Organization and Decision-Making in Enforced Networks: The River Groups in Northern Sweden

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This article examines the Swedish experience of network governance in managing flooding and high water flows. The aim was to study the regional responsibility for coordinating risk awareness and risk analysis in terms of information, prevention and actions. The focus was on differences between the Swedish river groups from the coordinators perspective, including their organization and approaches to decision-making. The conclusions reached here are based on interviews with the coordinators of county administrative boards. We argue that the absence of central guidelines in the organization of the river groups and the fact that they are enforced by the government rather than spontaneously formed have had implications for the networks' effectiveness and for exchanges of experience among the networks.

I Introduction

Floods and high river flows have become increasingly common in Sweden and in many other countries around the world. It is often argued that these issues are a result of climate change. As a result of increasing emissions of greenhouse gases, climate change is described as the greatest contemporary threat to the environment (see, e.g., Granberg & Elander, 2007; p. 537). This implies that authorities at all levels must consider climate change issues when analysing the risks associated with flooding and high water flows in rivers. An important issue in this context is adaptive capacity, which refers to the extent to which society is prepared to respond to climate change and the willingness to take action to address it (IPCC 2001; Burton, Huq, Lim, Pilifosova & Schipper, 2002; Folke, Carpenter, Elmqvist, Gunderson, Holling & Walker, 2002; Storbjörk, 2006; Smit & Wandel, 2006; Richmond & Sovacool, 2012; Khailani & Perera, 2013).

Environmental policies, including policies pertaining to sustainable development and climate, do not recognize or respect any boundaries. Environmental emissions or floods make no geographic distinctions between states, regions or municipalities or distinctions between public and private boundaries. Air pollution spreads rapidly over a wide area and must be addressed on an international level. Eutrophication, which refers to the release of toxins and nutrients in the water, affects not only the community or region in which a spill occurs but also adjacent areas downstream or along the coast (Jagers, 2005: 55; Raadgever et al., 2008). Environmental issues and environmental policy therefore often require interregional and international cooperation as well as networking solutions for the practical management of such issues. The political management of environmental issues, whether they relate to sustainable development or climate change, requires cooperation not only between agencies but also in the form of networks that include

both public authorities and private actors (Hysing, 2009; Pierre & Peters, 2000). This article focuses on such networks, the river groups, which manage floods and high water flows in Swedish rivers.

This article focuses on these river groups as networks of organizations and their approaches to decision-making. It will shed light on the regional responsibility for coordinating risk awareness and risk analysis in terms of information, prevention and actions. The study therefore focuses on the organization and functioning of the networks in managing issues related to flooding and high water flows in the rivers in Sweden. The theoretical starting point is in theories of risk governance and network governance (Pierre et al., 2000; Renn, 1998; Sørensen & Torfing, 2007). Risk governance is often said to include three elements: risk analysis, risk assessment and risk management (Renn, 1998). The last of these elements is the focus of this article. The river groups can be viewed as an example of risk management that takes the form of networks in which both public and private actors are included.

The article proceeds as follows. The next section presents the case: the river groups and their organization. The case section is then followed by the theoretical considerations of the study. Next, the study's method is outlined, followed by the presentation of the results and finally a discussion of the results and conclusions.

1.1 Previous studies

Studies considering the political and risk management associated with floods and high water flows in rivers are limited. In a study that is related to network governance but is also relevant to risk governance, Astrid Fell (2008) examines the network control associated with the Energy Agency's Sustainable Municipality programme. Fell focuses on whether the programme can be analysed through network and meta-governance theory, the extent to which the initiative was successful and whether the implementation can be problematized from a democratic perspective (2008: 17–19). Fell argues that network governance must be characterized by equality between parties, mutual trust and common problems, with a relationship delineated by negotiation rather than competition or a superiority/inferiority dynamic. The goal for the participants must be to increase their capacity to solve common problems through networking (2008: 10–12). Both the river groups and the sustainable development programme resulted from changed governance ideals. Actors from the public and private sectors collaborate with one another to reduce or mitigate the effects of high water flows and flooding.

Among the Swedish studies of risk governance and flooding, Nyberg (2008) shows that during the 1980s, Sweden experienced several major floods that caused great damage and resulted in enormous societal costs. However, there are few general Swedish studies of flooding; existing studies typically focus on a few actors at the local or regional level. The flooding in Arvika in 2000 has been the subject of several studies. Sjöberg, Wallenius and Larsson (2006) study leadership and decision-making in major emergencies, including the flooding in Arvika. Ohlsson (2001) focuses on rescue efforts associated with flooding, and Blumenthal, Nyberg, Grahn and Gustafsson (2010) focus on the events, consequences and costs of the Arvika flood 10 years later. Political management is mentioned only briefly in the book. Storbjörk (2006) focuses on the implementation of climate change considerations at the national and local levels and studies the municipalities of Falun and Kristianstad. Both municipalities are subject to high water flows and floods, which have particularly affected urban planning. In the case of Falun, these high flows occur because of the Dal River, Falu River and Svärdsjö streams; in the case of Kristianstad, central parts of the city lie below sea level. Lopez-Gunn (2008) studies joint administration concerning groundwater at the global level and finds that network control with stakeholders from both the public and private sectors is important for efficient and legitimate administration. One problem is that the network structures differ between the local and global levels. According to Lopez-Gunn (2008: 49), the synchronization of the two control models would be desirable. In a study of the benefits of using a provider-user matrix for collaboration in flood risk management, Hedelin and Hjerpe (2015) show that the benefits of collaboration have not yet been achieved in the Ljusnan River Group. Hedelin & Hjerpe do not focus on the river group networks as such but use the Ljusnan River Group as an example of network collaboration in a governance environment. However, no major studies have been conducted on the river groups and the type of network that they represent.

2 Governance, risk and water

Because the river groups are networks that address risk analysis, risk management and water management before, during and after floods and high water flows, the concepts of governance and risk are crucial to understanding them. Both concepts are constantly evolving, which implies that there are no universally agreed upon definitions. Thus, different institutions and different researchers use different definitions depending on the cultural, political and economic context (see Tortajada, 2010; Tropp, 2007).

2.1 Governance

Let us start with the concept of governance, which has no clear definition. Pierre et al. (2000) discuss it as follows:

... Sufficiently vague and inclusive that it can be thought to embrace a variety of different approaches and theories, some of which are even contradictory (2000: 37).

Pierre and Peters show that the concept of governance can be understood from multiple perspectives. The political management of society is considered to be a continuum, with traditional top-down control at one end and self-organization (autopoiesis) and networks, including those derived from sociological theories, at the other end. Governance can also be regarded as a policy instrument; considered in the context of institutionalism, rational choice and network and policy communities; or analysed based on neo-Marxism and critical theory (Pierre et al., 2000: 37–47). However, this work does not focus on the theoretical discussion of the concept of governance and thus has no ambitions to either test the existing definitions or develop theory surrounding the concept. Instead, this study is empirically conditioned and aims to explore the organization and functions of political management on issues relating to high water flows and flooding along the northern Swedish rivers. This study therefore employs Pierre et al. (2000) definition of governance as policy instruments and as a network for steering.

It has been argued that networks are an important phenomenon in both governance and public policy theory in different policy sectors (see, e.g., Christopoulos & Ingold, 2011; Henry, 2011; Lidén, Nyhlén & Nyhlén, 2015; McGinnis, 2011; Petridou, 2014). The concept of governance is used to describe how society is organized, how it is governed and who is involved. It is often combined with concepts such as dialogue, participation and networking, and it is often contrasted with the government ideal, described as the Weberian, hierarchical way of organizing society (Nyhlén, 2011).

2.2 Risk governance

The concept of risk governance combines two key social science concepts that are the focus of this article: risk and governance. Similar to the concept of governance, there is no uniform definition of risk. Risk can include a relationship between reality and possibilities (see Renn, 1998: 50), but it can also be defined as a consideration whereby the damage may be greater than the benefit (see Luhmann, 2005: 18–22). Risk can also be

linked to possible negative outcomes (Mayer, Davis & Schoorman, 1996: 725) and can be based on both real and perceived risk or linked to actions that have consequences for things that people value (Olofsson & Rashid, 2009: 22). Risk governance considers the legal, institutional, social and economic contexts as well as the actors involved in each of these contexts. Risk governance focuses on the political management of risk in society and therefore includes both public and private actors and actors from the third sector (Renn, 2008: 8–9). Renn also distinguishes between horizontal and vertical risk governance. Horizontal governance is close to multi-level governance and proceeds from the local and regional levels to the national, supranational and global levels. Vertical governance includes the public sector, industry, the academic community and civil society and NGOs (Renn, 2008: 9–11). Renn suggests that there are four phases of risk governance: pre-assessment, appraisal, characterization/evaluation and management. Renn's model emphasizes the importance of a more rigorous scientific approach to risk assessment in the evaluation phase. The influence of identified risk on health and the environment and its social and economic consequences are important in this model (Renn, 2008). Renn also notes that risk governance is context dependent and is influenced by organizational capacity, political culture, actor networks, social climate and risk culture (Renn, 2008: 354). Risk governance is often considered to be a complex social activity that is carried out in multi-level and multi-directional networks (see Boholm et al. 2011; Hood, Rothstein & Baldwin, 2001). In this respect, Sweden is often considered to be a special case with its consensual tradition (see Boholm et al., 2011; Löfstedt, 2005).

In 1986, Ulrich Beck introduced the concept of the risk society. According to Beck (1986/1992), risk society is a systematic way of addressing hazards and insecurities that are induced and introduced by modernization itself (Beck, 1992: 21). Beck argues that modern society has changed the label of social conflict. The division of wealth has been replaced by the management of risks. New modernity is no longer characterized by the distribution of goods but rather by the distribution of bads. Crucial questions become the following: Who runs the risks? Who is able to protect her/him? and Who is responsible for the risks? Giddens' (1999) risk society is 'a society increasingly preoccupied with the future (and also with safety), which generates the notion of risk' (Giddens, 1999: 3).

Beck's theories have been applied in different risk contexts around the world (see, e.g., Olofsson and Öhman (2007), Alaszewski and Coxon (2008) Cruz-Del Rosario (2009), Howell (2012)). However, Beck's theories of risk society have also been subject to critiques by several scholars. Mythen (2007) identifies six

lines of critique, including that Beck focuses on new risks and addresses risk as an objective concept, that he is focused on Western society and that a risk always implies something bad. Furthermore, Beck's lack of empirical evidence is also often highlighted (Dingwall, 1999; Olofsson et al., 2007). Despite the critiques, Beck's concept of risk societies has had a major impact on how we understand the complexity of modern societies and some of the contemporary challenges these societies face.

In addition to risk governance, the concept of water governance may be relevant in this context. According to Tortajada (2010), water governance in its broadest sense *include[s] all social, political, economic and administrative organizations and institutions as well as their relationships to water resources development and management* (Tortajada, 2010). Rogers and Hall (2003) have an almost identical definition of the concept as '...the range of political, social, economic and administrative systems that are in place to develop and manage water resources, and the delivery of water services, at different levels of society'. The UNDP (United Nations Development Programme) defines water governance as encompassing the political, economic and social processes and institutions by which governments, civil society and the private sector make decisions about how best to use, develop and manage water resources. (UNDP 2004: 17).

2.3 Governance networks

Networks are typically described as self-organizing or created and coordinated by the state, in which the actors come together and use one another's resources (Sørensen & Torfing, 2005; : 197; Lidén et al., 2015). Networks are driven by different sets of resources, and they are often considered to be relatively independent and regarded as an alternative means to hierarchical control of regulating the market (see, e.g., Rhodes 1996, 1997; Carlsson, 2000; Torfing, 2005).

Networks are often used by individual organizations to achieve their goals, maximize their influence over outcomes or avoid being dependent on other actors in the system. From this perspective, governance involves managing networks (Rhodes 1996: 658). Rhodes (1997) argues that governance is synonymous with network governance and defines governance as follows: *[governance] refers to self-organizing, inter-organizational networks characterized by interdependence, resource exchange, rules of the game and significant autonomy of the state* (Rhodes 1997: 15). Other scholars argue that networks should be considered complementary to the market and to hierarchical models of governance (Nyhlén, 2011). Participating in governance networks can reduce the transaction costs as well as the information asymmetries between the

stakeholders, which can also have a positive effect on legitimacy and the acceptance of public policies (Ahrens & Rudolph, 2006: 215).

According to Rhodes' perspective on governance, there is no monolithic power centre; rather, there are several centres (Rhodes 1997: 3). Rhodes (1997) argues that governance is a new process for exercising control and focuses on network management. Important features of this type of network are self-organization, interdependence between actors and resource exchange. Resource utilization drives networks; in other words, Actor A has something that is valuable to Actor B and vice versa. There is also resource dependency between the agents in the system, making networks self-organizing. Additionally, networks are characterized by significant autonomy from the state.

The key for all types of networks, including those presented above, is the interests that dominate them. Networks may be dominated by professional and economic interests or by the state, and networks thus vary in both the degree of internal influence and in what ultimately characterizes them. What exactly constitutes their nature is then an empirical question (Rhodes, 1997: 39). Thus, networks must be studied empirically to be characterized. Another conclusion is that networks occur in parallel with hierarchical and market models and that a system can be characterized by one or the other type (Nyhlén, 2011).

The relationships between the actors in a network are often horizontal, but they can also be vertical, as in a municipal organization (Montin, 2006: 9). Networks exist in the shadow of hierarchy. Hierarchical control remains an important factor with regard to the control of the political system. The role of the regime is then to coordinate actors (Nyhlén, 2011). The river groups are vertical networks at the regional level, with participants from both the local and regional levels. Unlike most networks, however, the river groups are not formed by the participants themselves but by the government. Even if, to some extent, the river groups can decide among themselves which actors should be represented in the group, they cannot decide to dissolve the network. Research on networks has mainly been focused on the tensions between networks and traditional institutions and on networks' complex approaches to decision-making. Studies of governance networks show that mutual trust between the actors is important for both networks' effectiveness and for decision-making capability in a network. Despite the importance of trust, the lack of studies that include trust is striking (Edelenbos & Klijn, 2007; Provan & Kenis, 2008; Klijn, 2008). Robins, Bates and Pattison (2011) study the Swan-Canning River System in Western Australia and argue that governance networks do not imply effective governance themselves. However, because each situation

and each network need to be analysed separately, generalizations are not viable. Networks can also be characterized as lobbying groups with public and private actors.

Johansson (2015) analyses the implications of lobbying networks for public decision-making. Based on a Swedish case of risk assessment for a road construction project in western Sweden, Johansson concludes that the network was successful in overriding procedural expert-based decision-making. In her study of local environmental policy, Gustavsson (2008) finds that networks offer the possibility for participants to influence environmental policy on different levels. Networks also function as nodes for knowledge transfer between the actors. A third conclusion Gustavsson draws is that networks also function as areas where personal contacts are established between the actors (Gustavsson, 2008). Crisis management is also dependent on leadership for cooperation and coordination. In a study of crisis preparedness work among municipal leaders in Sweden, Enander, Hede and Lajksjö (2015) identify three categories of factors that explain the motivation to work, with issues related to risk, societal safety and preparedness for crisis among officials at the municipal level in Sweden. Based on the results of the study, a model was developed that aimed to identify opportunities and barriers to crisis preparedness at the municipal level. The model includes factors related to the organizational and environmental context, activities that have been undertaken, and individual-related factors. All three categories are influenced by actual crisis experiences (Enander et al., 2015).

Palm and Ramsell (2007) emphasize the importance of trust for cooperation and coordination regarding emergency management. A lack of resources provides an effective ground for the development of cooperation and coordination in policy networks. However, to work effectively, mutual understanding and a willingness to listen to one another are crucial for the involved actors to develop trust within the policy network (Palm et al., 2007). In their study of civil defence directors' views on coordination and cooperation in crisis management, Wimelius and Engberg (2015) show that there is no clear way to resolve conflicts in crisis management in Sweden. Instead, the coordinators express hope that consensus will be achieved through better governance, better network governance and more resources. On the other hand, they also find that Swedish crisis management is governed too weakly and lacks continuity. Trust is a crucial concept in this context (Wimelius et al., 2015).

The logic of decision-making in governance networks is based on a reflexive rationality, meaning that decisions are made in ongoing negotiations between

the included actors. Because networks are built based upon interdependence between the actors, this process includes the aim to solve conflicts based on different interests and conceptions between the actors to find agreement on the issues that constitute the basis for the network (see Scharpf, 1994; Sørensen et al., 2007). This process not only might end in policy decisions but can also change the whole policy discourse, including a redefinition of the included actors and the fundamental basis upon which decisions and regulations are built (Sørensen & Torfing, 2009: 236).

3 Methodological concerns

This study presents a comprehensive survey of all of the river groups in the northern part of Sweden, including all 12 river groups in the region. This implies that the study includes all the largest rivers in Sweden, except for one, the Klar River/Göta River in southwest Sweden. The cases were selected because they are similar in both size and geography in the sense that they are all large rivers that run from the mountains to the sea in rural areas of Sweden. The research population includes both regulated and unregulated rivers. Four river groups manage unregulated rivers, all four of which are situated in Norrbotten, the northernmost county in Sweden. One group includes one regulated and one unregulated river and is coordinated by the County of Västerbotten. Seven groups include only regulated rivers and are found in all six counties. Finally, the selection of cases enables a comparison between river groups that are administered by county administrative boards (CABs) that founded the Coordination group, which was the predecessor and raw model for the river groups, with members of the Coordination group and rivers that were not included in the group. This comparison is possible because three of the river groups are coordinated by the initiators of the original Coordination group, the county of Jämtland and the county of Västernorrland. It can be assumed that previous membership in the Coordination group could determine whether a county administrative board acknowledges the need for the type of formal network of which the river groups (and the Coordination group) are examples.

The study is based on interviews and document studies. The interviewees include the coordinators of the six CABs, who were interviewed using the semi-structured interview method. The questions were predetermined, but there were opportunities to ask supplementary questions for clarification. An interview guide was used during the interviews, and the questions were based on a number of key topics (Frankfort-Nachmias & Nachmias, 1996).

The interviews were conducted in 2011–2012. One interview was conducted over the telephone, and the

remaining five were conducted in person. All six interviews were audio-recorded and transcribed verbatim.

To complement the interviews, document studies have been used. The document study provided important background information and allowed for data triangulation (Gerring, 2007). The document study included correspondence within the networks as well as notes from meetings of the networks and other network documentation. The document study provided basic information on the organization of the networks and information on decision-making within the networks. The information gathered from the document study was followed up on in the interviews, which deepened the information in the documents and allowed for verification of the information from the documents in the interviews.

4 The river groups

The idea of the formation of networks to address risk analysis and crisis management in the case of floods or high river flows was born during the rainy summer of 1993. Severe floods and high river flows affected the rivers in northern Sweden, and during rescue operations, the need for coordinated efforts became clear. The actors in the rescue operations sometimes arrived at different interpretations when confronted with the same information. At other times, the actors had different information that led to different assessments of what actions were required. Because floods and high water flows had largely been absent in the years leading up to 1990, the need for consultation and collaboration had not been previously addressed. Subsequently, the need for cooperation among the CABs, municipalities and water management companies became obvious, and on 19 April 1994, one year after the 1993 floods, the *Coordination group for information during high flows, etc.* (Samordningsgruppen för information vid höga flöden mm, hereafter referred to as the Coordination group) was formed on the initiative of the CAB in Jämtland. The group included representatives of the CABs in four of the five counties in northern Sweden, that is, Jämtland, Västernorrland, Västerbotten and Gävleborg; the County Police Chief in Jämtland; the Rescue Service in Östersund (Jämtland); the Emergency Alerting Company (SOS-alarm AB); SMHI (Sweden's Meteorological and Hydrological Institute); the Armed Forces (Fo 22) and the water regulation companies for five rivers: the Ume River, Ångerman River, Indals River, Ljungan River and Ljusnan River. The aim of the group was to *be responsible for the coordination of information and to give advice regarding actions intended to minimize the effects of high flows in the Ume River, Ångerman River, Indal River, Ljungan River and Ljusnan River watersheds (vid höga flöden,*

svara för samordning av information och lämna förslag till åtgärder för [att] minska verkningarna av höga flöden inom Umeälvens, Ångermanälvens, Indalsälvens, Ljungans och Ljusnans avrinningsområden). Later, the Dal River was added to the Coordination group. The water-regulating companies in Östersund were the conveners of the group (see SOU 1995/40: 48–49; Agreement 1, 1995; Agreement 2, 2005). Several actors subsequently joined the group, including the CAB of Dalarna, the Swedish Transport Administration (Trafikverket) and the Dal River Water Regulation Company. The Rescue Service in Jämtland and Medelpad also joined the group (see Agreement 1 (1995); Agreement 2 (2005)).

In May 1994, the government established the so-called *River Safety Investigation* (SOU 1995/40). The investigation concluded that to streamline the work involved in river safety, river groups should be formed for all of the major rivers in Sweden (pp. 11–12). The raw model for the river groups was the existing Coordination group. As a result of the investigation, the government (via the Swedish Rescue Service) called for the formation of the river groups in 1997. The CABs were assigned to coordinate the river groups. However, the instructions given by the Rescue Service provided no guidelines on how the groups should be organized or whom they should include. Currently, 30 river groups (Table 1) are organized differently and include different actors. In addition, 17 of the CABs serve as coordinators for one or more river groups (see Table 1). Only the counties of Skåne, Blekinge, Gotland and Östergötland are not responsible for any river groups.

From a legal perspective, the responsibility for risk and crisis management in Sweden currently rests with the municipalities. Thus, municipalities are expected to identify, analyse and plan for the so-called extraordinary events. Swedish crisis management is driven by three principles: responsibility, parity and proximity. This implies that the responsibility for an activity should be maintained by the same actor both during normal conditions and during a crisis, that the authority should function in the same way in both normal situations and during a crisis (parity) and that responsibility should be managed where it occurs by those directly concerned (Krisberedskap.se 2016). Before 2003, however, the legal situation was somewhat unclear. Municipal responsibility for actions during wartime included the explicit right of municipalities to take action, but their responsibilities during peacetime were more vague. The Planning and Building Act (SFS 1987) states that municipalities should include various types of risk assessments (e.g., the risks of accidents, flooding and erosion) in their plans. The Act (2002: 833) on extraordinary circumstances in peacetime in local governments was replaced in 2006 by the Act

Table 1. The Swedish River Groups

River group	Coordinating county	River group	Coordinating county
Torne River/Maunio River/Lainio River/Vittangi River/Rauta River	Norrbotten	Eskilstuna River	Örebro
Kalix River/Kaitum River/Tärendö River	Norrbotten	Nyköping River water conservation council	Södermanland
Råne River	Norrbotten	Water council Emåförbundet	Kalmar
Lule River	Norrbotten	Swedish SW Watercourses:	
Lagan, Nissan, Ätran, Viskan	Halland	Lagan	Kronoberg
Pite River	Norrbotten	Nissan	Västra Götaland
Skellefte River	Västerbotten	Ätran	Halland
Ume River/Vindel River	Västerbotten	Viskan	Västra Götaland
Ångerman River/Fax River/Fjäll River	Västernorrland	Mölnålsån	Västra Götaland
Järp stream/Indal River	Jämtland	Säveån	Västra Götaland
Ljungan/Gimån	Jämtland	Vänern/Göta River	Västra Götaland
Ljusnan/Voxnan	Gävleborg	Upperuds River	Västra Götaland
Dal River	Dalarna	By River	Värmland
Kolbäckens flow group	Västmanland	Nors River	Värmland
Arboga River	Örebro	Klar River/Trysil River	Värmland
Mälaren valley flood group	Stockholm		

Source: MSB (<http://www.msb.se/sv/Forebyggande/Naturolyckor/Oversvamnning/Alvgrupper/>).

(2006: 544) concerning local and county measures before and during extraordinary events in peacetime and high alerts. Both acts stated that the municipality or county should analyse any possible extraordinary peacetime events and determine how these events could affect their operations. The results of the risk analysis were supposed to form the guidelines and the action plans.

The CABs are responsible for supervising the municipalities in terms of comprehensive and detailed plans (SFS 2007) and for following up on the municipalities' work on extraordinary events, which includes risk monitoring and vulnerability analyses (Ordinance 2007: 825 with county administration instruction). However, possible sanctions if these guidelines are not followed are extremely limited. If the county board does not approve a plan, then the lack of approval must be noted in the plan (SFS 2007). The same applies to monitoring the work concerning extraordinary events: no real sanctions are available (Ds (2009:180)).

The Act (2003: 778) on protection against accidents states that municipalities must have prevention plans that cover the risks of different accidents in the municipalities, the goals for operations related to those risks and how the work is to be organized and planned (LSO).

The CAB boards are responsible for supervising and assisting the municipalities in their work preventing accidents. In emergencies, the state, represented by the CABs or other authorities, can assume the role of managing a rescue operation (LSO, Chapter 4, § 10). For water activities, the Environmental Protection Agency is responsible for overall supervision, and the CABs and the municipalities are often responsible for

operational supervision, including the supervision of dams. In this context, the CABs' role as coordinator for the river groups can be regarded as part of their responsibility as operational supervisors for the municipalities.

5 Results

When the Swedish Rescue Service called for the formation of river groups in 1997, no guidelines were provided regarding how to organize the networks, who to include in the networks or what issues other than the coordination of information that the river groups should address. This lack of coordination implies that the river groups differ in all of these three respects. The interviews with the coordinators at the CABs and the document studies show that there are major differences among the networks. Among the twelve river groups, the study shows that five have not been formally organized at all. All five of these networks are administered by the northernmost county of Norrbotten. Four of the networks include non-regulated rivers, while the fifth includes a regulated river with only one water regulation company. In the interview with the coordinator responsible for the five networks, it was argued that there is no need for this type of network because there are no water ponds along four of the rivers and thereby no possibility of controlling the water flows during a flood or high water. For the fifth river, the CAB and the water regulation company had already developed a method of addressing the risk analysis and the coordination of information in the event of floods or high river flows. It was therefore argued that the formation and organization of the river groups could disrupt an already

well-functioning system with the types of issues that the river groups are expected to work on.

The remaining seven groups are more formal in character, and they all hold recurring meetings twice per year, one during the spring flood and one during the autumn. Six of these river groups are also members of the Coordination group. Some of them consider the Coordination group to be senior to the river groups in certain respects, but others consider the two to be parallel networks. In general, the Coordination group is primarily focused on questions related to emergencies, although the group also discusses other issues; by contrast, the river groups address preventative questions and are therefore more focused on risk assessment and risk analysis. All of the river groups included in the Coordination group appear to agree on this focus.

Furthermore, the river groups differ with regard to each group's focus and as a consequence also with regard to the included actors in the groups. The five non-organized groups of course have no focus for their internal work. As for the remaining seven groups, four have chosen a more technical focus. These networks mainly focus on dam safety and technical solutions to avoid floods along the rivers as much as possible. These river groups mainly include the regulation companies, the dam owners and actors representing the Rescue Service and the blue light authorities. This focus also affects the risk analysis of flooding and high water flows because the groups do not address questions connected to planning and thereby do not include planners from all of the municipalities along the rivers.

Three of the river groups, all of which are coordinated by the counties of Jämtland and Västernorrland, have chosen a focus on planning, which reflects the composition of the groups. In addition to the actors mentioned above for the river groups that use a technical approach, local planners representing the municipalities along the rivers are also included in these three groups. This composition also implies that the groups address planning issues that are designated for the municipalities. It was argued that this composition implies that the risk analyses performed by the groups become broader and include more societal issues. One example is a project to develop a river alarm system to warn people along the river in the case of high river flows or floods.

As for decision-making, the networks differ first in whether they consider themselves to be decision-making bodies and second in what types of decisions their mandate vests in the networks. As networks that address risk analysis and preventive crisis management, the networks are responsible for the coordination of information before, during and after floods and high river flows. In addition to these coordination issues,

the networks have also engaged in different projects related to risk analysis and risk prevention. Thus, for some of the networks, the actors involved have vested some decision-making authority for the networks. Such authority can include actions that need to be taken to prevent a crisis. One example is the work by the river group for the Ume River and the Vindel River. While the Ume River is regulated, the Vindel River is unregulated. The rivers merge at the village of Vännäs, which is 30 km west of the city of Umeå. For centuries, Vännäs has been exposed to recurring floods, and high water flows have caused severe damage. Through the work of the river group, the actors have learned how to prevent these floods by emptying the dams both upstream and downstream of Vännäs to control the water flow in the Ume River and to cope with the mass of water coming from the unregulated Vindel River. Other examples include work on an alarm system in the event of a dam break along the Ljungan River. Thus, the decisions made by the river groups include strategic decisions concerning the organization and focus of the network as well as decisions that affect the different actors in the networks. Vännäs is one example of this.

Among the river groups, three of the networks argue that no decision-making occurs during the meetings except for practical decisions of a formal character such as the time of the next meeting. Instead, they emphasize the autonomy of the included actors and that any necessary decisions must be made by the individual actors and not by the network itself, which also implies that none of the participating parties are accountable to the network and that the network cannot be certain that everyone will make the same decision. On the other hand, all three networks argue that during a crisis, the Coordination group has the right to make the necessary decisions. Consequently, the river groups should only be viewed as a network for information exchanges. For all three of these river groups, the responsible counties were among the initiators and founders of the Coordination group.

6 Discussion

The aim of this paper was to study the Swedish river groups with a focus on their organization and approach to decision-making. The results have shown that the twelve river groups included in the study differ in both these respects.

If we start with the organization of the river groups, five groups can be viewed as non-functional because they have not been organized nor have they had any meetings. Instead, the CABs use other ways of cooperating with the municipalities, the rescue services and the dam owners along the rivers. There are

no recurring meetings. Instead, cooperation on floods and high river flows can be described as more ad hoc. However, the need for another more organized network is non-existent. These networks can be categorized as informal networks because they do not exist as river groups, and the actors use other channels to coordinate.

The remaining seven groups have been organized by the CABs with recurring meetings with fixed agendas. However, similar to the informal groups discussed above, six of the seven groups are also part of the Coordination group and thereby also have another network in addition to the river groups. So why do the CABs act differently even though the situations are to some extent similar? We argue that one crucial explanation for these differences is previous experience with networking. While the five informal river groups have not identified a need for formal networks to address floods and high river flows, the six formal networks have identified this need. The interviews show that the coordinators responsible for the five northern rivers do not recognize a need for formal networks because four of the river groups are not regulated rivers, and therefore, there is no possibility to control the water flows in the rivers. The fifth river has only one dam owner whom the CAB already has recurring meetings with. Furthermore, the actors already address floods and high river flows, and they therefore already have a well-functioning approach to cooperating on these issues. This cooperation, however, does not include recurring meetings either with the group or between the individual actors. Instead, it can be described as an ad hoc network, and the CAB has meetings with the individual actors when necessary. Consequently, the actors have not identified a need for further networks. As for decisions, no decisions are made in these ad hoc networks. Instead, the individual actors make decisions separately. According to Enander et al., the motivation to work on risk and crisis preparedness is influenced by previous experiences with crises. In this case, the actors have previously developed approaches to addressing recurring floods and high water flows, and therefore, yet another network is considered to be unnecessary.

The seven formal networks are all coordinated by CABs that have already participated in networks focused on flooding and high water flows. Six of these river groups are also members of the Coordination group. This network, the Coordination group, was initiated by the actors because they identified problems with coordination in the case of floods or high river flows. Thus, the need for formalized networks had already been identified by the actors, which simplified the formation of another network. However, the six groups can still be divided into

two categories, and the differences between them can be explained by their relations with and commitment to the Coordination group. The first category includes three groups that emphasize the importance of the Coordination group as a superior network, and all three groups are administered by the CABs that initiated the formation of the Coordination group. The second category includes three groups that argue that the two networks can complement each other. These three groups are administered by counties that were not among the initiators but that joined the Coordination group either close to the beginning or after a few years. Again, we can draw parallels to the study by Enander et al. (2015). The experience of recurring floods and high river flows implies previous experience with crises, which increased the motivation to work with risk analysis and crisis management and to include all actors in the networks.

With regard to decision-making in the networks, we can use the same categories of river groups. In the first category, all of the CABs agree that other than purely practical decisions related to the internal work of the river group itself, no decisions are made by the groups. Instead, the decisions regarding actions related to floods and high river flows are made by the individual actors. Thus, discussions within the river groups about different issues are always followed by individual decisions by the participating parties. This process implies that none of the participating parties are accountable to the network and that the network cannot be certain that everyone will make the same decision. The process also implies that the decisions are made by the Coordination group during crisis management.

Among the second category of river groups, all agree that the network itself makes decisions concerning issues related to floods and high river flows that the individual actors within the network are obliged to follow. Such decisions mainly concern strategic decisions that relate to the network itself or the issues handled by the network. In this category, we can also include the seventh river group, which is formalized but is not a member of the Coordination group.

All of the river groups included in the Coordination group appear to agree that the Coordination group is primarily focused on questions related to emergencies, although the group also discusses other issues. By contrast, the river groups address preventative questions and are therefore more focused on risk assessment and risk analysis. All seven groups have recurring meetings twice per year, one during the spring flood and one during the autumn.

To summarize the organization of the river groups and whether they are involved in direct decision-making, we can divide the networks into three types:

- River groups that are non-formalized and make no decisions (5)
- River groups that are formalized but only aim for information exchange (3)
- River groups that are formalized and make strategic decisions within the network (4)

We can illustrate this paradigm with a four-quadrant diagram, as shown in Figure 1. The figure includes two dimensions. The first dimension concerns the organization of the river groups and whether the groups are organized in formal networks. The unorganized groups are found on the left as *informal*, while the organized groups are found on the right as *formal*. As for decision-making, some of the networks argue that they do not make decisions other than practical decisions that are connected to their internal work. The other groups argue that they do make decisions and that the actors involved are committed to them.

Among the formalized river groups, a majority have a technical focus, primarily concerning dam safety and other technical issues connected to the power plants and dams along the various rivers. In addition, two of the formally organized river groups focus on community planning.

In the long term, the differences in focus among the groups may result from different types of operations and solutions to technical problems. One such solution is the alarm system that the river group for the Ljungan River has developed. The different approaches can complement one another and help to develop the work on risk planning and risk analysis within the group. No part of the proposed development is expressed in the instructions from the Rescue Service, however, or in the discussions within the river groups themselves, and it was not announced in the preparatory work for the formation of the river groups. This effect will be achieved only when there is cooperation

Figure 1. Differences between river groups.

among the river groups. This type of sharing is observed among the river groups participating in the Coordination group but is not observed in the other groups (e.g., those in Norrbotten). More detailed instructions could offer one means of achieving this goal, but such instructions may be contradictory to the very idea of networking. We find this type of perceived ambivalence in the study by Wimelius et al. (2015). The coordinators ask for more government, but the solution is more of the same, that is, cooperation and coordination in policy networks.

The idea of having a specific focus for the work of the river groups could also have disadvantages. The main disadvantage is that a clear focus may increase the risk that some issues will be sidelined. For instance, the river groups that do not address planning issues may overlook important issues in the risk planning and risk analysis process. If one focal issue is allowed to dominate, then other issues will not be prioritized.

The differences between the river groups in terms of organization and decision-making can be understood based on both studies by Renn (1998) and Rhodes (1997). The five informally organized networks who do not make any decisions do not feel the need for the networks because they already use other channels for information exchange and cooperation. Because the coordinating actor does not find it possible to either manage or eliminate the risk of floods and high river flows, the incentive to form networks is low. This result can be observed with networks that work in the shadows of the hierarchical model of governing (Nyhlén, 2011). The networks are not self-organized, which could lower the incentive for cooperation. As for the formally organized river groups, the need for cooperation to enable information exchange and risk analysis is considered to be high. The groups are also highly dependent on resources in terms of information and knowledge, and over the years, mutual trust has developed within the networks. These results are in line with the arguments put forward on the importance of trust between the participants in a network to achieve functional cooperation (Klijn, 2008), Palm et al., 2007; Wimelius et al., 2015). Furthermore, as shown in this study, resources play an important role, which has also been argued by other scholars (Rhodes 1997, Nyhlén, 2011; Wimelius et al., 2015).

The approach to decision-making differs between the formally organized groups. The groups that were among the founders of the Coordination group believe that decisions should be made within the included organizations or by the Coordination group, whereas the others believe that the river groups should also make decisions of a more strategic nature. Rhodes (1997) stresses the importance of the self-organization

of networks, as do the three river groups that once formed the Coordination group.

7 Conclusions

The risk of floods and high river flows is likely to increase due to climate change. To confront these risks, the communities along the rivers need to cooperate, both to calculate the risks from floods and high river flows and their effects and also to support the proper allocation of resources during the crisis that floods or high river flows might cause. As networks, the river groups to some extent include the three elements noted by Renn (1998): risk assessment, risk management and risk communication. The river groups strive to identify the risks of floods and high water flows along the rivers to manage the risks and if possible to eliminate them as well as to communicate the risks both among the actors within the networks but also between the network and the surrounding community.

Rivers are a cross-border phenomenon where incidents upstream will have consequences downstream, in some cases much more extensive consequences, especially with regard to floods and high water flows. The river groups are networks that address information exchange and risk analysis and that exist within a risk governance environment. As networks, the river groups differ from the theoretical definition of Rhodes (1996) because they originally were enforced by the government. The networks are highly dependent on the resources from the participating organizations, and the cooperation and information exchange are characterized by mutual trust between the organizations (Torfing, 2005). The river groups as policy networks differ with regard to both stability and continuity, which is reflected in the differences between the organizations and their approaches to decision-making.

This article has revealed the differences in the organizations, including their focus and members and the approaches to decision-making among the river groups in northern Sweden. The enforced implementation of the networks upon the actors involved together with the vague instructions for their operation could explain why some of the river groups are formalized while others do not make any decisions at all. On the other hand, the vague instructions also make it possible for the actors to organize the networks according to their own needs. The result is a lack of clarity as to what the activities in the networks should include, who should be involved and what the cooperation should result in. Thus, as is often the case for self-organizing networks, the activities are dependent on certain individuals and their engagement and personal contacts, as has been shown in previous studies (Gustavsson, 2008). Here, the previous experience with

networks related to floods and high river flows combined with an acknowledgement of the need for networks in this policy field seems to be of importance. The study also shows the importance of trust (Klijn, 2008) and the exchange of resources as vital aspects of a well-functioning network. The study also highlights, as previous studies have also shown, the problem with parallel structures, in this case parallel networks, which result in unclear lines of responsibility (Lidén et al., 2015).

Whether the enforced implementation of networks on the participating organizations is a productive way of achieving cooperation in a specified policy field will be the subject of a further study of the networks that address floods and high water flows.

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Interviews

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Interview Manual for Interviews concerning the River Groups

- 1 Can you tell us about the organization and the forms of work performed by the river group(s)? When was the group formed?
- 2 How often do you meet? Who is included in the group? Who sets the agenda? Who will chair the

meeting? Who can propose issues to address? Who decided whom to include in the group?

- 3 What do you feel is the biggest advantage of the group? Is this an optimal way to work or can you identify other ways that would work better?
- 4 Are there any problems with the cooperation among the members of the group that ought to be corrected or treated?
- 5 Do you engage in any type of decision-making in the group?
- 6 Are decisions advisory or binding? How is the accountability linked to the decisions determined? Who bears the eventual costs that the decisions entail? Are the costs and responsibilities allocated between the members of the group?
- 7 Do you feel that there are differences in the approaches to cooperation, decision-making and responsibility between the actors from the private and the public sectors? If so, how?
- 8 Regarding risk assessments in connection with floods and high river flows – is there often a consensus between the participants, or do you often have different viewpoints? If so, how do you find a common approach to the risks? Are there ever any differences between the participants with regard to their views on what actions should be taken?
- 9 Do you have any operational activities linked to the group and its decisions?
- 10 Are you engaged in other networks that address floods and high river flows? If so, which ones?
- 11 In your opinion, does the work of the Coordination group overlap with the work of the river group? If so, how? What are the differences between the two groups? Is there a risk that the groups will intrude onto each other's work? Is there a risk that the activities will become ineffective with two groups?