



Understanding social representations of the Vindel River

- and their relevance for the Vindelälven-Juhttáahkka Biosphere Reserve

Johanna Sundström

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Swedish University of Agricultural Sciences, SLU
Faculty of Natural Resources and Agricultural Sciences
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Sociala representationer av Vindelälven och deras relevans för biosfärområdet Vindelälven-Juhtátahkka

Johanna Sundström

Supervisor:	Anke Fischer, Swedish University of Agricultural Sciences, Department of Urban and Rural Development
Examiner:	Camilo Calderon, Swedish University of Agricultural Sciences, Department of Urban and Rural Development
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Swedish University of Agricultural Sciences

Faculty of Natural Resources and Agricultural Sciences
Department of Urban and Rural Development
Division of Environmental Communication

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Abstract

Biosphere reserves are recognised as places that facilitate collaboration among various interests related to the broader area, aiming to enhance the sustainable use of resources and contribute to a sustainable transformation. This includes various interests, which leads to the research problem that was addressed in this study: the reconciliation of different interests related to land. This study examined the perspectives of four stakeholder groups within the Vindelälven-Juhtatahka biosphere reserve, focusing on their experiences of the Vindel River and how it shapes their understanding of the biosphere reserve as a whole. This study did not primarily seek consensual elements or expressions but rather, to understand different views and what implications knowledge, emotions, and values have for further environmental communication within biosphere reserves. This study was conducted through focus group discussions and drawing exercises and analysed through the theoretical lens of social representation. The findings revealed that participants conceptualised the river in terms of its shape and flow, through their historical and cultural contexts, and demonstrated a multilayered understanding of the river that encompasses time, place, and history. Many participants employed metaphors such as “life pulse” and “blood vessels” to describe the river, indicating a profound emotional connection to it and a recognition of the values it held for them. Through the discussions, stakeholders also demonstrated a deep understanding of how climate change impacts both the river and their lives. However, this understanding was not reflected in their drawings, which pictured a more idyllic vision of the river and diverged from their verbal description. The implications of the findings suggest that communication within the BVJ would benefit from a deeper understanding of the various representations of the river and their connections to the broader area. It also indicates that continuously comprehending the complexity of these different representations, along with the role of values, knowledge, and emotions, would enhance governance within biosphere reserves and nature conservation practices.

Keywords: Biosphere reserves, social representation, nature, knowledge, emotions, value, river.

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Abbreviations

BR	Biosphere reserve
BVJ	Biosphere reserve Vindelälven (the Vindel River)- Juhttátahkka
UNESCO	United Nations Educational, Scientific and Cultural Organization

1. Introduction

The world must in the next 10 years turn the negative trends when it comes to crossing the planetary and biospheric boundaries (Richardson et al. 2023). Turning these trends is crucial and has to be based on a system-wide perspective where global success can be found in local solutions. Areas with high cultural and natural values, with the aim that humans and people harmonise, could contribute to do so; such places are recognised as biosphere reserves (BR) (Löf 2023). Within these areas, the aim is to understand and acknowledge different interests among the variety of stakeholders and how the same interests run along different lines, which poses communication challenges. An analysis made by Azote on behalf of the Swedish Environmental Protection agency (Naturvårdsverket) and UNESCO shows that the Swedish biosphere reserves have reached good results through connecting human and nature, as well as local initiatives with national strategies (Löf 2023). The analysis also shows that the biosphere reserves have a communicative, adaptive and effective way of working, which is anchored in local possibilities. BRs generate knowledge and engagement, new collaborations and organisational learning where the sum of its parts is a better understanding of how transformation towards sustainability should happen (Löf 2023).

Biosphere reserves have also been criticised regarding power asymmetries among local businesses where in some places, being restrained due to more strict regulations, and are forced to shut down, leaving people with no or reduced income. There have also been noticed that in some places there is a social asymmetry within cultural diversity, where the equality of indigenous groups is not always accounted for, either by not getting to raise their voice regarding change in regulations or activities, for example (Stoll-Kleemann & O’Riordan 2017; Sandström & Sahlström 2021).

Although the BRs of Sweden are argued to be successful, there are still concerns raised in the literature that there is a gap between theory and practice, and a lack of understanding of how humans should live within the planet's boundaries (Van Cuong et al. 2017). One common assumption is that more information leads to a better understanding of the environment and nature (Andersson et al. 2019), for example, if we understand the boundaries of the planet, humans will no longer live outside those boundaries.

I do wonder if it is really more information that leads to better understanding regarding the human-nature relationship within a BR, or if it is rather the understanding of the diversity of people’s views on a place designated as a BR.

To understand the diversity of these views, social representation theory offers a lens that allows us to see those different views and how they co-exist. Buijs and colleagues (2008) examine how public support for biodiversity management can be understood differently by examining the diversity of public understandings of biodiversity and moving away from assumptions that more information leads to better public understanding. In the introduction to their study, the researchers claim that the lack of public support for biodiversity among the public has previously been understood as a result of a lack of understanding of the concept itself (Buijs et al. 2008). Their study shows, through focus group discussions in three European countries, that members of the public draw on very rich and complex social representations of biodiversity. This illustrates how a better understanding of these representations among the public's attitudes is crucial to ensure more targeted communication by moving away from assumptions that more information equals a stronger engagement, and by that improve support for biodiversity management (Buijs et al. 2008).

In Sweden, biosphere reserves account for seven per cent of the land area. The latest designated BR, which makes it Sweden's seventh and is the largest to its surface area, is the Vindel River Juhttåhokka (BVJ), which was designated in 2019. The BVJ is not only the largest but also the most Northern one in Europe, through the BVJ flows the Vindel river 450 km which is recognised as Natura 2000 (Sandström & Sahlström 2021; Löf 2023). The BVJ is argued to have the potential to serve as a platform for mediation and dialogue among different interests linked to natural resource management, given the area's wide range of interests regarding land, including forestry, reindeer husbandry, agriculture, hunting, tourism and fishing. The BVJ is an example of a place with initial friction among different interests and therefore offers a setting for further improvement regarding collaboration and conflict resolution. Although the friction has been slightly reduced in recent years, some of it do remain much due to unefficient communication (Sandström & Sahlström 2021).

This thesis will investigate how stakeholders' social representations of the Vindel River can be understood through their experiences of the river by identifying emotions, values and knowledge that the stakeholders hold towards the river. To understand this, it is also important to understand the historical aspects since these colour the ways the river is conceptualised and represented. Understanding people's emotions, knowledge, and values could unfold a better understanding of the complexity of social representations of nature, to better understand environmental communication. This thesis starts from the assumption that a better understanding of the different representations of the Vindel River among stakeholders might be crucial for successful work with the BVJ.

2. Aim and Research Question

This leads to the research problem, which will be addressed; the ambition of reconciling different interests related to land, where the connection to the Vindel River in the context of a biosphere reserve will serve as the empirical space.

Previous studies on biosphere reserves have mainly focused on the practical aspects of implementation and governance, where there is also a relatively small amount of research on biosphere reserves in Sweden. This research will contribute to already existing research by taking a constructivist approach to understand the complexity of different interests through a theoretical framework of Social Representation Theory (SRT). This is relevant since the theory explains the concept of social representation as a multifaced concept focusing on systems of values, ideas, images and practices which will be explained further in Section 4 (Bidjari 2011; Martikainen & Hakoköngäs 2022). This thesis aims to understand the social representations of the Vindel River that are connected to (and possibly underpin) the different interests related to the area at large, and the BVJ in particular, by answering the following research questions:

- (i) What does the Vindel River mean to different groups of stakeholders?
- (ii) How is the river understood through knowledge, emotions and values?
- (iii) In which areas do these social representations of the Vindel River concur, and where do they differ?
- (iv) How is the BVJ understood among the stakeholders?

3. Background: The Vindel river - Juhttátahkka

In 1971 UNESCO started a global interdisciplinary program with the aim to improve human welfare through nature-human relations. This program is called “Man and the Biosphere” (MAB) – the biosphere program. The vision with MAB is to secure human welfare through conservation of biodiversity by sustainable use of ecosystem services (Heinrup & Schultz 2017; Löf 2023). Central for MAB is the so-called biosphere reserves, 700 of them worldwide which are all appointed areas with high cultural and biological landscape values and which seek to promote an approach to land management that harmonises interaction between humans and nature (Van Cuong et al. 2017; Sandström & Sahlström 2021). These areas should be protected through a sustainable use of resources where activities within the biosphere reserve are built on local initiative and cooperation (Heinrup & Schultz 2017; Löf 2023). The biosphere reserves should serve as places where responsible management of landscape and ecosystems is integrated with societal development anchored in local knowledge (Löf 2023).

The Vindel River -Juhttátahkka biosphere reserve includes a wide range of habitats represented as it extends from the mountains in the west to the Baltic Sea in the east, but where the Vindel River is central since it flows 450 kilometres through the whole biosphere reserve (Nilsson 2019; Sandström & Sahlström 2021). As diverse as nature is, so are the stakeholders operating within the area. Juhttátahkka means “migration route” in the indigenous language Umeå-sami, the river has also been, and still is, recognised as an important migration route for reindeer husbandry and wild species such as salmon (Sandström & Sahlström 2021). 32 per cent of the BVJ consist of formally protected nature conservation areas like nature reserves, nature conservation sites and Natura 2000, but also areas that have been voluntarily set aside (Sandström & Sahlström 2021).

Vindelälven in this thesis is translated to the Vindel River, some studies translate this to “the River Vindel”, but I chose to use the translation the Vindel River, which is also used by the Swedish Nature Protection Agency (Sandström & Sahlström 2021).

3.1 History

Between 1820-1945 the Vindel River served the purpose of floating timber and the development and export of timber from the forest industry played a central

role in the industrialisation of Sweden, where floating timber was key to transporting the raw material from the inland production to the sawmills on the coast, using water courses (Tornlund & Ostlund 2002). To be able to transport the timber efficiently and not risk it breaking on the way, log chutes were built to transport the timber over rocks and through the wilder parts of the river. These log chutes, as well as changing water courses through excavation to benefit the floating, resulted in a dramatic change in the landscape (Tornlund & Ostlund 2002). Due to the long period of floating timber, these activities have therefore left an indelible imprint on the Vindel River (Tornlund & Ostlund 2002). Today there are extensive restoration projects in place for the benefit of water living species as well as natural flooding protection (Nilsson 2019).

Another historical event regarding the river which have marked how people living in the river valley experience the river is what took place between 1960-1970. During the 1960s, the Swedish government planned to exploit the river for hydro power production, where some areas would have been dammed 46m above the average water height, which would dramatically affect the infrastructure and houses in these areas (Nilsson 2019). A strong opposition, along with calculations that it would not be profitable, resulted in the project being shut down in 1970 (Nilsson 2019). This event is locally known as “the fight of the Vindel River”. The river is today one of Sweden’s four national rivers, which means that it is one of the few large rivers that is not subjected to regulations for hydropower and dam construction, and this is constituted in the Swedish environmental law by being recognised as Natura 2000 (Nilsson 2019).

3.2 Formation of the Biosphere Reserve

The idea of forming a biosphere reserve in the area sprang in May 2013 in a meeting of 50 people from the area. To the meeting, representatives from two other biosphere reserves was invited, along with representatives from public agencies, researchers, municipalities, Sami villages, non-profit organisations and companies. During this meeting, the attendees explored the possibilities of forming a biosphere reserve. This work continued in 2014, inviting around 80 participants, and was made in close collaboration with the Väsetrbotten County Administrative Board, WWF and the six involved municipalities (Sandström & Sahlström 2021). The project resulted in the National Program Committee for the Swedish MAB Program approving the candidature for the BVJ. The conditions for forming a biosphere reserve were discussed at more than 160 meetings, including a variety of stakeholders. Finally, the Swedish Government decided to officially nominate the area to UNESCO, and the final application for the BVJ was approved by UNESCO in June 2019 (Sandström & Sahlström 2021).

3.3 Sápmi

The rights of the indigenous people Sami have long been a polarized topic in Sweden and it started as early in the 1600 when Oxenstierna known as “the founder of the Swedish state” announced that Northern part of Sweden should be colonialized and populated to enhance profit for the Swedish state (Hallgren & Thiel 2022). The issue was that these areas were already inhabited by indigenous Sami people. Central to the Sami culture is reindeer herding, which is practised through a traditional use of land and water. Sápmi is the area in which the Sami people live, and it stretches over Northern Scandinavia. Although Sami culture and livelihood correspond to 55 per cent of the land area of Sweden, it took until 2011 for the Sami population to be recognised as people in the Swedish constitution (Larsen et al. 2017). From industrialisation up until today, the exploitation of Sápmi has escalated, and in recent years, with an increase in permits for mining projects and clear-cutting forest. Most of the forestry is practised in the lowland of Sápmi, which is resulting in a reduction of lichen-rich forest, which the reindeer depend on in winter. During winter, the reindeer are herded in the lowland to be able to feed during the long, cold winter (Larsen et al. 2017). 70 per cent of lichen-rich forests have disappeared due to forestry, where Sweden’s largest forest company owns the majority of the forest in Sápmi (Hallgren & Thiel 2022).

4. Theory of Social Representations

A social representation (SR), can be understood as an ensemble of thoughts and feelings where the SR emerges as a product of values, ideas and practices while individuals try to make sense of their physical and social environment. SRs are always formed during interaction (Wagner et al. 2002; Bidjari 2011). Some studies also conceptualise SR as constituted by dimensions to better understand what role values, knowledge, and emotions have, these are called normative, cognitive and expressive dimensions (Buijs et al. 2011; Fischer et al. 2012). I use social representation theory to help me to understand how the river is experienced and what characteristics the river is attributed by the people living within the BVJ. These findings might provide insights into what successful communication regarding management could look like by understanding values, emotions and knowledge

The theory of social representation (SRT) was formulated by Serge Moscovici, influenced by social psychology and the concept of collective representation (Bidjari 2011). SRT is about how people use social representations to orient themselves in the material and social world (Martikainen & Hakoköngäs 2022). SRs is a collective phenomenon through which a community, containing individuals, co-constructs meaning in their everyday talk and action (Wagner et al. 2002). Social Representation Theory stipulates that the subject and the object are not separated: “The object is not constructed according to its objective characteristics but according to the characteristics of the social individuals who appropriate the object through the communication process that they develop around it” (Bidjari 2011 p.1594).

In the context of SRT, the phenomenon of conflicting elements of representations has been labelled as cognitive polyphasia, which is understood as the coexistence of multiple realities that exists live side by side in the same individual or collective (Buijs et al. 2012; Fischer et al. 2012). This could also be the presence of heterogeneous, and at times conflicting, practices and modalities of reasoning resulting in hybrid representations which could contain old and new ideas (Marková 2008; Buijs et al. 2012).

SR of nature have been studied to understand disputes over land management in the Netherlands regarding a national park and different stakeholder representations of nature in framed local conflicts. In their study, Buijs et al. (2011) focus on how cultural background relate to the SR of nature, and how the cultural background is used to facilitate communicative practices while collectively elaborate on the concept of “nature”, and how it shapes a set of ideas

regarding “nature”. SRs of nature are conceptualised as three dimensions: a cognitive, an expressive dimension and a normative dimension. Where the cognitive dimension is conceptualised as one that relates to one’s beliefs, the expressive relates to the affective aspects of nature and the normative consists of values about nature (Buijs et al. 2011; Fischer et al. 2012).

4.1 Cognitive Dimension

The cognitive dimension of SR is understood as the boundaries people use to conceptualise nature, but also people’s beliefs about natural processes (Buijs et al. 2011). In previous studies, these have been expressed as beliefs and reality of climate change (Fischer et al. 2012), including whether natural processes and the natural state are due to “balance” or a “flux” as of unpredictable systems (Buijs et al. 2011). SR is by itself a form of knowledge which is socially formed and shared among members of a group (Bidjari 2011; Buijs et al. 2012). Whether it is scientific knowledge, traditional knowledge or other forms of knowing, in this thesis, it is conceptualised as knowledge and how it could be understood through a cognitive dimension of SR.

4.2 Expressive Dimension

This dimension consists of the affective or emotional responses evoked by nature, for example, whether a landscape gives a sense of beauty through the experiential dimension of the experience of beauty (Briellmann et al. 2021). The diversity of such landscapes has in previous studies been described as one of those prime characteristics that define its beauty (Buijs et al. 2011). This expressive dimension also consists of feelings of attachment to specific natural areas, like residents who often feel an emotional bond with the landscape surrounding their home (Buijs et al. 2011). Emotions are seen as necessary parts of meaning-making since they operate on both unconscious and conscious levels, individually and collectively and are important in all kinds of social representations (Höijer 2010).

4.3 Normative Dimension

The normative dimension in their study shows that the moral foundation for nature conservation differs depending on people’s prevailing values (Buijs et al. 2011). Depending on how people characterise nature, the authors found different types of values coming up and sorted them out as themed values. For example, the wilderness representation is based on the ecocentric value of nature, which includes how nature is perceived regarding habitats, whilst the aesthetic and functional representation is based on the anthropocentric value of nature, meaning, for example, if it is considered as beautiful or not (Buijs et al. 2011).

The authors found biocentric value to be described as one which focuses on the individual well-being of plants and animals, where the value of protecting a singular species outweighs the health of an ecosystem at large (Buijs et al. 2011). Their findings suggest that the understanding of how the public values nature conservation, ecocentric and anthropocentric values, must be extended with biocentric values (Buijs 2009; Buijs et al. 2011).

4.4 Previous studies on the social representations of nature

By using the theory of social representation, Buijs et al. (2012) argue that the understanding regarding disputes over land management can deepen and help understand how people conceptualise nature. Previous studies have identified a growing complexity regarding the environmental debate, and it is no longer a debate regarding the importance of nature conservation per se, but rather a question of what should be protected and by whom (Buijs et al. 2012).

Research on SR has also been made to understand the public representation of biodiversity and how these illustrate how a better understanding of social representation and its link to public attitudes is crucial to ensure effective communication and to improve public support for biodiversity management (Buijs et al. 2008). Even though the loss of biodiversity is viewed as a global issue, many conservation measures have met resistance, and the support on local levels has been lacking. Buijs et al. (2008) provide an overview how different components of social representations of biodiversity are used different group-specific discourses on biodiversity, arguing for that the understanding of the concept is informed by much more than just definitions or knowledge about endangered species and that this approach should be accounted for to improve public support for biodiversity management and to manage conflicts constructively.

Another study made by Fischer and Young (2007) with the aim of understanding mental constructs of biodiversity investigated both people's verbal expressions and expressions from drawings made by the participants. Their study shows that a better understanding of individuals' mental constructs of biodiversity is of high importance to understand how to design biodiversity-related policies that are supported by the public (Fischer & Young 2007). Due to the complexity of these issues, the combination of methods of discussion and drawing exercises proved useful in understanding and conveying the development of such SR within the study sites (Fischer & Young 2007).

What would it imply if we could better understand the representations regarding the type of nature or land that is being protected, and would that imply anything for further environmental communication? What we describe as complex issues regarding nature conservation practices and the support for it, might turn out to be less complex if we would break it down by understanding the different parts of people's representations regarding the specific nature which is to be protected/conserved.

The BVJ provides an example of framing such a complexity, which Buijs et al (2012) mention in their study. Although the Vindel River already has a protected status as Natura 2000, it is still a complex issue regarding how the river is being used and/or protected and by whom, as well as by whom those interests should be protected. There are dividing interests around the river, as for tourism activities and traditional reindeer herding practices, for example (Sandström & Sahlström 2021). Buijs et al. (2008) found that understanding of the public representations could improve effective communication and public support, and where drawings could help to enrich such findings, as demonstrated by Fischer & Young (2007).

These findings provide examples of how the SR of nature can be used to understand conflicts and conflicting ideas regarding nature. I will use these insights to interpret findings in this research.

5. Method

This qualitative research aims to seek and identify people's social representations of the Vindel River and how the river helps them to understand the biosphere reserve. Social representation researchers observe talk and action which is related to a social phenomenon or an object (Wagner et al. 2002) and since social representation assumes that representations emerge from conversation, a quantitative methodology of focus group discussions was performed. This was made along with a drawing exercise during these discussions, to understand the joint, or diverse, construction of meaning for each stakeholder group regarding the Vindel River and the BVJ. By including different stakeholder groups, several perspectives could be identified, and how these representation co-exists and whether these are related to each other or not.

5.1 Focus group discussions

Semi-structured interview design is suitable for focus group discussions, allowing the interviewees to be more flexible in their responses (Robson & McCartan 2016; Creswell & Creswell 2018). The focus group discussions took place in a setting which the participants were familiar with to foster a safe environment for good discussions, as well as making it logistically easy for the stakeholders to participate. Face-to-face focus group discussions offer possibilities to better identify non-verbal cues to better understand the verbal response (Robson & McCartan 2016). During the discussions, I took notes regarding these non-verbal responses to better grasp the emotions. How discussions were performed is mentioned further down in Section 5.5. The focus groups got slightly modified due to sickness among the participants; two out of four focus groups ended up with just one participant and me, which made it more like a semi-structured interview, but it was considered not to affect the result in a significant way.

5.2 Inspiration from previous studies

The methodology was made with inspiration by previous studies, such as one made by Buijs and colleagues (2008), Martikainen and Hakoköngäs (2022) and one made by Fischer and Young (2007). Buijs and colleagues (2008) examined different representations of biodiversity within three large protected areas in Europe. The study looked at how different groups developed and used different notions to understand biodiversity issues, the groups included residents in protected areas, farmers, recreationalists and foresters. The researchers investigated how different groups within the general public use the representation of biodiversity and nature to make sense of biodiversity management. The method

of focus group discussions showed the range in which the different groups expressed their preference for diversity, but also how representations are embodied in people's knowledge and experience and shared and negotiated within and between groups. They argue that, by unravelling the representations of biodiversity and nature among stakeholders, this will contribute to a better understanding of how to design successful communication and management approaches (Buijs et al. 2008)

Martikainen and Hakoköngäs (2022) choose drawing as a method to enrich research based on verbal material, such as interviews and discussions, as well as enabling access to layers of knowledge and experiences that are difficult to express in words. They characterise drawing as a “low threshold methods”, meaning that it does not require technical skills. It can therefore also be seen as an inclusive method while conducting research among a diverse group, and it can evoke embodied layers of social representation. However, this kind of visual research method has been scarcely discussed in social representation research. Visual research methods are argued to enrich research based on verbal material, such as interviews and discussions, as well as enabling access to layers of knowledge and experiences that are difficult to express in words (Martikainen & Hakoköngäs 2022).

Fischer and Young (2007) used an approach including both discussions and drawings to understand people's mental constructs of biodiversity. They found that people expressed rich views and concepts on biodiversity in their local environment, although the scientific knowledge and technical terminology were on various levels. These views were both verbally expressed and through the drawings. They also found that the verbal expressions on biodiversity were more critical while the drawings conveyed a more ideal picture of biodiversity.

5.3 Selection of participants

Creswell & Creswell (2018) describe the importance of identifying and purposefully selecting participants on sites, rather than a random selection from a large participation site that is made in quantitative research. An important aspect of this research was to select participants purposefully on-site that was able to meet face-to-face and in the context of the Vindel River. To find participants, I started by contacting the head of the board for the BVJ, whom I had met before during a project at my internship. We talked over the phone and arranged for a digital meeting where I told her about my research project. I already had some stakeholder groups in mind, which I told her about. These stakeholder groups were groups that could have opposing interests due to their profession and from

my assumptions from what I have read in the media and in the literature. She was very helpful in this part of the process and provided me with the names and contact information of people who would agree to be interviewed. I also have good contact with one researcher from Umeå University who provided me with contact information for the Sami villages and some background information, which would help me to foster a good relationship with these participants. The final groups are shown in Table 1.

With inspiration from the snowball-sampling method (Robson & McCartan 2016) I asked the stakeholders I contacted to put together groups with people of similar profession/interests. The stakeholders could leverage their network to form homogeneous focus groups. Homogeneous groups promote an exchange of ideas and a sense of safety in expressing feelings or concerns, as well as facilitate communication (Robson & McCartan 2016). The contact person from each group got the consent form beforehand, which I asked them to share with the rest of the participants. Copies were brought to each interview for the participants to read and sign before starting the official interview, because some of the participants were not using their email frequently.

Many of the stakeholder groups I had in mind were contacted but without success. I then refined the criteria of having groups that I assumed were opposing each other as well as the number of groups, due to limitations in time. Three out of four interviews were booked before I arrived in Umeå, and the last one with the reindeer herder was booked with one day's notice. The week before I arrived, the Sami were victims of a hate crime, where three of their reindeer were killed, which affected their ability to have time, and possibly energy, to reach back to me. Due to my flexibility, I could meet him where he was working that day. All focus group discussions took place at the study site in a physical setting where the participants decided on a suitable place to meet. During my one week in Umeå, I drove around by car to each interview, which was a good opportunity for me to get to know the area and to understand local knowledge such as names and places which I noticed afterwards was beneficial for the interviews since I did not have to ask so many clarifying questions. Table 1 shows an overview of the participants and the different groups. Participants from Group one (G1) included one representative from Umeå/Vindel River Sportfishing Association and fishing advice. Group 2 (G2): one business owner whose business utilises raw material from the forest, one person working for Sweden's largest forest company, and one business owner whose company do an inventory of managed forests regarding biodiversity among other factors. Group three (G3): one operating manager for one of the bigger tourism associations in Northern Sweden, two people, both

business owners, offering tourism activities. Group four (G4) consisted of one person who is both a reindeer owner and reindeer herder.

Stakeholder participation

Discussion Group	Profession	Age	Years of residence within the BVJ	Years engaged within the BVJ
G1	Sport fishing association	49	49	23
G2	Forestry	37	10	
G2	Forestry	39	25 (now summer residence)	
G2	Forestry	61	61	5
G3	Tourism	51	0	8
G3	Tourism	60	27	
G3	Tourism	60	60	
G4	Reindeer owner and herder.	59	59	

Tabele 1. Stakeholder groups participated in the focus group discussions between 18-22 of february 2025. G: Group; BVJ. ting

5.4 Drawings

Along with the focus-group discussions, I also included drawing as a method. The drawing as an exercise worked for the participants to make abstract explanations and representations more tangible. Drawings in this kind of setting could also be argued to be a participant-driven method for data elicitation. The choice of this method was made with inspiration from studies made by Martikainen & Hakoköngäs (2022) whose research showed how embodied layers of social representation came up while using drawing as a method, and Fischer & Young (2007), who found that the participants' drawings showed a surprisingly rich understanding of biodiversity and how this was an important addition to the focus group discussions.

5.5 Data Collection

The focus-group discussions were between 35-50 minutes. It started with a short introduction to the thesis project and me. The participants were then asked to introduce themselves shortly. They then got introduced to the format of the interview of the character as a discussion and the exercise of drawing, and were handed paper and could choose pencils from the stock of coloured pens that I had brought. The interviews were audio-recorded after the participants had read through and signed the consent form. Three main questions (Table 2) were asked in combination with the drawing activity. The participants were encouraged to fill in the drawings during the whole discussion. During the discussion, I took notes in an observational/interview protocol, and directly afterwards, I wrote a summary of the impressions I got.

Question	Probing questions examples
Introduction	- What is your profession? - How old are you? - For how long have you lived within the BVJ area? - Have you been involved in the BVJ, and if so, for how long?
What is the Vindel River? <i>Here participants were asked to take a few minutes to draw first.</i>	- How would you describe it to me that have not been here before? - Is the river a physical object, source of income, collaboration, what else? - The role for the biosphere reserve? - What knowledge is there regarding the river?
What is valuable with the river (for you)? <i>Here the participants could fill in the existing drawing if they thought they missed something.</i>	- What emotions do you have towards the river?
How do you experience that the river have changed over time?	- During the time you have lived/worked here? - From when you were a child? - From what older relatives/ friends have told you?

Is there something you would like to add?	
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Tabele 2 Discussion guide designed and preformed for the focus group discussions (See Table1.).

5.6 Research Ethics

Before the discussions started, I, together with the participants, went through the consent form and clarified if it was something that they did not understand. I also explained my topic and how these discussions and the drawings would form the result of my study. I also informed them that they will be anonymised in the thesis and that they could contact me afterwards if they changed their minds regarding participation, or if I should exclude something they said, or if they wanted to add something. When everyone had signed the consent form, I informed everyone that I had started the audio recording, and the discussion built on the questions in Table 2. Most of the participants chose to include their name in the introduction part which I cut out from the audio file before I uploaded it in the transcription tool. I repeated this process for all the discussions. I used my student subscription for Microsoft 365 for transcribing, after getting it as a recommended tool from the university. I trusted this recommended licensed software regarding database server and data storage, since the university is responsible for the subscription. Even though I excluded the names of the participants, this data will probably be used to further train AI, and it is a question for further discussion in research how this kind of data is being managed. Noted for further research is the important issue that if the researcher does not understand the issues of ethical concerns regarding using AI and how it is being managed, how will the participants then do so? There are ethical concerns regarding the awareness of participants that is being recorded as well. Even though the participants signed a consent form, and they were informed when I started recording, this likely got forgotten during the discussion, since it was initially me they trusted with their answers.

5.7 Data Analysis

Thematic coding was used to code and make sense of the data. This is a flexible method for data analysis which can be used on a variety of quantitative data, and it is suitable for researchers with little experience in research (Robson & McCartan 2016), which was suitable this master thesis project. This method for data collection resulted in two sets of data, one verbal set of answers and one set of drawings. The interviews were transcribed with help from AI (see section 5.6) and then refined due to some limitations in the AI tool used. I took on an inductive approach and went through these texts several times to identify initial codes for the text, building themes, patterns and categories. This inductive process

allows the researcher to move back and forth between themes to establish a comprehensive set of themes (Robson & McCartan 2016).

These themes were developed with guidance from the research questions to develop coding categories, and the final main coding categories ended up being “knowledge”, “emotion”, “value”, “history”, and “symbol”. The online programme Miro Board was used to create flowcharts with Post-it notes and is argued to be a suitable tool since the answers did not include sensitive or personal information about the participants or others. The different Post-it notes were then colour-coded according to each coding category. This was made to structure the data, to get an overview of the themes in the answers and to make the cluster process faster. I used the same structure for the drawings, where I wrote down all the symbols drawn. The final main coding categories and definitions of these are presented in Table 3.

Coding category	Identification of statements/talks	Example of question/ probing question referring to themes
Knowledge-related	What they expressed was that they knew from their positioning and answers including wording and phrases such as “know”, “lesson”, “knowledge building”, and “knowledge”.	What knowledge is there about the river?
Emotions-related	Answers including wordings such as “feel”, “emotions”, “happy”, “sad”, “fear”, “calm”, “frustrated”, “respect”, “feel”.	What emotions are there towards the river?
Value-related	Phrasings including wording such as “value”, “wealth”, “worth”, “important”, “good”, “bad”.	What values does the river have (to you or others)?
History-related	Answers relating to historical events such as the floating of timber and the fight of the river. Answers including words such as “history”, “tradition”, “in the past”, “ancient”, and “before”.	How do you experience that the river has changed over time?
Symbols-related	Mainly objects from the drawings as well as answers describing and referring to objects as symbols.	

Table 3 Thematic coding scheme regarding knowledge-emotions-value-history- and symbol-related answers. Adapted from verbal expressions and drawings from focusgroup discussions: 18/2-22/2-2025.

The main themes for each discussion group are presented in figure 2 in the first section of the findings. The findings will be presented under headlines regarding the themes of knowledge, emotions and values and how the participants make

sense of the river through these. The findings will also include the drawings, which are all to be found in Appendix 1. In the discussion, I will discuss how these themes are interrelated and co-exist.

5.7.1 Reflexivity

Since qualitative research is a form of interpretative research, my reflexivity as a researcher for this project is of relevance. I have a background in environmental science and have also engaged with the study site before this research at my internship in an environmental communications bureau (Azote), where I met one of the participants from the forestry group. Many of the places I visited are rural areas, and I have grown up in Stockholm, although I have lived in rural nature-close places for the past 10 years. I have a strong connection to nature, and recreational activities in nature, which are also the most common ones in the studied area, such as skiing and hiking in the forest. I also had high expectations regarding biosphere reserves beforehand, since I had engaged in those areas and the topic during my internship. When I first engaged with the research problem, I thought that the biosphere reserve would take up more space in the thesis project than it did. I also assumed that the participants in the focus groups would be much more involved in the BVJ than they were.

As a master student coming from Stockholm to the more rural areas of Sweden it affected how the participants chose to answer. Initially, in the discussions, I sensed that some participants were giving me answers that they thought I wanted to hear, and they made a lot of comparisons regarding rural versus big cities. The further we came into the discussions I sensed that they got more transparent in their answers. I would argue that some of the power imbalance of researcher-participant and big city inhabitant-rural inhabitant disappeared with me joining discussions, and I clearly stated that I had not been around the Vindel River before, and that they were the ones sitting on the valuable insights. I also made a conscious choice that the participants would choose the place for the focus group interview, firstly because of their local knowledge, and secondly because I assumed it would give a sense of a safer space and enrich the discussion. At the beginning of the process, when I had only engaged with the research question and not the participants, I thought they would not be so enthusiastic about drawing as they were. And I also did not expect them to be so engaged in the discussions as they were, considering they have business and jobs, I assumed they would not prioritise being in a master thesis project. I afterwards understood that most of the participants saw this as a valuable opportunity for them to speak their minds. One member of the forestry group said he saw this as an opportunity for self-reflection as well as contributing to my thesis project.

My past experiences also shaped my interpretation of the data, where I was more enthusiastic regarding themes such as climate change or nature-human relationships, like recreational activities and the experiences and meaning the participants held for nature. I sometimes had to take a step back from my analysis when I noticed myself forcing meaning into certain answers regarding the meaning that the participants held for nature and the Vindel River. Further, I also valued getting approval from my former internship since they could be seen as gatekeepers to the study site at large, as well as I valued approval from the head of the board of the BVJ. She was the gatekeeper regarding contact information, as well as getting approval from participants. When I mentioned her name while calling potential participants, I sensed that they had a lower threshold to agree to participate. To get the interview with the reindeer herder, I called him on the number I was given from the researcher at Umeå University and by saying I got his phone number from her, I sensed that he agreed to meet. She was also the one informing me about the hate crime and the background to that, which was important to know about when meeting him.

5.7.2 Methodological reflections

To understand the data through the theoretical and analytical lens of SRT through coding analysis, I hope to understand what the Vindel River mean to different groups of stakeholders, and to identify the role of knowledge, emotions and values in these social representations of the river. I also hope to understand in which areas these social representations of the river concur, and where they differ, and by that answering my research questions. The findings are both the symbols found in the drawings made by each stakeholder, as well as what was verbally expressed through focus group discussions. The findings are not representative of the stakeholder group at large since the findings are built on the representations of these eight participants participating in the study, coming from four different stakeholder groups. This study rather identifies that social representation of the Vindel River, and in the context of the BVJ, can concur as well as differ and the roles of knowledge, emotions and values.

Participant selection

For this research project, the method of participant selection was chosen based on the assumption that people in this study site would have a richer and more honest discussion if they were matched with people who already had some kind of established relationship due to common interests in the area. Participant selection was made with inspiration from the snowball sampling method, which is argued to require caution, since it can result in a sampling of participants that do not have a representative spread (Robson & McCartan 2016). I would argue that this method for this research did not manipulate the result in any significant way, but

rather enriched it to reach the aim of this thesis, which is to understand different stakeholders' perspectives in the area concerning the Vindel River and the BVJ.

Gender

Six out of eight participants were men between the ages of 40-60. I would not argue that this is something that affected the result in a significant way, since the representations of the river are from different perspectives of stakeholders where forestry, fishery and reindeer herding are traditionally male-dominated areas, and I will therefore not elaborate on gender perspectives in this thesis.

Limitations of AI as a helping tool for transcribing

The interviews were transcribed with the help of an AI tool (Microsoft 365), which had its limitations. The tool could not recognise dialectical differences where significant parts of the participants' answers were transcribed incorrect. I therefore had to go over the interviews, and about 2/3 I had to transcribe from scratch, which is a limitation to bear in mind for future research using AI as a tool for transcribing.

6. Findings

This section will present the findings from the group discussions and the drawings regarding the meaning the Vindel River has for the stakeholders, how knowledge, values and emotions are expressed and how they understand the BVJ.

6.1 The meaning of the Vindel River to different stakeholders

The first observation was how all the groups made sense of the shape of the river and identified it as meaningful to them, since it appeared to be an important characteristic of the river, expressed both verbally and in the drawings.

“I have drawn it as it is, it is ‘vindlande’ which is the way it moves”,

“Vindlande” refers to the name of; Vindel River, which could be translated to winding. The way the river flows also seemed to be important in the sensemaking of the Vindel River, where all participants explained how it flows while drawing it,

“It flows from the mountain region in the west towards the ocean in the east”.

Figure 1. Drawings made by stakeholders from G1, G4 and G3 during the focusgroup discussions.

During the group discussion with the tourism group, one of the participants said that the river flows from the coast to the mountain, and immediately he got interrupted by one of the other members correcting him that it flows from the mountain to the coast. The way it flows was seen as a great value since it is unique compared to other wild rivers in Sweden, which the participants explained to me usually flow from north to south. It also shaped their understanding of the area at large and the values regarding this, which is further explained in Section 6.5.3.

All the drawings from the tourism group and forestry group included recreational human activities such as skiing, dog sledging, snowmobiling, fishing, swimming and playing. These drawings also included human-made objects like houses, boats, docks, a sauna and roads, which I interpret as symbols for recreation. They explained some of these as “my house”, “my sauna” or “my dock and boat”, and by that, how the river is a part of their everyday life. In some of the drawings, particular symbols were drawn which, I assume, relate to their background and/or profession, either within the forestry sector, sport fishing association, tourism or reindeer herding/owner. The symbol of trees was only expressed in the drawings from the forestry group. The person from the sport fishing association was the only one including the tributaries in his drawing, since they are important for the migration of water living species and are a significant symbol for him in his profession. The drawings from the tourism group included recreational activities as well as wild species, which show the rich exchange of activities and interests connected to the river, and how this is important for them working with tourism around the river. The reindeer herder was the only one whose drawing did not include animals or activities, he only chose to include the main villages upstream, where the river had significant curves, and which he wrote down. The main themes emerging from the discussion are presented in Table 4. below.

Group	Meanings
Sport fishing association (G1)	- Life nerve in the landscape with the tributaries as the blood vessels - Tributaries as the blood vessels - Migration route for salmon - Recreation; open access - Scientific knowledge building - Wild and untamed - Childhood memories

	- History (floating of timber and the fight of the Vindel River) - Migration path (including humans, wild species and reindeer)
Forestry group (G2)	- Life nerve in the landscape - Wild and untamed - Enables collaboration between communities - Increased value of life due to recreational activities connected to the river. - Childhood memories - History (floating of timber and the fight of the Vindel River) - Migration path (including humans, wild species and reindeer)
Tourism group (G3)	- Source of income – livelihood - History of the river (increased value for their customers) - History (floating of timber and the fight of the Vindel River) - Wild and untamed - Migration path (including humans, wild species and reindeer)
Reindeer herder (G4)	- Prerequisite for traditional reindeer herding (livelihood) - History (floating of timber and the fight of the Vindel River) - Wild and unmanaged - Migration path (reindeer herding)

Tabell 4 Main themes that I identified during the coding (Table 3) that emerged from the focus group discussions..

6.1.1 Metaphorical descriptions relating to “life”

Discussing the first question, the forestry group and the person from the fishing association, independently of each other, used the metaphor “life-nerve” to describe the river. And the person from the sport fishing association referred to the tributaries as the “blood vessels”. One of the members from the tourism group also explained the river as being “alive”. All participants reflect on the importance of the river concerning their profession and/or life, and these are expressed through metaphors relating to life. The reindeer herder starts the interview by saying,

“The river means everything and is a prerequisite to practising traditional reindeer herding”.

This person concluded the discussion, saying that their life would not be possible without the river, something that is expressed by all the discussion group reflecting over what their lives would look like without the Vindel River.

6.1.2 What the Vindel River is

All participants used the words “wild” and “untamed” to describe the river, and valued this as something unique for the Vindel River. However, it seems like there was also a shared understanding of dishonesty, referring to it like this. All participants explained how the history of floating timber has affected the river, both physically and concerning the local identity within the area. They also opposed the hydropower plant Stornorrfors, which is in the Umeå River, in which the Vindel River exits. This hydropower plant is affecting migrating species like salmon since a significant amount cannot get through the fish ladder. All participants expressed the function of the river as a migration path, which the name “Juhttátahkka” also indicates. This function was expressed verbally in discussion as well as in symbols in the drawings. It also seems to be commonly understood that the river connects people in the river valley, where one participant from the forestry group said that municipal borders now cut off villages from each other, which were connected by the river before. This discussion group also mentioned how the river populated this part of Sweden, thanks to forestry and the manpower such an industry required. The river is viewed as a place for recreational activities, which all participants expressed, referring to different activities connected to the river, and which is also expressed in the drawings.

6.1.3 Multilayered understanding of the river

All participants referred to childhood memories and anecdotes, which seemed to be an important measurement tool for them regarding understanding of how the river has changed over time. The river was also understood by all participants through history, experience and geographical position, which is presented in Table 1.

“It feels safe as well, that it is kind of the same, like I remember it as a kid. I guess it looks the same now, as it did when I was a kid, by the big Martall (local expression for old pine tree), and hopefully he will stand there for another 100 years... So, it is static but also dynamic in a way” – Person from the sport fishing association

“I remember when I was old enough to be out with the small boat by myself and you had to lift the small engine to slide gracefully over those wooden barriers built for the floating of timber” – person from forestry group

The historical event regarding “the fight of the Vindel River” was mentioned in all discussions, and everyone who mentioned this then expressed their appreciation that the river is still “wild and untamed”. They referred to it as an event they experienced themselves or were told about by older relatives. Explaining this, I interpret it as the Vindel River is a fighter and where the people of the river valley will fight for their river. As one person from the tourism groups said:

“I think it would be the same opposition today if they brought up the question regarding hydropower, even among the young generation, you don’t touch our river!”

6.1.4 The river as a hindrance

Although all participants mentioned the river as being wild and untamed, some participants view this wild character of the river as a limitation for their own business. Some of the participants from the forestry group discussed the far distances to drive and argued that it would be easier with a bridge nearby. Due to regulations of the river as a protected entity, this is unlikely to happen. One person from this group referred to the river as a logistical hindrance for transportation of goods for his business, as well as for personal use. One person from the tourism group also elaborated on this and referred to the shoreline protection. He mentioned the values of such protection regarding nature conservation practices, but since they have a business connected to the river, it also limits the development of their business. He told me of ideas that they had for developing the experience for visitors, but these were shut down due to the shoreline protection.

“It sometimes feels like it is like a wet towel slowly smothers a fire...”.

Where his business is the fire, and the municipality’s obligation to follow the shoreline protection is the wet blanket.

These two both expressed the values of the protected status the river has, but those could be bent for the benefit of one’s business.

6.2 How the Vindel River is understood through knowledge

The history of the Vindel River seemed important for the shared meaning-making about the river. The primary activity that was mentioned in the discussions was the floating of timber and the “fight of the Vindel River”. These are known from either childhood experience or stories told by older relatives or people nearby.

One member of the tourism group said to me that Evert Taube got inspired by “the fight of the Vindel River” when he wrote the well-known Swedish song Änglamark, where he sang “Let the last River roar”.

The way it flows is important knowledge among all participants and was frequently used in describing the river during the discussions, as well as correcting each other if someone referred to the flow “incorrectly”. The tributaries and the understanding of how they are interlinked with the river as a whole seemed to enrich their understanding about how “everything is connected” and used phrases like “system-thinking”.

The person from the fishing association told me about the strong collaboration with the University and researchers in restoration projects as an important part of the process of creating knowledge. He refers to this as “the rich exchange of knowledge”, building scientific knowledge.

6.2.1 Climate change

Change in water temperatures, changes in flood patterns, and changes in freezing patterns were something all participants acknowledged and explained as a result of climate change. The person from the fishing association also raised concerns about events that they cannot control, referring to ocean acidification, flows of nutrients, warmer temperatures in the ocean and fish feed production. The changes of the river were explained by the participants as something they “know”, “assume” or “are sure of” is due to climate change, the knowledge that explains these changes.

“There are challenges connected to the ocean that we cannot manage, and which affect the river and the salmon in a bad way, it is a heavy thought, but the situation is the same for all salmon rivers around the world...”

The tourism group raised the same concern about these problems, referring to them as “spin-off effects”. All groups mentioned the increased biomass production in the calmer and more shallow parts of the river, which they all concluded is due to climate change. Another event that they all are convinced is due to climate change is the change in flood patterns, where the “spring flood” nowadays comes earlier than it has before. This, as well, is explained through their own experiences and stories from their elders in the area.

6.2.2 Inherited traditional knowledge

The reindeer herder strongly raised concerns regarding climate change since it is challenging the way they can perform traditional reindeer herding. Due to inherited traditional knowledge, they know the patterns of the river and how and when they can migrate. Changes in weather patterns and the pattern of the river challenge this traditional knowledge and the way the reindeer can feed. He told me that knowledge about the river is a prerequisite for them to be able to perform traditional reindeer herding, which is their life. Nowadays, the autumn is wetter, the ice coverage on the ground increases in winter, which covers the lichen on the ground from which the reindeer feed.

“The reindeer dig through the snow because they can smell the lichen. When it is covered in ice the animals can’t smell it, so they do not dig for it. That is why we must be out here providing them with the extra feed we drive out.”

He said, pointing at his truck, which is parked where I met him. This year has been one of the worst regarding accessible lichen for the animals. This traditional knowledge, which gets passed on to the next generation, is strongly represented in how they use the river and is challenged due to climate change.

“Sometimes I think about how it would work with the reindeer herding if we did not have the river, and I am not sure if it even would be possible. But the reindeer herding has survived until now, so I think it will be able to live on...”

6.3 How the Vindel river is understood through emotions

It is clear from the discussions that the values of the river evoked emotions and talking about these emotions made an important addition to understanding these social representations and the collective meaning-making of the river. It seems that all members ranked the river high as unmanaged, which was expressed and reinforced through conversation, as well as the freedom and variety in activities expressed in some of the drawings

6.3.1 Calmness

The person from the fishing association expressed a concern that nowadays fewer people than before are just enjoying the company of the river, as such, not primarily for the activities it can provide, such as sport fishing. He commented on the lack of families that go out just to be by the river and spend a day in the company of the river. The tourism group also elaborated further on this while talking about experiencing the river and that there are few signs present showing where the river and the biosphere reserve are:

“Why can we not just call it for what it is, a beautiful place, and this place I would love to show my cousins when they come and visit me.”

During these two discussions, emotions were evoked regarding how they all feel the beauty of the river, and the calmness it brings. They all discussed that they feel that fewer people today experience that calmness, and that it must be a purpose of an activity to go out and just enjoy the river. That the river itself should be the reason to be along the river, and not the purpose of performing an activity. They all had a hard time putting words on those exact emotions, but I interpreted it as the calmness that the company of the river brings, and that they lack people who spend time along the river unconditionally.



Figure 2 Drawing from one member of G3 during the focus group discussion.

6.3.2 Respect

Respect is one emotion that all participants mentioned while talking about the river. The person from the fishing association thought that the respect toward the river has weakened now, referring to increased littering around fishing spots and rest areas. The tourism group talked about respect toward the river since their business is dependent on it, and how they must adjust to nature. One person in the forestry group also talked about this and elaborated on how people today live disconnected from nature, and that is good for humankind to learn how to adjust to Mother Nature. The reindeer herder talked about how knowledge and respect are interlinked.

“I hope all this littering is due to some misconception, that people today don’t gain that respect for the river from their childhood”. – The person from the sport fishing association.

“We cannot steer over it, it is a river that is alive, and we have to adjust after nature, not the other way around”. – One person from the tourism group

“I mean, respect is something I have for nature as a whole, because it can make things complicated for you, even if you know a lot, it can turn out bad, and lately it has been more unpredictable” – Reindeer herder

6.3.3 Frustration

The river also evoked emotions like frustration. As mentioned in Section 6.1.4, one person from the forest group felt frustrated regarding the logistical hindrance that the river poses for transportation, and since the river is protected, it is hard to develop the infrastructure around it, such as bridges. For the small business owner in the tourism group, he expressed frustration over the shoreline protection. The person from the fishing association expressed the feeling of not being enough since he is alone in his working position, but gets help from others during the summer, for example,

“We have this long stretch, and it makes me sometimes feel insufficient in this enormous work. We have this stretch of 40 kilometres facing many challenges, but we also have so many possibilities”

The person from the fishing association, as well as one from the tourism group, expressed excitement regarding the possibilities the river has to offer, but that excitement was also connected to frustration. They both talked about that last step for the river, seeing it as an untapped resource and wanting something bigger for the river. There was an excitement regarding the possibilities they saw with the river, but it turned to frustration, expressing that they wanted more to happen.

6.4 How the Vindel River is understood through values

During these four focus group discussions, the participants assigned the river values, which they described as increased values for their lives. How the river increases their experience of life through these values differs in the character, either by being anthropocentric, ecocentric or biocentric. Ecocentric values were coming up in all discussions where the participants reflected over the quality of the river, where one of the values all assigned to the river was that it is “wild and untamed” and has “clean water”. The values were also expressed and represented in some of the drawings as children playing, people fishing or as a house, sauna or dock owned by the person drawing these symbols.

6.4.1 Wild and untamed

All the participants mentioned this as a value of the river; this ecocentric value seemed to be of great importance for many of the participants, and it was one of the most frequently mentioned while explaining the values of the river. One of the members from the forest group tried to make sense of why this value is not ranked higher by potential visitors and compared it to the Umeå River, which is strongly managed by Stornorrfor, and he said:

“For the tourists there, it does not seem to matter whether the river is wild and free or strongly managed; they seem happy as long as they can go snowshoeing”.

For the person from the fishing association, the wild character of the river provides a unique experience as well as good possibilities for sportfishing, and he talks about the river as a fantastic resource for that. The tourism group acknowledged its wilderness since it gives an extra experience for their visitors, and they were also talking about this place as a “unique” one. For the reindeer herder, it is a prerequisite that the river remains untamed, or not regulated, and he says,

“It is important for us, if they start building dams, many feeding grounds would get destroyed, they need the natural flow of water”.

For some of the participants, the values of the river were strongly connected to their livelihood, while for others, it just gives that extra quality of life. The character of the river also enriched their childhood memories, sharing stories of how they played along the river. They all expressed that it feels safe that the river has been there, and how it is a part of their cultural identity.

6.4.2 Migration route

“It is a migration route for fish, but also the Sami villages and wild species”

This value was expressed in all the interviews referring to wild species and reindeer, as well as humans. The migration path has a cultural value and seems to be embedded in their cultural and geographical identity as people living along the river valley and in their profession. They all talked about the migration of humans as a part of the recreational activities, as a value of the river. They all, except for the reindeer herder, explained how these recreational activities increase their quality of life as well as give added value to the area at large and tourism businesses. This includes dog sledging and sport fishing, whilst the reindeer herder opposed some of these activities, like skiing and driving snow mobiles, since it stands in conflict with the reindeer herding in some places along the river.

And in conflict with the cultural value as a migration route for reindeer and the cultural identity of the Sámi villages.

“Well, we are a nomadic folk, we move, that is how we live, and we need the river for that”.

6.4.3 Comeback of salmon

The comeback of salmon is mentioned as a strong value by both the person from the fishing association and from the tourism group. The person from the sport fishing association explained that the salmon has such a strong symbolic value for them regarding tradition, monetary value and cultural values. The salmon is also a part of the logo for the BVJ. Regarding the salmon, there is also a huge value in the system of how people are allowed to fish, which is a unique system for Sweden

“We have these fishing right holders who let everyone fish in their water for a cost of a fishing card, and we should be very thankful for this”

6.4.4 The river as their livelihood

Both for the tourism group and for the reindeer herder, their livelihood depends on the river. One person from the tourism groups said that in ancient times, people were living off nature in a way that is not possible today, but one could still have a business connected to nature. The Sami villages are also dependent on the river, since it works as a natural border in summer to keep the animals separated, and in winter they use it to migrate.

6.5 Similarities and differences of the social representations

This section will present the findings regarding similarities as well as the differences in the social representations that the stakeholders expressed, both verbally and through their drawings.

6.5.1 Increased values of life

The ecocentric values represented seem to be the same among all participants, even though the expression of these differs. Along with these ecocentric values, anthropocentric and biocentric values were also expressed by some of the members of these groups. Anthropocentric values were represented as the value the river has, for example, for the beach walk mentioned by the forest groups, which is also represented in the drawings as children playing. Some of these were contradictory to the ecocentric values expressed as the river remaining as it is. Those anthropocentric values included worrying about one's business regarding

shoreline protection, or the logistical hindrance the river is to one's business and accusing the regulations around the river of hindering community development. The values are both embodied as valuable in their characteristics of "wild and untamed" but also as logistical hindrance due to this character as being wild, and in this case, understood as protected. How the river is a hindrance was not expressed in the drawings, only through verbal expression, where the drawings seem to mirror an idyllic view of the river, with all interests cooperating in harmony.

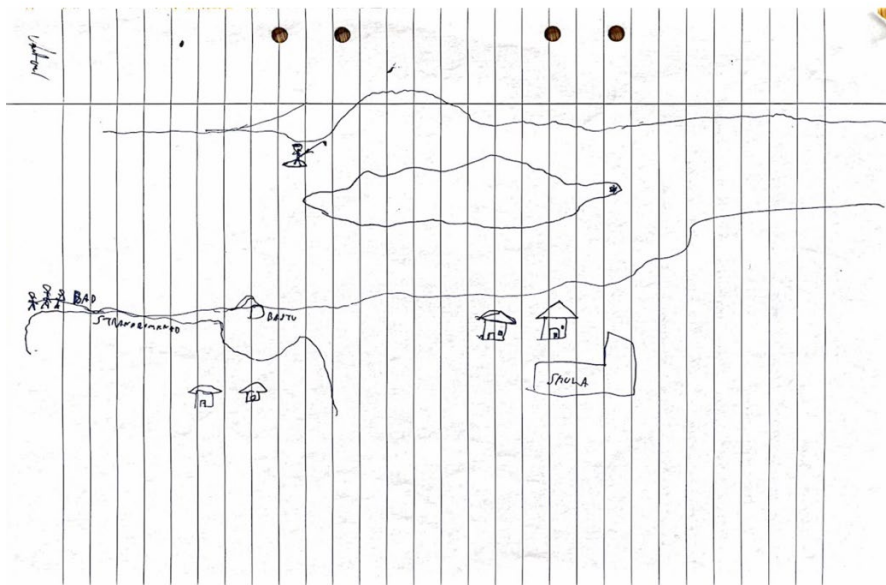


Figure 3 Drawing from G2 from the focus group discussion, including children playing, a person fishing and his sauna and house, among other things.

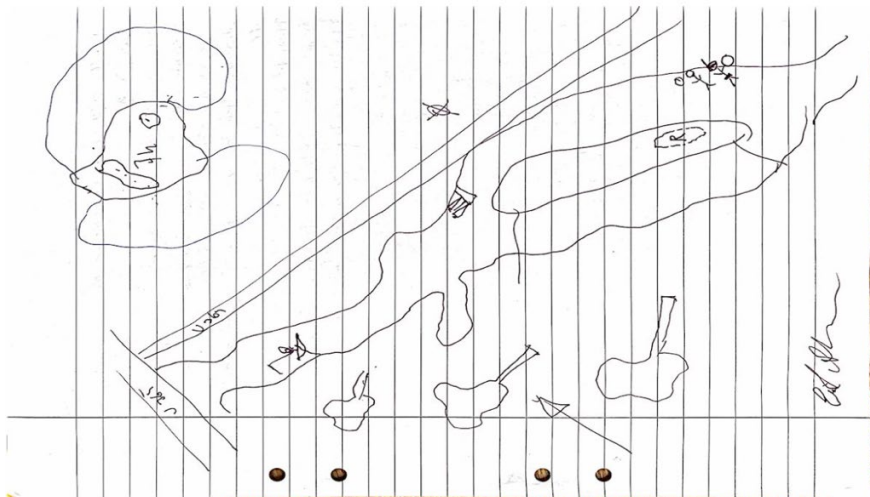


Figure 4 Drawing from G2 from the focus group discussion, including children playing, his boat and his dock, among other things.

6.5.2 The monetary value of the experience of the river

All participants, except for the reindeer herder, expressed the monetary value connected to recreational activities. By the person from the fishing association, this was expressed in the symbolic value of salmon, where he also compared it to Norway and referred to it as “big money business”, and where Sweden has not come as far. He elaborated on this further when he said that the river has not reached its full potential yet, that the river could be much more beneficial for the fishing rights holders, for the local inhabitants and communities around the river. The same argumentation was coming from the forestry group, which also discussed how the values of the river being unmanaged should be reinforced and increase tourists visiting the area. This was something that the tourism group also talked about, mentioning that the river should reach its full potential, and more tourists should be able to find information about the river, for example, through signs. The forestry group and the tourism group all agreed that the biosphere reserve should play a bigger role in this, because the biosphere reserve itself has monetary values connected to it and could help with reinforcing the picture of the Vindel River as a place worth visiting. They all argue that they know it would benefit the local communities if tourism were to flourish, and that this knowledge delineates the answer to the joint meaning of the need to improve local communities around the river. The reindeer herder saw this differently, and it was well represented in the drawings, where his drawing lacked any human activity (Figure 5). He referred to the Sami community as nay-sayers and that they would like to be alone in the area. His view of the monetary value differed, and by saying that it is commonly understood that the Sami community are nay-sayers, I interpreted it as he positioned his community as opponents for the representation of the river as a provisioning service in the sense of economic income from recreational activities. Reindeer herding is also an economic activity, although it is not viewed as a form of recreational activity in this sense. This got vivid in the drawings where one person from the tourism group drew many activities mentioned by all the other groups (left, figure 5), where the reindeer herder only included some villages and, apart from that, showed no other human activities present (right figure 5).

Figure 5 Drawings from members of G3 and G4 from the focusgroup discussions.

6.5.3 The shape and the flow

The shape and the flow of the river seem to be agreed upon, it was expressed in the drawings as well as in the discussion while explaining it to me. All the groups mentioned the “sel”. “Sel” is a local expression describing how the curves of the river create places with calmer waters, which are the human-populated areas along the river. These sel made living easier when people were more dependent on nature, and I was told that there are almost 40 small to big communities ending with “sele”, like Ruscksele, Eckorrsele and Sorsele. “Vindlande” means “winding” in Swedish and is found in the name of the Vindel River. This was expressed primarily through commonly socially worked out knowledge, where the members know their local history as the common reality by continuously referring to the river as winding. The flow structured their understanding and belonging to the area at large and their common representation of the river. One of the members from the tourism groups mentioned this at the beginning of the discussion,

“and also from a Juhttátahkka-perspective- it is this motion everywhere”

From the discussions as well as the drawings, the flow and the motion seemed to be the common representation among all participants. Another dimension of this physical dimension of the river is the emotional experiences, both to its physical form and to social and cultural norms. It was commonly understood that it is important to mention that the river flows from the mountain region to the coast, and not the opposite, and how this flow was described is interlinked with the social representation of the river and how it is understood.

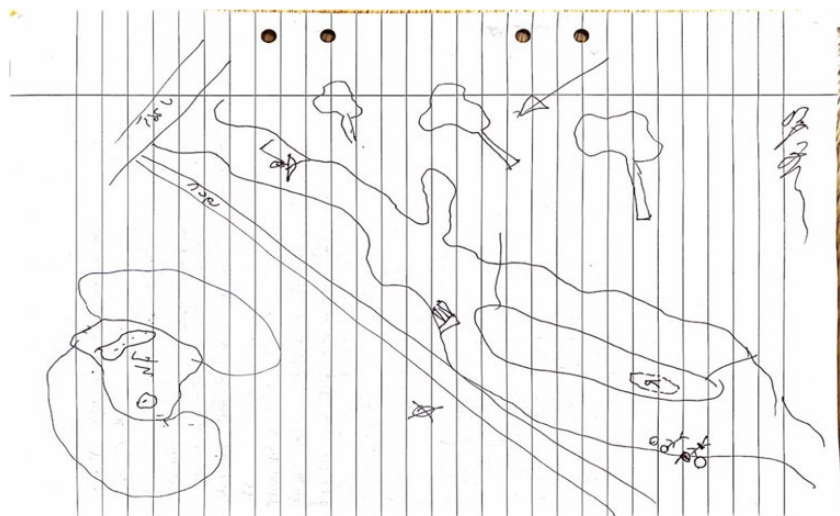


Figure 6 Drawings made by members of G2, G3 and G2 , from the focus group discussion.

6.5.4 Change of the river is understood through climate change

All participants through the discussions raised concerns about climate change, where they have identified more production of biomass in the “sel”, changes in flooding patterns during spring and shorter periods of ice coverage. During the discussion with the sport fishing association, he stated that even though there is no hard scientific data about the increased biomass, he cannot ignore that several people, independent of each other, report the same thing along the river. During the forest group discussion, they also raised this topic, comparing it with histories from their elders and how they experience it today. The change of the river is expressed through knowledge, through statements like

“I could only assume it is due to climate change”

“It is impossible to look away from the facts that this is due to climate change”

Since knowledge is not seen as a given phenomenon, but rather as an operating concept to understand certain needs, knowledge was used by the participants to understand the changes of the river and create an answer to it. SR also constitutes a knowledge which is socially shared, intending to build a common reality where the change of the river is also understood through sharing stories and anecdotes, with expressions relating to “how it was before”. The understanding and worries about climate change were not expressed in the drawings, which, as earlier explained, picture a more idyllic picture. Regarding the verbal expressions and the drawing, there was also a gap in the expressions regarding climate change. Except for the drawing from the sport fishing association, where he finished the discussion with

“I will draw a sun, which symbolises global warming”.

Figure 7 Drawing from G1 from the focus group discussion, illustrating climate change.

6.6 How the biosphere reserve is understood among the stakeholders

“Well, the BVJ is the whole river valley!”

It is commonly understood that the Vindel River has a crucial role in the biosphere reserve. They all used phrases like:

“If there were no river, there would be no biosphere reserve”

“Well, the river is the biosphere reserve”

“The BVJ is the result of many years of love towards the river”

They all had a common understanding of the function of the river as a migration route, for example, and through the discussions, they agreed that many interests should fit within the area, and that the river is important for discourse practices and collaboration. The reindeer herder said,

“I guess the BVJ makes sure that everyone gets a piece of the cake and is happy... or at least they try”

The common understanding was that the BVJ enables collaborative practices, but when I asked if they have succeeded, the participants gave me answers like “I am not sure” or “for me it is not clear what they do exactly...”. The common understanding seems to be that they all agreed on what the aim of the biosphere reserve is, but that it is not always clear how the aim is fulfilled. One person from

the tourism group turned the question around when I asked what role the river has for the BVJ,

“The real question is what role does the BVJ have for the river...?”.

For this group, the attitude towards the biosphere reserve was quite critical, and they saw the main problem as there are no physical signs regarding the BVJ or the river and asked questions about how people would find this place, they need physical proof of the BVJ, the river itself seems not to be enough for that, they argued for that signs would improve communication. Overall, the participants saw the benefits of the biosphere reserve, but they seem to have a hard time identifying what it does. The members who have been or are members of the board of the BVJ seem to have a richer understanding of what the BVJ does and could provide examples. All participants expressed their representation of the river and how they are connected to the river but seem to be disconnected from the biosphere reserve. None of the drawings pictured the connection to the biosphere reserve in an obvious way.

7. Discussion

Commonly, while discussing conflicts of interest regarding land, it is in the context of ownership. This thesis investigates how shared interests in a natural place, such as the river, can be understood from the experience of the meaning it possesses, since the river is not owned by anyone in the traditional legal sense. The meaning of the river is both concerning the stakeholders' cultural identity as well as in their professions. Different stakeholders' representations of the river are understood through the three dimensions of SR.

7.1 Cognitive dimension

Knowledge or beliefs that were expressed during the discussions referred both to how the stakeholders conceptualise nature, and the river, and whether the change in the patterns of the river is due to the balance of nature or as a flux of unpredictable systems (Buijs et al. 2011). The history of the Vindel River seems to be an important cognitive component to further understanding of how it has united the people of the river valley. Climate change is brought up in all discussions, elaborating whether the change of the river is within the balance of nature, or if the unpredictable nature of it is due to climate change. It seems like all stakeholder understands that the change of flooding patterns, increased biomass production, and changes in freezing patterns, as well as the depletion of accessible lichen for the reindeer, are due to climate change. Some of them also show a rich understanding of how these changes are connected, using terminology like “spin-off effects” and “system-thinking”, which is used to understand how climate change is a global issue affecting them locally. The stakeholders seem to express their knowledge that the change in the river is due to climate change, similar to what has been found in previous studies (Fischer & Young 2007; Buijs et al. 2011). This knowledge about the change of the river is confirmed and reinforced, both by the stakeholders in each discussion, as well as stories they told about what people in their surroundings have identified and told them.

7.2 Expressive dimension

It is clear from the discussions that the values of the river evoke emotions, and talking about these emotions makes an important addition to understanding these social representations, which is important for the collective meaning-making of the river (Höijer 2010). The emotional responses towards the river were vivid in all discussions where the stakeholders showed a strong attachment to the area at large and the river in particular. This is an important addition in understanding the social representation and a necessary part of the meaning-making (Buijs et al.

2011). Both in the discussion with the sport fishing association and the tourism group the members elaborated on how the river is a beautiful place which brings calmness, and lately the experience of the river has changed regarding having a specific activity when experiencing rather than just “being” and enjoying the beauty of it. All participants brought up respect as an emotion they feel towards the river, and how the people living in the river valley have to adjust for the river, not the other way around. The reindeer herder analysed how knowledge and respect are interlinked, saying that although one could know a lot about the river, it can turn out bad, and it is worse now than before because he sees how nature has been more unpredictable in the last years.

7.3 Normative dimension

As Bidjari (2011) indicates, the objective is not constructed according to its objective characteristics but according to the characteristics appropriate to the object through communication processes. During these four focus group discussions, the stakeholders assigned the river values which they described as increased values for their lives. Firstly, it was how the river was understood as wild and untamed and how that affected their surroundings and their sense of belonging. This was brought up several times with comparison to other rivers not having the characteristics of the wilderness. This can be understood through the expressions of ecocentric values, as clean water and the comeback of salmon. Secondly, it was expressed through anthropocentric values that the river is described as beautiful and a place for recreation. By using the metaphors of the river being the life pulse of and the blood vessels of the landscape, the participants showed a deep understanding of the system at large, expressing ecocentric values. Another value that was repeated was how the river was seen as a migration route. The river as a migration path is viewed both as an anthropogenic value regarding recreational activities like transport with skis or snowmobiles as well as the ecocentric value of the river being a migration path for wild species or reindeer. However, it seems that the values connected to the characteristic of the river being a migration path are deeply embedded in their cultural and geographical identity as people living along the valley and in their professions- although the purpose of migration path differs, whether it is regarding salmon, humans or reindeer, or a combination of all. Through this normative dimension, we can better understand how the moral foundation for nature conservation can differ depending on people’s prevailing values (Buijs et al. 2011). These different values get vivid in the drawings, where some included many recreational activities and some excluded any kind of human activity. The drawings confirmed what was brought up in each discussion as well, and they give an overview of the different representations of the river. It seems that all members rank the river high as unmanaged, which is expressed and reinforced through conversation, as well as

the freedom and variety in activities expressed in some of the drawings. Since SR is seen as something that makes communication easier since it offers group members common codes through which they can rank objects (Martikainen & Hakoköngäs 2022), expressing these shared values of life connected to the river could be assumed to lead to implications as continuously protection of the river, and by that protecting those values.

7.4 Cognitive Polyphasia

In some of the discussions, contradictory representational elements came up, which can be understood as cognitive polyphasia (Buijs et al. 2012). For the tourism group, this was the coexistence of values and emotions regarding the wild and untamed character of the river and how it increased the value of life and the experience regarding their business, contrary to the frustration over the shoreline protection and how it hindered the expansion of their business. This is an interesting example of the co-existence of multiple realities and how they exist side by side with the same individual or collective (Buijs et al. 2012; Fischer et al. 2012). If it would not be for regulations like shoreline protection, the river would not have the wild characteristic that was so highly valued by the same group. The same argument came from one member within the forestry group that the wild and beautiful characteristics increased his sense of the value of his life, talking about how he would like to see the river from his house by removing trees. The same person also referred to the protection of the river as a hindrance for transport, referring to the impossible process of getting a permit to build a bridge. Understanding cognitive polyphasia is useful to understand the complexity and the multifaceted nature of people's understanding of the natural world (Buijs et al. 2012). How the river as a hindrance is not expressed in the drawings, only through verbal expression, where the drawings seem to mirror an idyllic view of the river, with all interests cooperating in harmony. This kind of gap between drawing and verbal expressions was also identified by Fisher and Young (2007) in their study, in which they sought to understand people's mental constructs of biodiversity.

7.5 Differences and similarities in the representations

Three out of four discussion groups (sportfishing association, forestry and tourism group) sees the river as a provisional or recreational ecosystem service, where previous studies show that people working with these provisional services sees the nature as delivering a monetary return for working with, and caring for, nature (Rik De Vreese et al. 2019). These groups all acknowledge that the river has a higher potential, referring to recreational activities resulting in monetary gain for the people living and working around the river. This view was opposed by the

reindeer herder and he, in the discussion pointed it out, referring to the Sami community as “nay-sayers”. This could be assumed to be a historical scar within the history of Sweden and how the Sami people have been marginalised, and still are to some extent. This was vivid due to the hate crime which occurred during my time in Umeå. Understanding the history of Sápmi would also help in understanding the opposition towards the establishment of further recreational activities, since the river has been used for traditional reindeer herding long before the events of floating timber took place. By this, it is important to acknowledge all representations of the river, whether those are shared or differ, they are still equally important.

The flow of the river structured their understanding and belonging to the area at large, and their common representation of the river, which was verbally expressed as well as expressed in all drawings. One of the members from the tourism groups mentioned this at the beginning of the discussion,

“and also from a Juhttáhka-perspective – it is this motion everywhere”.

From the discussions as well as the drawings, the flow and the motion seem to be a common social representation among all participants. The flow structured the stakeholders’ understanding and belonging to the area at large and their common representation of the river, which was continuously reinforced in conversation and at some times, participants were correcting each other or themselves. The motion seemed to be another common representation which was interlinked to the understanding of flow. Previous studies on landscape experiences show that it is largely due to the process of social and cultural mediations (Vuillot et al. 2020). This motion was representative in all drawings, as well as in how the stakeholders illustrated the “winding” of the river. Social representations as such can be seen as a form of knowledge, since they are social and symbolises a shared meaning among these social groups (Bidjari 2011).

7.6 The stakeholders understanding of the BVJ

UNESCO emphasises that community participation is a key method to achieve the sustainable use of natural resources (Stoll-Kleemann et al. 2010), but from the focus group discussions it is not entirely clear how community participation look like but that the river is an important common resource for that, where all participants refers to the river as the ground bolt for the BVJ. From previous interviews conducted by Sandström and Sahlström (2021), participants from the BVJ emphasised the importance of initiatives that provide fast and visible results while working with long-term objectives. And this seems to still be an issue among the participants in this study, except for the participants who have been involved in projects and/or as board members and can therefore provide examples

I would therefore argue that this is a communication problem, since it seems that the understanding of those who have not been involved still do not quite understand what the BVJ does.

All the stakeholders expressed in different ways that they understood the biosphere reserve as a place where many interests should fit. This study is relevant for their understanding since the approach of it is to identify how these interests are expressed. It seems that all participants feel a very strong connection to the river, but are disconnected from the biosphere reserve at large. By incorporating the understanding of the different and similar representations of the river, it could be possible that the BVJ could improve the way people feel connected to the BVJ through the different dimensions of SR toward the river itself.

If we could better understand the variety of representations within the BVJ, the complexity could be broken down and improve targeted communication. Of course, this is a cost and time question for the area, however, it proves a quite good example how conflicts of interests regarding land could be handled, especially when it is not connected to ownership but rather how a place is experienced. This would not only improve communications but also the public support for biosphere reserve as a concept, which also been found in previous studies (Fischer & Young 2007; Buijus et al. 2008; Buijus et al 2012).

SRT can help to understand and theorise such conflicting interests, and that they are multi-layered and complex. With help from such understandings, the establishment of biosphere reserves could be better managed, as well as suggest how BRs should continuously build trustworthy relationships. The implications of knowledge, emotions and values among the stakeholders held towards the area at large, and to the river in particular, could be an important tool for the governance within biosphere reserves. This would improve targeted measures that can be taken, as well as targeted environmental communication by including the perspectives of those affected by it, leading to people feeling more included.

To break down the complexity and to better understand the SRs it is suggested that this should be done through the three dimensions of normative, expressive and cognitive SR. What people value and feel are not just either pro or against, right or left, it is rather a big palette of emotions, knowledge and values, and it is important to understand that whole palette, as well as the cognitive polyphasia, to ensure and understand environmental communication. I think the findings in this thesis provide an example of that and how this could be used further in other biosphere reserves. For the BVJ I think improvements regarding how people feel

connected to the BVJ are to firstly put the energy on the similar components to show the connection they have to each other. Although the participants in this study do have conflicting interests they all agree upon the shape and flow of the river, how history have shaped the river and their understanding, and that the river itself is life-dependent. This is important to understand, as well as the importance of understanding all different representations. This allows us to see that it is not primarily consensus that is the aim, but rather that consensual representations should be mixed with all other representations to create a recipe for understanding how we can improve communications for these areas by making it more inclusive.

Limitations of this study

The findings in this thesis are based solely on the representations of the eight participating stakeholders, which do not necessarily provide a representative spread. The four stakeholder groups do not reflect the stakeholder group at large but rather include only a few individuals from those groups. Therefore, it is impossible to conclude the representations of the broader stakeholder group. Additionally, the thesis mainly presents the views of people living near Umeå, except for the reindeer herder who resides in the farthest northwestern area during summer. However, due to time constraints, it was not feasible to travel the entire distance of 450 kilometres upstream.

8. Conclusion

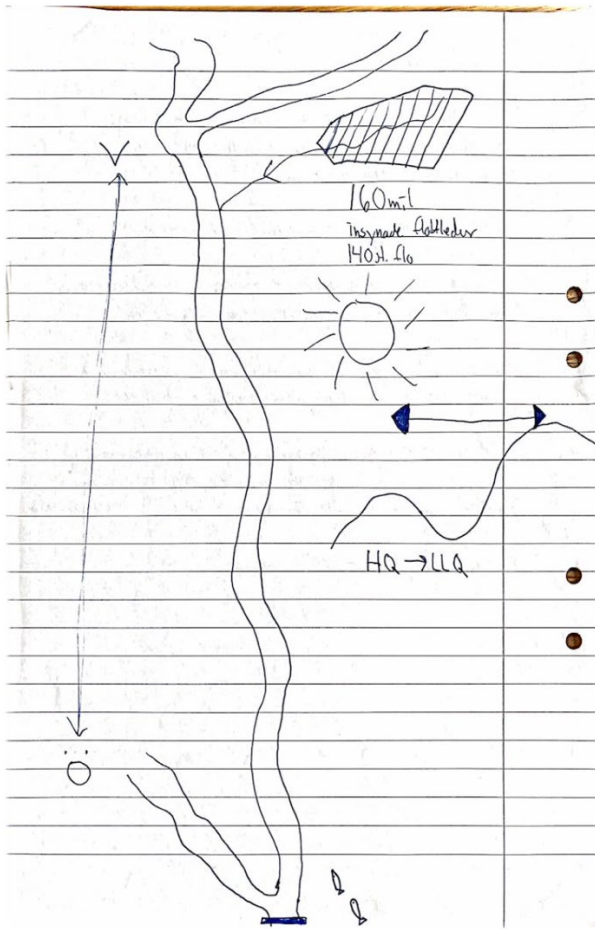
By understanding the SR through the three dimensions, the complexity regarding different interests relating to land, whether it is regarding ownership or experience, could be better managed and more inclusive. Drawings could be used to show more embodied layers of SR and whether they are confirmed by verbal expressions or not. This kind of method could be used for collaborative meaning construction since participants add to their drawings while talking. By understanding the SR, and the embodied layers and dimensions among people within the area, more inclusive and transparent governance of the river and the biosphere reserve could be made, where the initial aim does not necessarily have to be consensus, but rather to understand different representations and the co-existence of those. I would argue that for future research, a continuous understanding of collaborative meaning constructions, including knowledge, emotions and values, would continue to improve a more inclusive governance within biosphere reserves and nature conservation practices.

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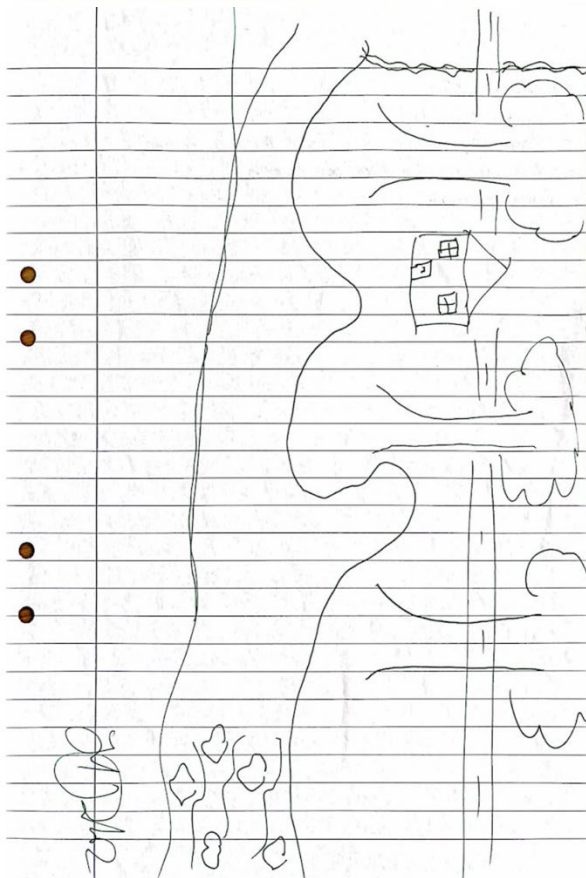
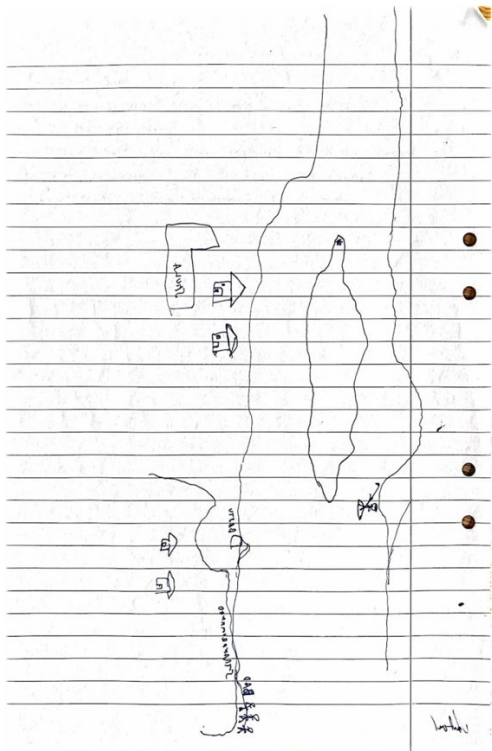
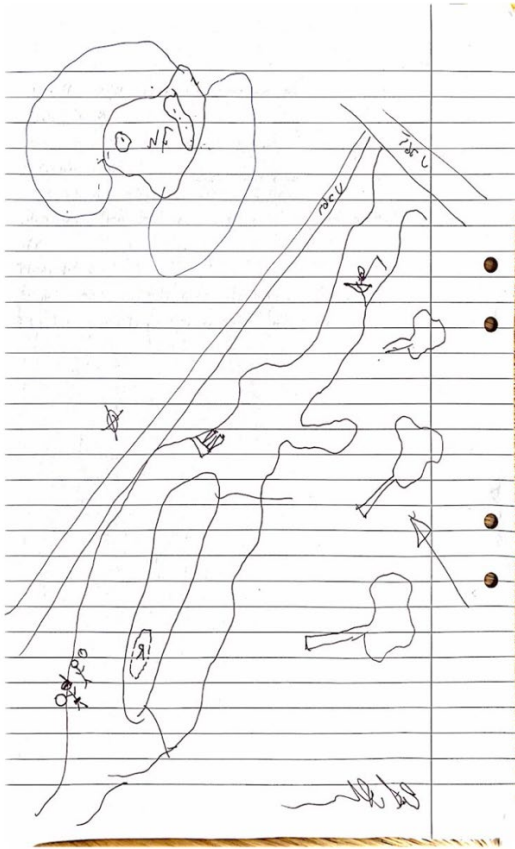
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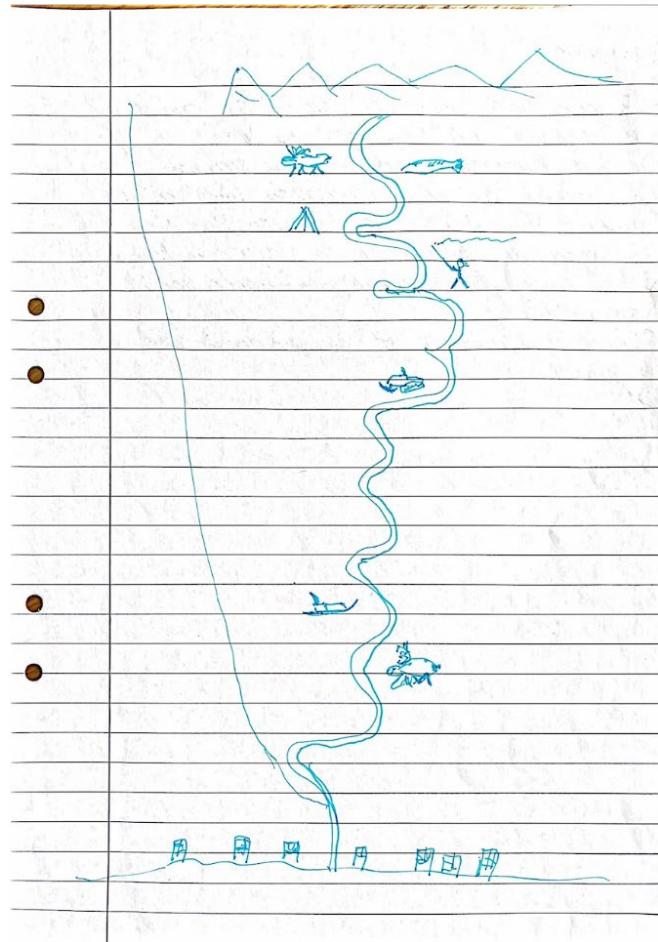
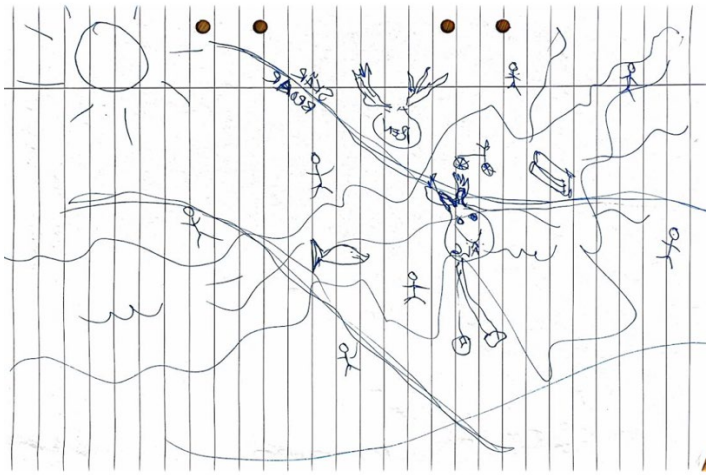
Appendix 1



G1

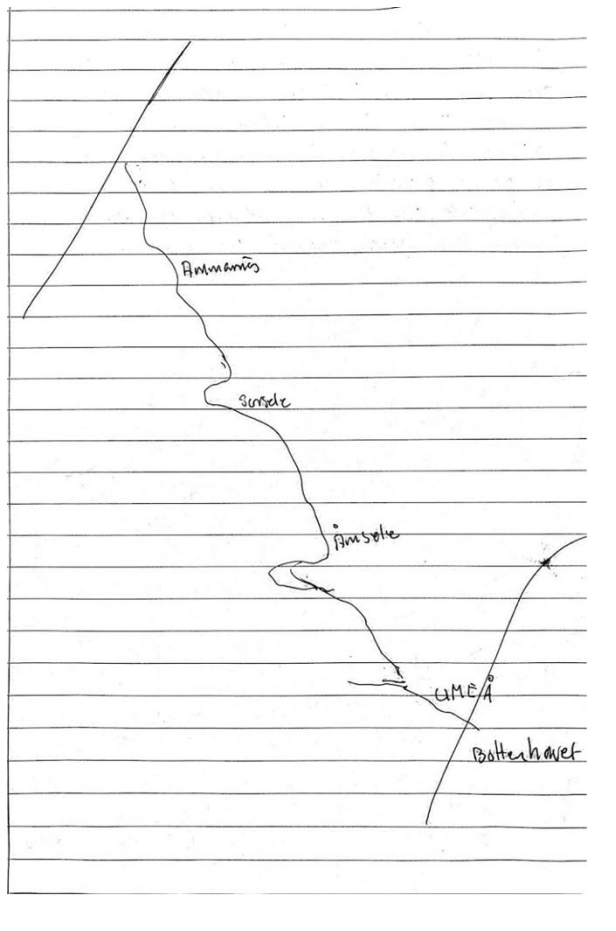


G2





G3



G4

Popular science summary

What does nature mean to you? And why is it important? Nature is, in itself, a huge concept. Is it the garden outside your house, the forest where you grew up, the river in which you swim during summer, or is it the wilderness so distant that humans rarely access it? Or is it all of this? No matter how nature is being conceptualised, it is surely connected to certain emotions, values, and knowledge. However, these may differ depending on who is feeling, experiencing, and knowing.

Nature conservation evokes these components, as well as land management, and it usually involves questions of ownership and what those legal rights imply, including who has the final word in a decision-making process, for example. But how do we address a situation when it is not merely a question of different kinds of ownership structures, but rather that different people feel and experience a certain natural place differently? By identifying how people express values, emotions, and knowledge, we can make environmental communication more inclusive for all involved.

This thesis identifies the social representations of nature among four stakeholder groups within a biosphere reserve in Northern Sweden. The aim of biosphere reserves, designated by UNESCO, is to improve the relationship between humans and nature to secure a sustainable future where people live within the planetary boundaries. In this particular biosphere reserve, the Vindelälven-Juhtatähkka biosphere reserve, the Vindel River flows 450 kilometres through Sweden, from the barren mountain landscape in the west to the coastal and more densely populated area in the east towards the Baltic Sea. As diverse as the landscape is through which the river flows, so are the stakeholders and their interests regarding the river. These stakeholders are, to name a few, forestry, traditional reindeer herding and Sami villages, tourism, fishing, research areas, and municipalities. Previous studies have shown that this biosphere reserve set an example regarding cooperation, although some other studies show that there is still initial friction between these stakeholders regarding land use.

To understand how these different interests are expressed through the experience of the Vindel River, I visited the area to meet with representatives from four different stakeholder groups, such as people working in forestry, a sport fishing association, tourism, and traditional reindeer herding. In discussions with each group, we talked about what the river means to them in terms of the values they see, what the river makes them feel, and what they know about the river. With inspiration from previous studies on social representations, the participants drew

the river while explaining it to me; this proved helpful in unlocking explanations that were hard for some to express in words. The findings showed that participants had a strong collective understanding of the river regarding historical events and how it was shaped and flows. They viewed the river as something important for their lives and the area at large, using metaphors like “life pulse” and “blood vessels.” Regarding what one could do with or in connection to the river, their views varied, as was reflected in the drawings, where some included many human-made objects such as houses, boats, and children playing, while others excluded any form of human activity. The participants also showed a rich understanding of how climate change is affecting the river and themselves, using advanced terms like “system-think” and “spin-off effects.” The representations of the river differed not just between stakeholder groups but also within individual participants, who felt multiple, sometimes contradictory, things about the river. This serves as a valuable example that people are not just for or against, right or left; rather, they have a wide palette of emotions, knowledge, and values.

This implies the importance of understanding the entire palette in order to create more inclusive and targeted environmental communication, where the aim does not necessarily have to be consensus but rather to understand all representations. The findings in this study can tell us something about how we can identify different interests and how they are expressed and the role of values, emotions and knowledge. The findings show that all participants in this study feel a very strong connection to the river, but are disconnected from the biosphere reserve. If we better understand how people in the area are connected to the river and how their representations look like, it would be possible to improve how people feel connected to the biosphere reserve Vinde River-Juhttatahkka. This findings can be applied in biosphere reserves at large and help understand how we should deal with conflict of interestst when it not regarding ownership. This thesis could also open up for further improved communication within biosphere reserves, which have been regarded as a successful concept but where communication is sometimes lacking.

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