



Assessing a nationwide policy reform toward community-based conservation of biological diversity and ecosystem services in the Alpine North

Vera Helene Hausner^{a,*}, Sigrid Engen^b, Lorena Muñoz^a, Per Fauchald^b

^a Arctic Sustainability Lab, UiT-The Arctic University of Norway, Naturfagbygget 9037, Norway

^b Norwegian Institute for Nature Research, Tromsø, Norway

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ABSTRACT

Many attempts have been made worldwide to implement community-based conservation to gain a more inclusive protection of biological diversity and ecosystem services. In a recent national reform, the management of protected areas was devolved from the Norwegian government to local conservation boards. The main goals were to reduce local resistance toward conservation and ameliorate threats to biodiversity. We assessed the attainment of these goals a decade after implementation. We synthesized literature published since the onset of the reform and results from a survey (N = 936). Despite the limited inclusion of stakeholders and experience-based knowledge by local conservation boards, survey data show that community-based conservation arrangements are supported by residents. Conservation has been tailored to the local context by balancing sustainable use and protection, but there are some discontent with the opportunities for rural development. Managers report that biological diversity is threatened in 27% of the protected areas. Climate change and increased visitation are major conservation challenges that need to be addressed by the boards, but their mandate and capacity appear inadequate to cope with these challenges. Few studies have evaluated the conservation impact of the reform and we therefore suggest this as a priority for future research.

1. Introduction

Community-based conservation is based on the premise that conservation success can be obtained by providing benefits to local communities and increasing local participation in decision-making (Berkes, 2004). It recognizes that granting local people management responsibility for biological diversity and ecosystem services could create a sense of ownership and an incentive to protect areas of high conservation value (Brown and Mitchell, 2000). Community-based conservation can also bolster support by reconciling conservation with rural development and by tailoring management of protected areas to the values, knowledge, needs and preferences of local people. When local people participate in rulemaking or in the day-to-day management of protected areas, more effective solutions that create ecological and social synergies can materialize, and it is more likely they will comply with the rules (Andrade and Rhodes, 2012; Persha et al., 2011; Young et al., 2013).

Community-based conservation has been defined as a set of

“principles and practices that argue that conservation goals should be pursued by strategies that emphasize the role of local residents in decision-making about natural resources” (Adams and Hulme, 2001). The term includes situations characterized by i) collectively shared tenures, ii) cases where “local residents exercise de facto control in the absence of formal rights,” or iii) where responsibilities for managing protected areas are transferred to locally elected bodies (Agrawal and Ribot, 1999; Hausner et al., 2012; Poteete and Ostrom, 2004). Community-based conservation does not necessarily imply full decision-making power at a local level, but is characterized by a bottom-up process where decision-making starts at the local level and interacts with multiple levels of governance (Baral, 2012; Berkes, 2006). Community-based conservation thus differs from most co-management models where governance is shared between government and stakeholders (Hovik and Hongslo, 2017).

Community-based conservation reforms have not always delivered the expected results (Brooks et al., 2013). There is a range of factors determining the success of a governance reform, and the way the reform

* Corresponding author.

E-mail address: vera.hausner@uit.no (V.H. Hausner).

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is designed and implemented is particularly important (Brooks et al. 2013). Failure could, for instance, be explained by lack of empowerment of the user groups most affected by the reform (Berkes, 2009) or a lack of accountability in situations when powers are transferred to local administration rather than to elected community leaders (Ribot, 2002). Moreover, reforms are often defined by pre-determined conservation agendas, thereby failing to deliver meaningful local participation and empowerment in practice (Campbell and Vainio-Mattila, 2003). Lack of local capacity to manage biological diversity and ecosystem services (Brooks et al., 2013), poor design and implementation of participatory processes (Sterling et al., 2017; Young et al., 2013), lack of arenas for social learning, trust building, and conflict resolution are other potential reasons for failure (Young et al., 2016). Those anticipating that rural communities should prosper from protecting biological diversity and ecosystem services, might have been disappointed by too low revenues or unequal distribution of benefits from, for example, increased income from tourism in nearby protected areas. Poor outcomes with respect to rural development may create few incentives for community-based conservation in the long run (McShane and Newby, 2004).

In Norway, a nationwide policy reform toward community-based conservation was implemented in 2009. Prior to the reform, management responsibility was held by the state representative at the regional level. Ten years later, 80% of the protected land in Norway is managed by local conservation boards consisting primarily of local politicians and, in some regions, Sámi indigenous representatives and common property owners (Ministry of Climate and the Environment, 2019). Protected area managers with scientific and local expertise have also been appointed along with local stakeholder councils. The reform has been characterized as “a grand experiment” (Fauchald and Gulbrandsen, 2012), given the scale of the reform, the unique model for managing protected area networks, and its implementation in a highly developed country.

The reform was expected to ameliorate conservation threats and reduce local resistance toward protected areas (Auditor General, 2014) by balancing conservation and use, involving and mobilizing stakeholders, and integrating different types of knowledge in the management of these protected areas (Hovik and Hongslo, 2017). Our aim with this paper was to assess the efficacy in terms of whether the overall political goals have been reached. Drawing on the academic literature on community-based conservation, we first developed a framework for assessing the expected impacts of community-based conservation. As the arguments for the reform were primarily instrumental (local empowerment is perceived as a means to reach the end goals of the reform) or substantive (inclusion of experience-based knowledge could increase the quality and legitimacy of decisions), the framework does not explicitly incorporate normative arguments for participation such as equity and democratic concerns. We used the framework as an analytical tool to synthesize evidence from peer-reviewed and gray literature published about the reform and to identify gaps in our knowledge about the impacts. Given the few published studies available, we also made use of unpublished data from a large-scale population survey on local support of conservation boards to fill in some of the gaps. We asked the following:

Q1. Has the community-based conservation reform resulted in the inclusion of stakeholders and experiential-based knowledge in protected area management?

Q2. Are conservation decisions tailored to the local context in terms of balancing sustainable use and conservation?

Q3. What is the level of public support for the local conservation boards and are conservation decisions considered acceptable to local stakeholders?

Q4. Do people’s preferences for ecosystem services affect their support for protected areas?

Q5. What is the evidence of the impact of the reform on biological diversity and ecosystem services?

1.1. Assessing the expected impacts of community-based conservation

Empowering local decision makers to manage protected areas could reduce local resistance to conservation and mitigate threats through multiple causal pathways. One of the main assumptions, and one that is central for the policy reform assessed in this paper, is enhanced efficacy of decision-making in terms of balancing local interests with conservation concerns (Fig. 1). Local decision makers could better understand conservation challenges from different perspectives and make use of experience-based knowledge to identify priorities and solutions that are tailored to the protected areas they are managing (Falleth and Hovik, 2008; Hovik and Hongslo, 2017; López-Rodríguez et al., 2020). This may in turn promote a higher legitimacy of decisions on conservation compared to those made by governmental agencies (i.e., output legitimacy in terms of perceived performance of protected area management, satisfaction of stakeholder preferences, and/or acceptance of conservation decisions), see Birnbaum (2016). Local stakeholders, that is, residents that are affected by protected area management, are more likely to comply with and commit to long-term conservation when their knowledge and needs are taken into consideration in decision-making processes. According to some authors, allowing small-scale consumptive use can also mobilize local conservation support against large-scale development that is more detrimental to conservation (Brooks et al., 2013; Nolte et al., 2013).

Community-based approaches have been found to be more inclusive and better at integrating Indigenous and local knowledge (ILK) than other approaches (Benyei et al., 2020). Indigenous and local knowledge is defined as a special form of experience-based knowledge that has accumulated over time and, along with biological information, could provide a multiple evidence base for conservation decisions, thereby improving the capacity to manage biological diversity and ecosystem services (Fazey et al., 2006; Kohler and Brondizio, 2017; Tengö et al., 2014). Díaz et al. (2015) define ILK as: a “cumulative body of knowledge, practices, and beliefs, evolving and governed by adaptive processes and handed down and across (through) generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment.” By spending time in nature, indigenous and local people observe and experience changes that can provide valuable insights relevant for conserving biological diversity and ecosystem services. Thus, ILK can contribute to a better understanding of the processes underlying conservation threats in protected areas and help identify appropriate actions to mitigate loss of biological diversity and ecosystem services (Wheeler and Root-Bernstein, 2020).

Tailoring decisions to a local context go beyond effective decision-making to balance use and protection. Daugstad et al. (2006) argue that conservation conflicts are not necessarily driven by effective trade-offs between use and protection, but rather from misconceptions about the relationship between nature and culture. In many cases, conservation of biological and cultural diversity depends on continuous management of land and the custody of indigenous and local people through, for example, small-scale farming (Rivera López et al., 2020). Mountainous landscapes in Europe have been shaped by long-term use by the rural populations, and their continuous use is necessary for maintaining the conservation values in many protected areas (Daugstad et al., 2006; Olsson et al., 2000). In such cases, local custodians are crucial for conserving the biological diversity and the cultural ecosystem services of mountainous landscapes. Output legitimacy, such as effective conservation and reduced resistance to decisions, is likely to unfold as community-based protected area management incorporates people–nature interactions that have evolved over a long time. Culturally sensitive policies can also avoid local conservation conflicts that are rooted in strong emotional bonds to places.

A second pathway to attain the goals is the potential for increased trust in conservation decision-making and enhanced social learning. Resistance to conservation could be a simple matter of the

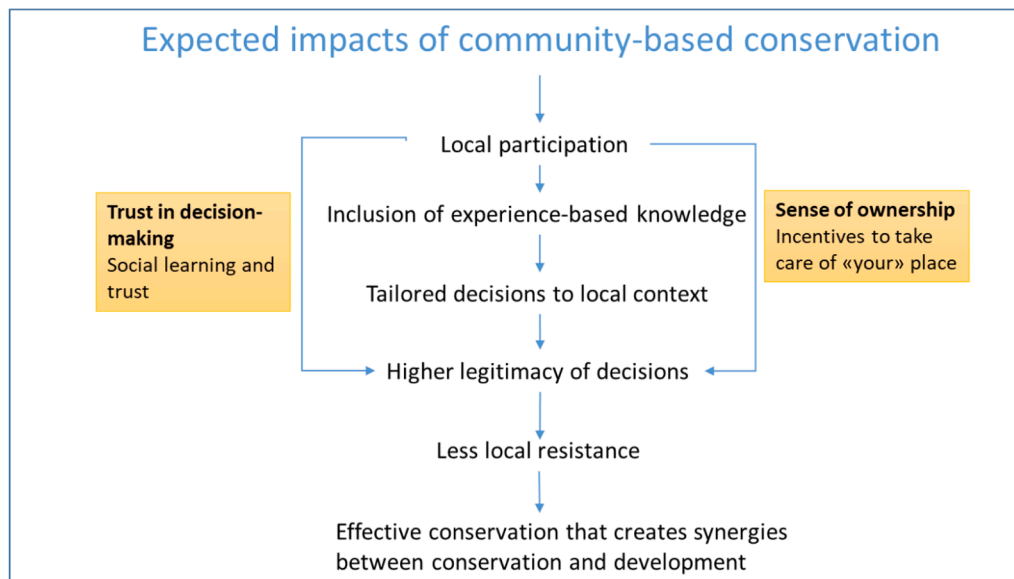


Fig. 1. Schematic diagram of the pathways used to reduce local resistance and attain conservation goals.

trustworthiness of local versus external governmental agencies. Trust is defined as the “willingness to accept vulnerability based upon positive expectations of the intentions or behaviours of another” (Rousseau et al., 1998), and has been shown to increase support to conservation through both attitude and behavioral change (Winter and Cvetkovich, 2010), reduce local resistance and compliance with conservation measures (Andrade and Rhodes, 2012), and enhance legitimacy of management agencies (Turner et al., 2016). Sharp et al. (2013) distinguish between the trusting intentions of local residents and the characteristics of agencies that make them trustworthy. Local decision makers could be considered more trustworthy due to their ability (e.g., appropriate knowledge, familiarity with, and awareness of the site being managed); benevolence (e.g., the belief that they act according to the best interest of local residents); and integrity (e.g., they act in accordance with a set of values and norms that is shared and accepted by residents). According to Sharp et al. (2013), goodwill shown toward decision makers makes it more likely that local residents will consider a conservation decision as legitimate. However, it should be noted that local decision makers are not always considered more trustworthy by residents. Past experiences, elite capture, and local power dynamics are important for trust in decision makers and conservation outcomes (Agrawal and Ribot, 1999; Schmidt et al., 2018; Sterling et al., 2017).

Interpersonal trust in conservation decision-making could also be enhanced by iterative interactions and learning about others’ viewpoints and how they understand the conservation challenges. Close proximity to local decision makers makes regular face-to-face interactions more feasible and over time could enhance trust and relationships between stakeholders and conservation boards, thereby increasing the output legitimacy and acceptance of decisions that are being made (Young et al., 2016). Local participation that is built on extended engagement through face-to-face interactions and dialogue can increase social learning and reduce conflicts, especially if stakeholder involvement is considered fair by the participants (Ernst, 2019; Sterling et al., 2017). Social learning, defined as a change in individual understanding that happens through social interactions and occurs across a wider number of people (Reed et al., 2010), could also be enhanced in trustworthy local environments allowing participants to open up and share their knowledge about conservation challenges with other participants (Ernst, 2019).

A third pathway relates to the bond that forms when local people themselves are responsible for the care of a place, which could increase their motivation and interest in conservation (Brown and Mitchell,

2000). Chapin and Knapp (2015) argue that “capitalizing on the attachment that people feel to particular places can provide a foundation for stewardship strategies.” Place attachment is the emotional bonds people form with nature and can be assessed as place identity and place dependence (Masterson et al., 2017). Place identity refers to the strong emotional or symbolic connections that people have with their special places that define who they are and where they belong, whereas place dependence describes a more functional relationship with nature because of its instrumental value to fulfill specific goals or activities needs (e.g. protected areas could provide people with recreational opportunities, clean water or flood protection, provisioning services, or income from tourists visiting high quality sites). Place dependence encompasses the direct and indirect values that people assign to places depending on their experiences, which could be either direct, for example, hiking in mountainous landscapes, or indirect, for example, recognizing iconic peaks in a national park from reading or media (Gurney et al., 2017).

Place attachment can act as both a barrier and an enabling condition for conservation (Masterson et al., 2017). People with equally strong attachments may ascribe different meanings to a place, which may influence their opposition or support to conservation. Place meaning is about *what* kind of images people have of a place and the specific values they appreciate or dislike, which acts as mediating condition between place attachment and the willingness to act to conserve nature (Masterson et al., 2017). Similarly, Brown et al. (2020) used the concept of place values to identify how people relate to nature and associate different values with specific places. Place values connect the assigned values of an important object of a place with the values held by an individual or a group about nature and is tightly linked to place attachment and meaning. Empirical studies have demonstrated that place values are interrelated with attitudes and preferences for management actions and can indicate potential conservation conflicts in protected areas (Hausner et al., 2014; Brown et al., 2020)

Numerous studies in the ecosystem services literature have documented how local community members differ with respect to the ecosystem services they value and their preferences for conservation or local development (Satz et al., 2013). These differences are also manifested spatially, as locations of high conservation value can be associated with bundles of ecosystem services (including biological diversity) that some local residents would like to protect, which is not necessarily shared by other stakeholders in the community (Zoderer et al., 2019). Local decision makers must therefore navigate different place meanings,

values and preferences associated with specific locations as some may resist while others may support a decision. However, the idea is that over time people will build relations with the protected areas they are managing and develop an intrinsic motivation to take care of nature (Cundill et al., 2017; De Vos et al., 2018). Community-based conservation projects that enhance the feeling of autonomy and competence of local communities has been shown as more likely to foster such an intrinsic motivation to conserve nature (Cetas and Yasué, 2017).

Finally, care for conserving biological diversity and ecosystem services in protected areas could be extrinsically motivated by demonstrating that local institutions have the capacity to protect nature without interference from external governments. Stewardship can also evolve through the benefits that protected areas have for rural development, but such motivations have been shown to be less likely to attain conservation goals than intrinsic motivations (Cetas and Yasué, 2017).

2. Materials and methods

2.1. Norwegian reform toward community-based conservation

The community-based conservation reform in Norway follows much of the advice from the prevailing literature on community-based conservation. Management has been devolved to local conservation boards that manage single or multiple protected areas that transcend administrative borders (Fauchald and Gulbrandsen, 2012; Engen et al., 2019). The boards consist of elected local and regional politicians that can be held accountable through elections, with some additional rights holders such as Sámi representatives and commons property leaders represented on some of the boards (Engen et al., 2019; Lundberg et al., 2021). The local conservation boards are responsible for making decisions about human activities in the protected areas and for developing management and action plans in accordance with broadly defined conservation rules, while the Norwegian government has retained authority for rulemaking, conflict resolution, and the monitoring and sanctioning of rule violations (Hongslo et al., 2016). Some scholars claim that the reform cannot be considered community-based conservation because of the limited power granted to conservation boards for local development (Overvåg et al., 2015; Skjeggedal et al., 2016; Skjeggedal and Clemetsen, 2018) or for resisting large-scale development projects. However, the overall purpose of protected areas is conservation, and according to other authors, the rules in Norway are already flexible in terms of permitting sustainable use by local communities in protected areas (Fauchald et al., 2014; Hausner et al., 2017; Engen et al., 2018). Development of commercial tourism, cabin and second home development, and other large-scale developments has been strict, as these interventions are expected to threaten conservation values of protected areas.

Local stakeholder councils, consisting of landowners, environmental and recreational interests, the tourism industry, cultural heritage representatives, public administration, Sámi representatives, and livestock owners, have been established to provide advice to the conservation boards (Engen et al., 2019). The stakeholder councils are required to meet at least once a year. To support the work of the boards, the government has engaged protected area managers with conservation expertise. Recently, the government has recognized the low capacity of the boards to address the increasing conservation challenges and has consequently increased their funding (Ministry of Climate and the Environment, 2019).

2.2. Conservation challenges in the Norwegian Alpine North

A high proportion of the protected areas in Norway are located in what Metzger et al. (2005) defined as the Alpine North, mainly consisting of mountainous landscapes. According to the European classification, 91.3% of Norway is located in the Alpine North (Price et al., 2019). There are specific conservation challenges in these areas that local boards have to consider. For instance, there are already signs that

climate change can represent a significant challenge for managing areas of high conservation value, as evident in the rapid melting of glaciers and tree and shrub expansion into the mountainous tundra (Cannone et al., 2007; Hallinger et al., 2010). Regrowth in cultural landscapes threatening mountainous pastures and traditional haymaking fields is also a major concern for Norwegians and those managing protected areas (Engen et al., 2019), and recently a tourism boom in the Norwegian mountainous landscapes has presented new challenges to protected area management (Gundersen et al., 2019; Kuba et al., 2018; Muñoz et al., 2019a; Runge et al., 2020). A national strategy for tourism and a visitor strategy for national parks aimed at increasing revenue from tourism to rural communities within and adjacent to protected areas, was issued in 2015 (Norwegian Environment Agency, 2015). Amenities development through second homes is also a conservation challenge in mountainous protected areas (Kaltenborn et al., 2009), and can be hard to control for the boards. The local conservation boards therefore must manage the protected areas so as to continue to attract different groups of visitors while simultaneously protecting places and species of high conservation value (Gundersen et al., 2019).

Decline in rural populations is strongly associated with the restructuring of agriculture which, together with climate change, has resulted in forest recolonization of mountain pastures, which in turn has implications for biological diversity, landscapes, local heritage, and tourism (Olsson et al., 2011). This is particularly evident in southern Norway, where summer farms and rights to provisional ecosystem services on mountain common properties rely upon active farming (Hausner, 2015). In northern Norway, the mountainous landscapes are mostly public lands, however, in northernmost Norway, land tenure and resource management was transferred from the government to residents of the Finnmark region in 2005 (Broderstad et al., 2020). In northern Norway, Sámi indigenous lands based on usage rights to pastures for reindeer herding cover most of the mountainous landscapes, regardless of land ownership. In the north, Sámi representatives are always a part of the local conservation boards.

The historical right to access the land owned by the King for subsistence use is also the root of the public right of access, *Allemansretten* – a law that grants both locals and tourists the right to access and move freely on all open lands whether public or privately owned (Hausner et al., 2014). In addition to hiking and camping, *Allemansretten* also allows the public access to traditional activities such as harvesting berries, mushrooms, herbs, or other plants.

The right for everyone to move freely provides a challenge as tourism grows. However, most of the mountainous landscapes are still remote wilderness areas (areas > 5 km from roads or encroachment). The main categories of protection that are managed by local conservation boards are large, protected areas such as national parks (IUCN II) and protected landscapes (IUCN IV). Outdoor activities such as cross-county skiing, hiking, berry picking, horseback riding, and cycling, as well as hunting and fishing are usually permitted. There are no fees for entering the park, but sometimes for parking and road access. Commercial and organized tourism has also been strictly regulated, but recent reforms have opened up for tourism operators to a larger extent (Gundersen et al., 2019) (Fig. 2).

2.3. Data and synthesis

The main aim of this paper was to assess whether the 10-year-old policy reform has worked as intended. Our primary interest was to evaluate the evidence and understandings presented in peer-reviewed and gray literature. We searched for literature on Google Scholar regarding the reform using the term “protected areas” combined with “Norway” and explored all empirical studies which have been published relating to the reform since 2009. We excluded articles that were based on empirical studies conducted before the local conservation boards were established. We also excluded empirical studies that were primarily focused on visitor use or wildlife management without an explicit

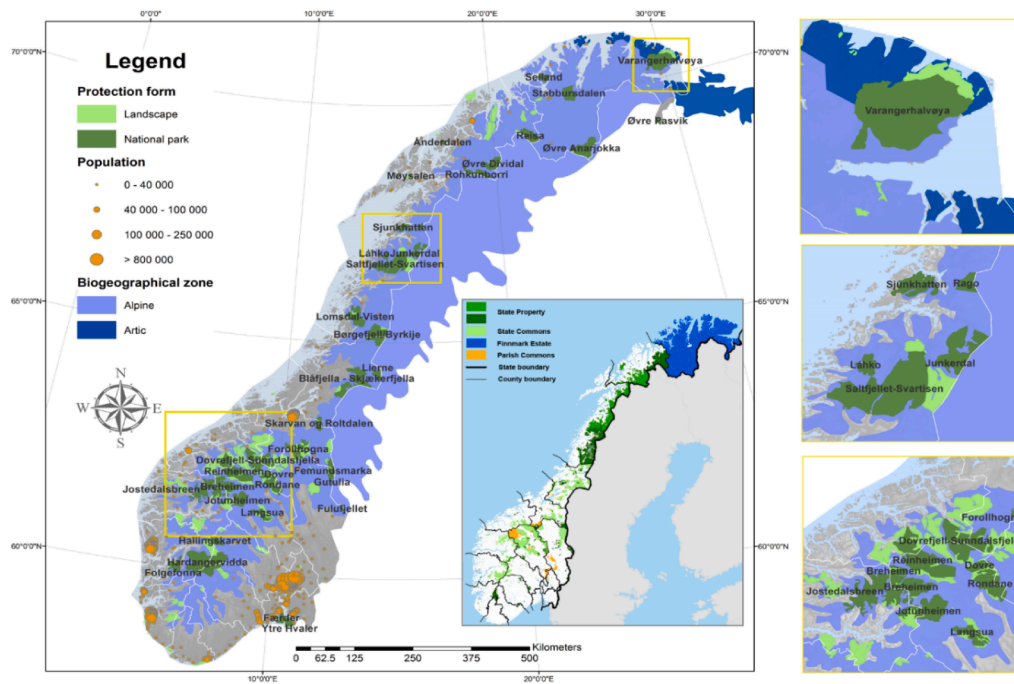


Fig. 2. Map of the protected areas, land tenure, and Alpine North biogeographical zone.

link to how protected areas are managed. We searched the www.evaluationportal.no to collect all evaluation reports relating to protected areas and biodiversity conservation from 2009–2019.

There are few empirical studies available that specifically study how local residents perceive the local conservation boards, and we therefore also present unpublished survey data that was specifically designed to evaluate this aspect of the reform. In total 6000 invitations were sent to randomly selected residents from southern (Number of respondents = 440) and northern Norway (Number of respondents = 486) to participate in a web-based online mapping survey (Number of protected areas = 56). The residents (age > 18) were randomly selected from the tax register stratified by age, gender, and municipality. The questions that specifically addressed the policy reform are included in a questionnaire at the end of the survey (Appendix A). We included two questions about local participation (i.e., opportunity to voice opinions and satisfaction with the participatory processes), and two about integration of knowledge (experience-based and biological). Overall perception of the degree of governmental control and effectiveness of decision processes was also included. Finally, two questions about support for management of natural areas (i.e., output legitimacy) were included; one specific to local board's management of protected areas and one referring to municipalities' land use planning. We also asked about participants' trust in decision makers at different levels of governance and who they prefer as managers. In addition, the survey had open-ended questions where participants could elaborate on their perceptions of both the local conservation board and the environmental authorities in charge before the reform. (See further details about design and methods in Brown et al., 2015; Hausner et al., 2014).

Conservation impacts of community-based conservation or stakeholder engagement have previously been systematically reviewed as four types of outcomes relating to change in attitude, behavior, ecological, or economic outcomes (Brooks et al., 2013; Sterling et al., 2017). There were too few peer-reviewed publications specifically assessing the policy reform; thus we did not use a systematic review but adopted a narrative approach where we aimed at discerning factors relevant for assessing the expected impact of the policy reform based on our conceptual framework (see Fig. 1). A narrative review of empirical studies could combine results from previous studies by drawing on

interconnections between different factors such as causal linkages between attitudes – behavior – ecological outcomes, in relation to the different pathways described in our conceptual framework. We also depended on a narrative approach to synthesize the different data included in this study, ranging from rich, qualitative studies from a single site to results from quantitative surveys covering many protected areas. Our framework was developed to capture expected impacts when embarking on a reform toward community-based conservation, that we then assessed using literature from different disciplines relating to a single policy reform, creating a richer narrative synthesis appropriate for this study.

A narrative approach is also beneficial for explaining multiple interpretations of the results and the failure or success of conservation is a matter of perspective (Bennett, 2016; Dietz et al., 2008; Sterling et al., 2017). As explained by Bennett (2016) “Peoples’ perceptions, in the form of observations, understandings, and interpretations, can lead to positive or negative evaluations that exert a powerful influence on people’s support for conservation.” Local resistance to conservation is usually deeply rooted in different values or views on how ecosystem services should be managed, or distrust of those taking decisions on their behalf. Understanding the heterogeneous local values and preferences for managing biodiversity and ecosystem services, how different local views are represented in the new governance system, and the perceived trust in decision makers is, therefore, the first step necessary for evaluating a policy reform toward community-based conservation. Similar to Bennett (2016), we therefore also consider local perception as evidence for how the reform has played out. To allow for interpretation of multiple perceptions, the results and discussion have been combined in this paper.

3. Results and discussion

3.1. Local participation and the inclusion of indigenous and local knowledge

One of the arguments for devolution is that closer proximity creates local engagement and participation. Evidence for a more inclusive approach to protected area management is not well supported by the few

empirical studies that have specifically evaluated the reform. Local board members tend to see themselves as representing residents and their concerns, and claim that the reform has improved local involvement (Auditor General, 2014; Hovik and Hongslo, 2017). However, a survey among conservation board and advisory council members showed that conservation board members have a more favorable evaluation of the functioning of advisory councils compared with the stakeholders that serve on them (Lundberg and Hovik, 2017). Overvåg et al. (2015) found that the Norwegian model does not substantially include local stakeholders, as theirs is mainly a consulting role, which is different from the co-management models in Sweden, Austria, and Scotland that more explicitly create arenas for knowledge exchange and/or joint decision-making.

According to Hovik and Hongslo (2017), local politicians on the conservation boards seek information from a rather narrow network represented by municipal administration, park managers, and their closest colleagues. Inclusion of experiential knowledge was one of the main impacts expected from implementing the community-based conservation reform, but board members neither appear to encourage local knowledge holders and stakeholders to participate in protected area management nor bridge the different opinions and interests. The role of landowners, industry, recreation, and environmental NGOs or other local user groups is, according to Hovik and Hongslo (2017), “passive, informal, and weak.” The board members neither seek advice from science or professional biological expertise, nor higher-level environmental authorities.

According to the Auditor General (2014), establishing well-functioning advisory councils has been a challenge. The involvement of stakeholders is formalized through the appointment of advisory councils consisting of lay stakeholders (e.g., property owners, farmers, NGOs). These councils are only required to meet once a year. Part of the challenge is the large number of stakeholders in the councils making it difficult to convene because of so many members (Auditor General, 2014; Lundberg et al., 2021). On the other hand, restricting representation can lead to tension (Auditor General, 2014). Few meetings (in some cases none) result in little direct contact between stakeholders and conservation board members; instead stakeholders contribute with local knowledge in a more informal way through contact with protected area managers on a case-to-case basis (Lundberg and Hovik, 2017). The most recent evaluation report confirms the limited inclusion of stakeholders by the conservation boards, but also the lack of transparency about decision taken by the board (Lundberg et al., 2021). The members of the

advisory councils experience that they are primarily informed and not involved in dialogues about protected area management. The representatives from the Sami parliament have been particularly disappointed, as they feel that both the members of the board and the advisory council lack an understanding of Sámi use of nature and reindeer pastoralism. Perception of lack of inclusivity among Sami herders could also relate to the timing and yearly cycles of administrative work in conservation that do not necessarily fit the need of herders to be present on the mountains in periods.

In our survey, we did not find a general dissatisfaction with the local participation process among local residents (20%). Moreover, the majority of the participants thought the opportunities to express their opinions about protected area management were good (Fig. 3). However, the local participants were less satisfied with the utilization of knowledge in the management of protected areas. They requested more use of local experience and knowledge (81.5%) as well as biological knowledge (81%). In the open comments, the need to build knowledge and capacity was among key elements advocated by the participants.

3.2. Conservation decisions tailored to the local context

Local residents and stakeholder councils generally agree on the need to integrate sustainable use and conservation, whereas protecting the wilderness and large predators is less supported locally (Engen et al., 2019, 2018; Muñoz et al., 2019a). Albeit not specifically referring to the protected areas, Gangaas et al. (2013) found Norwegians to have a stronger anthropocentric view and greater emphasis on resource use and predator control than Swedish citizens. Similar results were found in a cross-cultural comparison of protected area management in Poland and Norway (Brown et al., 2015). Outdoor activities like grazing, fishing, hunting, and picking berries and mushrooms is generally allowed in Norwegian protected areas, which is less restrictive than in many other countries (Fauchald et al., 2017; Hausner et al., 2017; Linnell et al., 2015).

Despite the insufficient involvement of stakeholders, the conservation board seems to make decisions that balance sustainable use and conservation that are acceptable to both stakeholders and higher-level conservation authorities (Hovik and Hongslo, 2017; Lundberg et al., 2021). Protected area managers and stakeholders believe that the local conservation boards perform well in terms of balancing use and conservation (Engen et al., 2019; Hovik and Hongslo, 2017). They received few complaints, indicating acceptance of their decisions as well as high

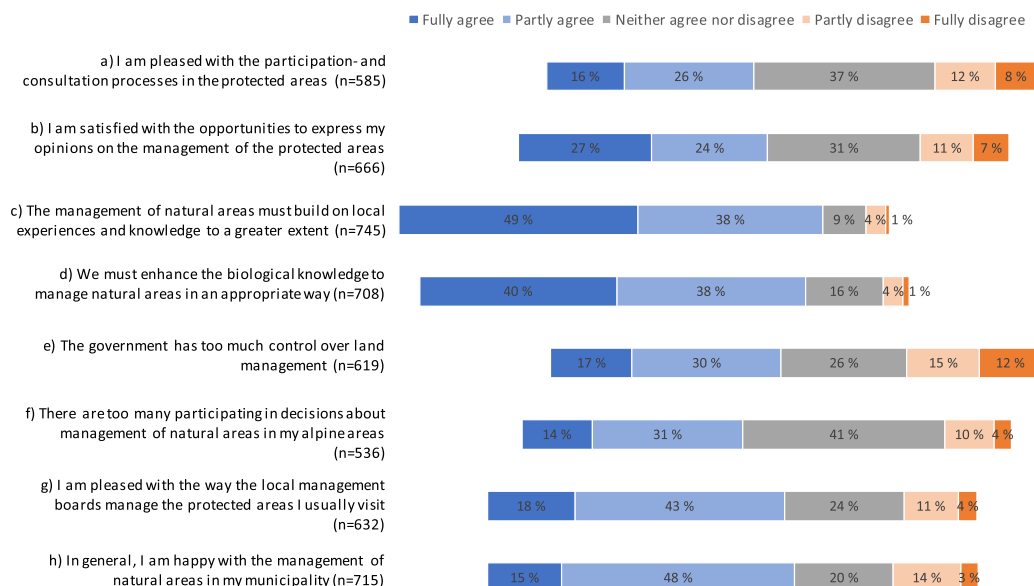


Fig. 3. Perceptions of protected area management among local residents in two mountain areas in Norway.

compliance of conservation regulations. There are also examples of boards revising the conservation permit decisions after discussing these with stakeholders (Hovik and Hongslo, 2017).

Engen et al. (2018) found that the current conservation policy of combining long-term use with biodiversity protection was well supported by residents, who also opposed land development that could threaten conservation and traditional uses of nature. Traditional livelihoods that maintain cultural landscapes and mountain pastures are an integral part of conservation in Norway (Olsson et al., 2011) and the decline of such activities caused by restructuring agriculture is a major concern for the government, protected area managers, stakeholders, and local residents alike (Engen et al., 2019, 2018).

Despite the willingness to support both conservation and traditional livelihoods achieving spatial co-existence is not always possible. For example, Risvoll et al. (2016) found that sheep and reindeer pastoralism were challenging to combine with increasing predator populations. The participation of Sámi reindeer herders in conservation decision-making is also demanding as the perceptions of landscape management differ (Risvoll et al., 2014), which is also expressed by Sámi representatives in conservation boards in the evaluation by Lundberg et al. (2021).

3.3. Support of local conservation boards and trust in protected area governance

Lundberg et al. (2021) find indications that most are supportive of the community-based conservation reform. In our survey, we found that more than 50% of the local residents were satisfied with the conservation boards and the management of natural areas in their municipality (Fig. 3) with less than 15% dissatisfied. The respondents also differed in their opinions about who should have authority over protected areas: 36% preferred the local conservation boards to continue, 30% preferred to replace the boards with municipalities, and 29% with the national environmental authorities. In the open comments, we found the main reasons for selecting the national environmental authorities were the need to prioritize conservation, higher expertise on biological diversity and ecosystem services, and financial capacity to implement decisions (Q5b, Appendix B). Those in favor of a strong role of municipalities, argue for facilitating rural development based on protected areas and the dispositional rights of property owners. They emphasized the subsidiarity principle as the need for geographical differentiation as exemplified by these statements: “Norway is a country with large geographical differences, even within single counties. No one can manage the national park better than the municipality”; “I think the management should take place in closest possible proximity to nature and its users. At the same time, cooperation between different agencies is important to coordinate the management. If possible, I would’ve closed down the local conservation board as well.” Those prioritizing the continuation of local conservation boards were more confident that these boards could provide biological expertise while bringing in local knowledge into decision-making, which is interesting when considering

that local residents also perceived this as a major weakness in the current protected area management.

Our results also show that the conservation boards were trusted by local residents to a greater degree than other authorities involved in protected area management. In total, 62% had a high to very high trust in conservation boards compared with 44% for municipalities and 41% for regional environmental authorities (Fig. 4). Our results are similar to a survey of representatives serving on stakeholder councils (Engen et al., 2019). In this study, trust in conservation boards, stakeholder councils, and protected area managers was relatively high, and the level of trust was less polarized compared with trust in municipalities and regional environmental authorities.

Trust building and social learning are important for building bridges between conservation interests through knowledge, values, and concerns of opposing stakeholders (Young et al., 2016). The Norwegian model has been criticized for putting too little emphasis on the need for continuous interactions and learning among stakeholders (Engen et al., 2019; Hongslo et al., 2016; Overvåg et al., 2015). Balancing sustainable use and conservation through representation is, according to the adaptive management literature, insufficient for long-term conservation (Berkes, 2009; Hongslo et al., 2016). According to this literature, capacity to plan, monitor, and evaluate outcomes, preferably through an interactive, adaptive cycle that recurrently involves stakeholders is the ideal, but this depends on governmental investments or revenues from protected areas.

3.4. Preferences for ecosystem services and support for conservation

The Norwegian public is generally in favor of conservation, but support is lower in rural areas, and changes in attitude toward conservation as a result of the reform are uncertain (Selvaag and Aas, 2018). Engen et al. (2018) found that local people’s development preferences aligned with prevailing conservation policies in protected areas. This support was less evident among the representatives on stakeholder councils. Lundberg et al. (2021) found that in some of their case studies those involved in protected area management felt a sense of ownership and pride about managing their own protected areas and are more aware of the conservation values in the protected areas.

Power relationships matter in conflicts relating to biological diversity and ecosystem services. The stakeholder councils mainly consist of property owners while around a quarter represents fishing and hunting interests (Engen et al., 2019). Engen et al. (2019) also found that property owners were the main stakeholder group that were in favor of protected area downgrading and downsizing for rural development. Rural development has been a major source of conflict as protected areas are located in remote areas that suffer from declining rural populations (Skjeggedal and Clemetsen, 2018). This was further supported by Brown et al. (2014) who found distinctive ecosystem service bundles depending on place identity (local culture and consumptive use), place dependency (economic interests in place development), and

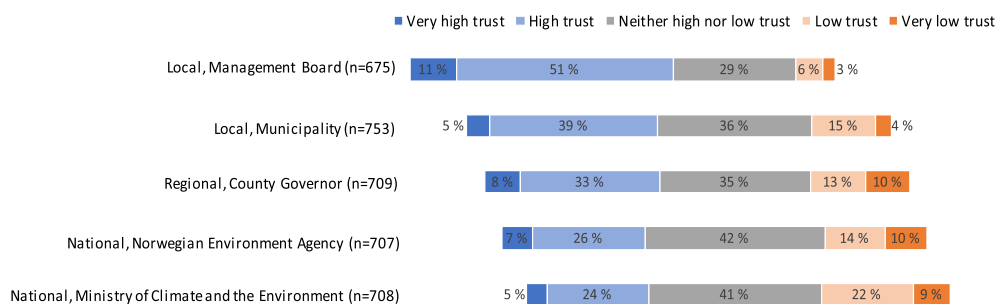


Fig. 4. Level of trust in institutions involved in protected area governance among local residents in two mountain areas in Norway.

bundles associated more with conservation.

The councils are also male-dominated (only 26% are female), resulting in a gender bias in stakeholder involvement (Lundberg, 2018). Previous studies found that middle-aged men are more interested in hunting, fishing, predator control, and land development, compared with women who are slightly more environment-oriented, and value nature for berry picking, health benefits, and its beauty (Brown and Weber, 2012; Hausner et al., 2015). The same survey also found a tendency among older people for a strong place identity associated with traditional use and mountain pastures who are against the development and motorized use that threaten mountain pastures.

Muñoz et al. (2019b) found that all users (local, Norwegian, and international) prioritize scenic and recreational cultural ecosystem services when mapping important places in protected areas, but local residents had a stronger place identity relating to consumptive uses (hunting, fishing, and berry picking) and local culture that differed from non-locals who liked places because of their wilderness and conservation values.

Sámi reindeer pastoralists are particularly vulnerable to loss of land for adapting to environmental changes (Hausner et al., 2019). Approximately half of reindeer herders tend to support conservation (Fedreheim and Blanco, 2017). On the one hand reindeer herders favor the reduced disturbance and lower degree of land development that protection offers, but on the other hand are less supportive of the protection of predators that they feel directly threaten their livelihoods (Risvoll et al., 2014).

3.5. Impact of the reform on biological diversity and ecosystem services

There are few studies documenting that the reform has reduced conservation threats to biological diversity. There is some indication of increased land development in the protected areas as a result of the reform (Engen and Hausner, 2017). Based on self-assessment by the local protected area managers, biological diversity is threatened in 27% of the protected areas (Ministry of Climate and the Environment, 2019). The main threats are ranked as follows: i) forest and shrub regrowth of mountain pastures and cultural landscapes, ii) invasion of non-native species, and iii) human disturbances. Land development, vegetation impacts, and littering were considered less important. In a recent evaluation of the reform, Lundberg et al. (2021) found that four of five of those participating in the management of protected areas, either as stakeholders, managers, or decision makers (N = 555), consider conservation values to be an integral part of protected area management. About 60% responded that conservation values have not been negatively affected by the reform. Despite of this, Lundberg et al. (2021) caution that the reform has not necessarily strengthened the long-term conservation goals. Most boards did not allocate time to revise management plans to address novel conservation challenges; decisions have been made on a case-to-case basis; exceptional decisions have been applied more than originally intended, and the local politicians have been reluctant to make unpopular decisions to strengthen conservation goals.

A study by Strand and Bentzen (2017) assessed the occurrence of human encroachments (buildings, antennas, roads, trails, ditches, etc.) inside Norwegian protected areas using aerial photographs. In the study, a representative selection of 232 1x1 km pixels from Norwegian protected areas (national parks, nature reserves, and protected landscapes) was analyzed, along with 100 such areas in wetland reserves. Encroachments were found in 37% of protected areas and 58% of wetland reserves, indicating that there may be a greater conservation threat to protected areas than previously assumed (Strand and Bentzen, 2017).

The recent exponential growth in tourism in Norway (Runge et al., 2020) and amenity development relating to second homes (Kaltenborn et al., 2009) represent conservation challenges for the local boards. To improve local economies related to tourism, a program for developing local visitor strategies within protected areas without violating conservation goals, was presented by the government in 2015 (Norwegian

Environment Agency, 2015). The wild mountain reindeer populations in the southern Alpine areas are sensitive to human disturbance and this is of particular concern with the increase in tourist traffic (Gundersen et al., 2019). Numerous studies have documented that disturbance from tourists and the associated network of infrastructure (e.g., roads, trails, and cabins) have negative impacts on reindeer migration and space use (see e.g., Panzacchi et al., 2013). In the evaluation by Lundberg et al. (2021) there are some evidence that visitor use of protected areas have created barriers so that wild reindeer could not move between seasonal habitats or that pastures have been avoided due to human traffic. The reindeer herds utilize large areas during their annual cycle, and there is consequently a need for large-scale spatial management strategies to avoid conservation conflicts (Gundersen et al., 2019; Kaltenborn et al., 2014). Accordingly, while local management boards should, on the one hand, promote eco-friendly tourism to support local economies, they also need to consider the current piecemeal fragmentation of wild reindeer habitat important for conservation and local hunters. In Lundberg et al. (2021) those involved in protected area management think that the “conservation first” principles have been applied in visitor strategies developed to attract tourists, but the at the same time the evaluation concludes that marketing of tourism in the protected areas combined with the reform poses novel conservation challenges for the boards.

4. Concluding remarks and research gaps

We found local support for the community-based conservation arrangements among residents. The reform has provided disappointing results with respect to the inclusion of diverse local voices and perspectives, and experience-based knowledge in decision-making. Nevertheless, the conservation boards are largely trusted by local residents and stakeholders and they appear to be able to balance sustainable use and conservation. Similarly, after investigating 92 biosphere reserves in 36 countries, Mohedano Roldán et al. (2019) did not find a strong relationship between level of stakeholder engagement and legitimacy of nature reserves in local communities. It is important to note that supporting local decision makers or finding them trustworthy, does not necessarily imply support of conservation or conservation success. Further research regarding stakeholder participation and conservation support and impacts is therefore needed (López-Rodríguez et al., 2020). Also, promoting learning and trust building is widely assumed to facilitate long-term conservation and exchange of knowledge for adapting to conservation challenges over time (Sterling et al., 2017; Young et al., 2016).

In spite of the general support of residents for the local conservation boards, there is still dissatisfaction with the limited opportunities for rural development, especially among those with dispositional rights in the protected areas. Our results show that there are just as many conflicts and opposing views on how protected areas should be managed in local communities as in the general Norwegian public. The local politicians serving on the conservation boards belong to different national parties that could advocate national policies that counter conservation. They are expected to contribute to rural development by their electorate which could conflict with the overall goals of conserving biological diversity. Further studies should examine how boards resolve these tensions, including how local residents support decisions depending on capacity, knowledge, and the degree to which biodiversity is prioritized.

Gurney et al. (2017) question the use of relations to proximate areas as the main criteria for conceptualizing community-based conservation. Increasing connectedness through communication technologies and the mobility of people demands new approaches that bridge local, national, and international stakeholders' relationships with protected areas. Gurney et al. (2017) define these as communities of attachment, where shared environmental interests transcend geographical and social boundaries. Local conservation boards must manage these complex and multiple relationships that communities attach to the protected areas

they manage and their multiple understandings of conservation challenges. The connections that nonlocal people have to distant places, their reactions to change, and their interpretation of conservation challenges is important for protected area management. Furthermore, they alone cannot solve the conservation challenges faced by local conservation boards. Conservation challenges relating to climate change, tourism booms, and amenity development in mountains are some examples of the immediate concerns to which local conservation boards must adapt. The question is whether the conservation boards have the capacity to respond to these challenges.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

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