders and reindeer to adapt to (Heikkinen *et al.* 2011).

However, compensation schemes are perhaps the biggest issue affecting reindeer herding's resilience to predators. As far as land predators are concerned (wolf, wolverine, bear, lynx), the compensation schemes are much debated and considered as insufficient and unfair by the herders. Considerable problems arise when killed reindeer have to be found and proven to be caused by a predator to get compensation. As a result of this, the cost, time and money herders have to invest increase and many predator kills remain uncompensated. However, the change in the compensation system regarding the golden eagle has been quite successful. Reindeer Herding Cooperatives are currently being compensated for the number of nesting eagles within the cooperative area as well as on the basis of the assumptions about how large a portion of the eagles' diet is based on reindeer in a given area. Currently, herders themselves are informing the environmental administration about eagle nests, which they have located in order to receive compensation. With land predators, there are constant accusations that herders are poaching them without licences (Naskali *et al.* 2006; Heikkinen *et al.* 2011). The golden eagle example demonstrates that institutional arrangements can play an essential role in transforming a threat into an opportunity and increasing the resilience of local livelihoods as well as enhancing relationships between reindeer herders and environmental managers and administrators.

## **Lessons learned**

Following the examples outlined in this article, some suggestions can be made for further examinations of resilience in the North. However, it should be noted that various contextual factors also impact on resilience of reindeer herding and forestry to nature conservation. For example, resilience of reindeer herding to nature conservation depends on range of contextual factors: what is the amount of predators in given Reindeer Herding Cooperative (RHC), are there certified protected areas within the RHC, and are ENGOS campaigning in given RHC and what are the relationships of herders and other locals to the ENGOS. On the other hand, resilience of forestry is also dependent on the smaller scale area under question. Obviously, if there are no old-growth forests in the area, disturbances from ENGOS cannot be expected. Furthermore, resilience of communities mainly dependent on single industry depends on the available alternative livelihood strategies. Finally, Metsähallitus as an organization may be resilient to ENGOS' aims as Metsähallitus dominates the forestry planning, but ENGOS' strategies to effect on Metsähallitus through its customers are not controllable by Metsähallitus. It is the market context in which Metsähallitus operates that effects great deal on Metsähallitus' resilience. In addition, resilience of forestry in private forests is different than in state owned forests. The resilience of individuals in forestry or reindeer herding depend on their relationship on the livelihood in question. If they have alternative livelihood strategies this makes them less vulnerable. Finally, the enclosure of Kemijärvi pulp

mill may increase resilience of Finnish forest industry by increasing profitability and raising values of stocks, and also secures jobs in the remaining pulp factories, while having negative consequences for Kemijärvi community. Our cases provide only case specific examples regarding local complexities of resilience and thus cannot provide generalised answer to a question: how resilient reindeer herding and forestry are to nature conservation in northern Finland. Despite the context specificity of our findings some lessons can be drawn for future studies on resilience.

Firstly, resilience assessments should be explicit as to whether they assess resilience of communities or livelihoods since these are two different things, and positive measures for one can be a threat to the other. This was illustrated by the Inari case, where intervention of Greenpeace and other ENGOs enhanced resilience of reindeer herding as a livelihood against forestry, but at the same time decreased community resilience in Inari by causing local conflicts between some herders and those in favour of forestry. Before the intervention of ENGOs this local conflict was not acute. Furthermore, the resilience of an industry should be treated as a different issue than the resilience of a livelihood from a local perspective. This highlights that resilience studies need to address the question: resilience for whom (Lebel *et al.* 2006).

Secondly, as seen in the forestry sector argument regarding the possible shut down of the Kemijärvi pulp factory because of additional forest conservation, we can see that thresholds and tipping points are very political concepts and ideas, and actors

tend to emphasise that the threshold is closer than in reality as this supports the position they take (see Sarkki & Karjalainen 2012). In this way, resilience studies need to provide solid evidence for the existence of thresholds or tipping points if science is to have relevance for policy (see Cash *et al.* 2003).

Thirdly, the Kemijärvi case also highlights that disturbances that exceed the threshold can be surprising and come from unexpected directions, underscoring the need for resilience studies to utilise scenario tools to examine the possible impacts of unexpected developments.

Fourthly, the assumption that heterogeneity in local livelihood structure increases resilience to outside disturbances (e.g. Rytteri 2010) should be evaluated critically, as it may be the case (like in Inari) that outside intervention (e.g. by ENGOs) can create friction and gaps between heterogeneous local groups, making life more difficult and possibly also decreasing community resilience to other disturbances in the future.

Finally it can be asked whether resilience towards nature conservation is a good or bad thing depending on scale and context. Conservation is seen to benefit the public good, while it may disturb local social justice. The kind of resilience that ensures long-term vitality of local communities and livelihoods, even though new conservation measures are imposed, seems to be worth fighting for. Often conservation may be beneficial for local livelihoods (e.g. protected areas as reindeer pastures), but there is also threshold here in that a possibility may be turned into a threat by restricting reindeer herding. Furthermore, institutional mechanisms (e.g. governmental practices)

can be put into place to increase resilience of local communities and livelihoods to the threat posed to reindeer which is created by conservation. An example of this kind of institutional mechanism is the compensation schemes regarding predators and reindeer. However, the ability of institutional arrangements to increase resilience has its limits. In predator policies there are institutional and governmental mechanisms for enhancing herders' resilience, whereas in other areas (e.g. ENGOs and forestry) formal mechanisms are lacking and the institutional structure is in a sense "neoliberal", which emphasises market- and civil society-based governance, rather than state-based regulation (Sarkki & Rönkä 2012). This hinders possibilities for state-based governance to create institutional mechanisms which would help co-existence of conservation and local livelihoods. How to plan and launch institutional mechanisms also in neoliberal setting that would enhance local resilience to conservation and other pressures northern communities and livelihoods encounter becomes a crucial research question. These mechanisms would make conservation more appealing to local communities.

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