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Abstract:	Throughout the Nordic countries both the debate about, and the practice, of institutional arrangements and processes can be characterised by decentralisation, deregulation, privatisation and marked. Consequently the relationship between public authorities and private actors (business, NGOs etc) are being reshaped: Processes of *government* have been seen as transformed into *governance* which mean that a wider range of actors may be participating and simplistic hierarchical models are being abandoned. The papers address how these changes effect the implementation of environmental policy: Which actors are involved? Whose interests are served? Whose knowledge is included and whose is excluded? Why do particular perspectives on environmental change become so entrenched in policy?
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Foreword

The biannual NESS Research Conferences have become a valued tradition. From a relatively humble beginning in the early 1990's, these conferences have grown to become truly international events. The Nordic region shares democratic and social values and at the same time has, to a large extent, the same environmental challenges.

In 2007, it is twenty years since the Brundtland-commission came with the report "Our common future". They launched the most common definition of sustainable development and, as a consequence, gave the global perspective in environmental policy its absolute breakthrough.

Twenty years later, this perspective has become even more relevant. Nature consists of common-pool resources, and environmental problems are border crossing. The 8th NESS conference in Oslo, Norway June 18-20.looked into how the international community, nations and local communities meet common challenges on the environmental area. Furthermore, we discussed how the internationalisation of environmental politics creates challenges, constraints and opportunities on the local, national and global level.

These themes provided a good starting point for interesting discussions and new acquaintances. The conference gathered approximately 80 researchers from the Nordic countries, the Netherlands and Germany. In addition there were four keynote speakers: Arild Underdal, Susan Baker, Terry Marsden and Jan Erling Klausen. In this compendium you will find some of the papers presented at the conference. Of different reasons, some of the participants wanted to abstain from the proceedings.

Oslo, October 2007

Berit Nordahl

Research Director

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Questioning organizational boundaries? – the implementation of the EU-WFD in Sweden

By Petra Adolfsson

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Abstract

EU's water framework directive (EU-WFD) demand geographical grouping of the administrative bodies in EU according to river basins (EU, 2000). The water directive emphasizes an ecosystem perspective of water management, that is the natural flow of waters should be the basis of the administration.

Various actors are involved in translation processes where the EU-WFD is translated into local actions. A new organization in the water administration and conservation field is created when the EU-WFD is adopted into the Swedish context. The introduction of the river basin idea means that a long tradition of having associations for watercourses crossing administrative boundaries is enforced. At the same time it is questioning the municipalities' right to make decisions concerning land and water. The county councils have also for a long time had the responsibility for the environmental situation in the counties and carry through environmental programmes in order to implement the national environmental quality objectives. Accordingly, the county and municipality borders have to be replaced in one way or another in order to fulfil the contents of the directive. It is a process where old ways of acting, institutionalized action nets according to Czarniawska's vocabulary, are questioned. New actions are taken in the field, replacing or complementing old actions. Actors try to see what actions that are needed, make sense of action taken and defend actions. Acting accordingly to a logic of appropriateness is one important aspect in this process.

1 Introduction

The issue of water, or more specific clean drinking water is an issue debated globally, but has also implications in regional and local perspective; being important to flora and fauna but also human industrial production, energy production and the consumption of drinking water have environmental implications. The environmental impact related to water has been under discussion in EU (the European Union) for many years. According to the text of EU, the process of new EU water framework directive (EU-WFD) from the year 2000, has been going on for a decade. According to the EU-WFD, river basins will be the basis of water management in all countries of the EU. In effect, the natural movement of water will determine how it will be administrated. This means that the Swedish authorities and other actors have to organize their work according to river basins instead of traditional organizational boundaries such as the administrative boundaries of local municipalities. The directive is based on periods of six years. The work includes: characterization of river basins (that is describing the watercourses), monitoring, objectives and norms, river basin management plans and operational programs of measures. The directive emphasizes cooperation and decision-making is to be executed after local actors have been consulted (EU, 2000).

The water directive emphasizes an ecosystem perspective of water management in the sense that the natural flow of waters should be the basis of the administration (Kallis and Butler, 2001; Johansson, 2002; SOU, 2002:105). The work related to all river basins in EU will undergo a cycle of six years including e.g. characterizing watercourses, goal setting, establishing action plans and monitoring programs. In the literature models are have been put forward about how cooperation and decisions should be manage in the river basin area e.g. the RESPECT model (Hofmann and Mitchell, 1998) och the CATCH-model (Collentine et al., 2002). The aim of both models is to handle conflicts and facilitate cooperation. Studies, from both EU and other countries in the world, have shown the importance of cooperation in the field of water administration (e.g. Vick, 1999; O'Hara, 2000). Johnson et al. (2001) claim that many cooperation projects in river basins fail because the local population needs, limits and restrictions are not taken into consideration. Huisman et al. (2000) argue in their study that cooperation over national borders takes time and demands trust and voluntariness.

In Sweden, a member of the European Union (EU), the environmental legislation is adjusted to the EU legislation. The legal system in Sweden has for many decades included environmental concern. It was initially a control based legal system but the last two decades there have been supplementary regulation forms based on cooperation (Lundqvist, 1996; Dobers, 1997; Borén, 1999). Earlier studies of river basin management in Sweden suggest that the positive aspects of local participation are that it emphasizes democracy and legitimacy but also facilitates implementation and incorporates local knowledge into the process (Jonsson and Lundqvist, 2006).

This paper is about organizational issues, it is about actions and activities related to the EU-WFD in the west part of Sweden. It will highlight the new activities and actions that

are performed in the process of the EU-WFD implementation in Sweden. It is a story of the striving for cooperation and the search for activities that the actors perceive as appropriate if we use March (1991) vocabulary. The question this paper intends to analyze is: What kind of actions do actors perform connected to the EU-WFD in the Swedish context? In the end of the paper I will also give a comment on how the process in Sweden can interpreted when talking about concept of governance.

1.1 Disposition

Next section will be a presentation of the theory used in the analysis of the field material and a description of how the field material was collected. After that the field material is presented, which is followed by a discussion based on the field material.

1.2 Theoretical influences

In this paper a constructionist perspective is used to reveal the process of implementing EU-WFD in Sweden. According to the constructionist perspective there is no point in dividing our reality into nature and culture. The environment is therefore, in this paper, viewed simultaneously as a thing, the physical environment, and as ideas (Czarniawska&Sevón, 1996). An idea travels through time and space and becomes part of a locality by the process of translation (Callon, 1986; Latour, 1986; Czarniawska&Sevón, 1996). An idea is translated into a local context through action and materialisation and further on to new ideas (Czarniawska&Joerges, 1996). This process includes both humans and non-humans, that is, entities able to act, and its understanding requires a performative perspective, where the meaning of words, things and actions is determined by their use in specific times and places. Therefore, a concept or a model does not have a single meaning that easily can be "diffused". Instead, the meaning is created in a process of translation in the local context. In this paper the actors involved in the translation processes, e.g. where *sustainable water management* and *river basin management* are translated into e.g. new activities and classification systems. As Lindberg and Czarniawska (2006) claim, it is of vital importance to emphasize the actions, and not necessarily the actors, when conducting organizational studies (see also Czarniawska, 2000). The focus will be on the new actions and activities that the translation of the EU-WFD generates. New activities and connections between actors arise and I will emphasize such activities and actions in order to be able to analyze the possibility that new nets of actions are created that may be the birth of new actors in the field of water management.

Our surroundings and we are constantly changing, but the process of change can be fast or slow, which sometimes makes us see things as stable at a specific time. As Rottenburg (1996) shows, when describing the use of management systems such as TQM, new ideas or concepts can be seen as having life cycles. A concept like river basin management is observed by local actors who translate the concept into actions and documents. When these are apprehended as given and the ‘right’ way of thinking, the concept has been institutionalized. Later on it will probably be challenged and driven out of competition by other concepts and ideas presented as ‘new’, ‘modern’ and ‘logic’. Accordingly, actors do not necessary act according to logic of consequences as a rational perspective might expect. Instead, the actor act according to what he or she find appropriate (cf. March and Olsen, 1989; March, 1991). One way of acting is to imitate, that is to act like someone else but the reasons why you do it can differ, e.g. saving resources or achieving a desired identity. Nevertheless, imitation is about performance, it is not only to copy someone else

(Sevón, 1996). The imitators act according to their conception of the situation, self-identity, and the identity of others. What method an organization will imitate and translate is then related to the identity of the organization.

In the analysis I will also use the concept of boundary objects. It was used by Star and Griesemer (1989) in their story about the creation of a museum. The boundary objects are objects that are solid, and can therefore maintain their identity when treated from different points of view, but also adaptable enough to be attractive to the representatives of those differing viewpoints. Star and Griesemer give examples of stuffed animals that were to populate Natural History Museums, which for scientists were objects of science, for businessmen objects of attraction, for local patriots the relics of the region and so on and so forth. In order to connect actors and activities the importance of non-human entities can not by forehand be neglected, instead it is vital to include them in studies of organizing issues (e.g Latour 1986, Czarniawska, 2000; Lindberg and Czarniawska, 2006)

In many studies of environmental issues the concept of boundary object and boundary organization. Harvey and Chrisman (1998) argue that the creation of boundary objects by negotiations between groups is important since the object it self has a vital validity and strength in a great deal of the society. The authors emphasize that the constructed object as its best is only stable enough for a moment and is object of renegotiations. Harvey och Chrisman's study about the use of GIS (geographical information system) shows that there was always a boundary object involved when the negotiations, on a local solution on how GIS will be used, was wound up. The boundary object GIS contains several boundary objects. In their study of wetlands in US, an organization created a standard for classification of wetlands by scientific consensus and institutional agreements. The classification system became a boundary object by constituting the link between the different groups when they produce, use and distribute data from the database based on the classification system. Knowledge about the system means to be part of a network; to know certain persons, to know certain models and to know analyzing soft ware. In this way groups are connected to each other and opponents are excluded. The boundary objects work as both seperators and integraters since they offer translations between groups.

1.3 Method

Narratives are a form of knowledge and a way of communicate (Lyotard, 1979/97; Czarniawska, 1998). Organization researchers handle a lot of various forms of narratives. The researchers collect narratives from the field and try to understand other authors' narratives. These narratives are the basis for the researcher's own story (Van Maanen, 1988).

The paper is based on documents, interviews and observations of actors representing national, regional and local authorities but also local actors such as farmers. The focus has been on the work in one of the five created water districts in Sweden. The documents are regulatory documents from e.g. EU but also texts from different actors in Sweden, e.g. web sites and power point presentations. In these documents the actors present stories on actors, actions, ways of working etc. that they hold as vital for the process. The observations are done with openness for new connections, or new "data", which Latour (1987) calls a symmetric anthropology. As Baszanger and Dodier (1997) say, this is the opposite of an in beforehand coded procedure. The aim of the interviews has been to obtain the interlocutors' detailed accounts for what has happened (Czarniwska, 1992). As

I see it, the interviews are situations where stories from the field are collected (Miller&Glassner, 1997). Accordingly, it is not an “objective truth”, instead, it is that person’s story of how e.g. he or she attends meetings or uses a database.

2 The EU-WFD in Sweden

2.1 The EU-WFD comes to Sweden

In Sweden an investigator was commissioned by the Swedish Government to investigate how the water framework directive was to be implemented in Swedish legislation. In 2002 the investigator presented his report. The Swedish Government took the investigation into account and decided that five new water authorities were to be established. The water authorities are new governmental institutions that have an official mission to implement the EU-WFD in Sweden. As a result, the water authorities have the overall responsibility of water conservation in each created district and there are no legal hierarchic differences between the five water authorities. The water authorities are connected to one county administration each. The approx. 20 county administrations in Sweden are the national governments' representatives in the Swedish regions (counties). The legislation in Sweden regarding water had to be changed in order to fulfill the content of the EU legislation. One immediate change was to rewrite the instructions that were the basis of the work of the county administrations. But also new guidelines are under development regarding e.g. how to describe and characterize the watercourses.

Accordingly, the county councils have been given a vital part of the process since the Swedish Government have decided to place the new water authorities at five of these councils and the rest of the councils are still responsible for the work related to the watercourses in each geographical area. The water authorities have one delegation each who act like board. The five delegations consist of representatives from the university, the county administrations in each district and others. There is also a wish to have municipality representatives in the delegations but the Swedish Association of Local Authorities and Regions have refused to elect representatives. The association finds the role of the delegations vague and the financial effects for actors like municipalities because of the delegations' future decisions are not analyzed. Municipalities in Sweden have a far-reaching right of self-determination in issues relating to the planning of land and water. How the municipality planning process and the water directive based water planning cycle will be connected is still under discussion. The final legal status between the two legal systems has not been decided yet. The national government has appointed a few investigators who has reported on these and related issues.

As a result, in 2004 the water authorities were established but some of the guidelines that were to be the basis of some essential parts of the work were not established and legal aspects such as the legal role of various actors had not been made clear. For example it was not decided if the delegations of the water authorities, the national government or some other actor would be responsible for accepting or rejecting the locally developed documents related to the EU-WFD.

2.2 A search for cooperation

For many decades there has also been another vital actor in the field of water management. Water conservation associations are municipalities, companies, interest groups such as the Federation of Swedish Farmers and other local actors that often work together in order to fulfill programs for monitoring the water quality of the local watercourses. For example, companies responsible for waste water treatment and drinking-water must have a licence in order to carry out their activities. In Sweden these companies are most often owned by local municipalities which therefore often are members of water conservation associations.

The extent of the monitoring programs is decided by the authorities for all activities that have an impact on the environment. One aspect that has been discussed is to what extent the existing monitoring programs can live up to the requirements of the EU-WFD. For example, there is a long tradition in Sweden of monitoring chemicals like phosphorus but biological factors have not been monitored to the same extent, factors that are emphasized in the EU-WFD. The water conservation associations can also have joint programs of measures in order to restore the local watercourses in the local area. They are non-profit organization and work voluntarily. So far it differs to what extent the water conservation associations are taking part in the water directive process. In the western parts of Sweden, where there are about 30 associations and the area consist of a lot of forestry, fishing and farming, several associations have contacted the water authorities and said that they want to be vital local actors in the water directive process. In meetings with the associations of water conservation, one by one, the water authority has encouraged local initiatives for implementing the EU-WFD. The water authority has also presented how such initiative can look like by suggesting the associations to transform themselves into a local water council (vattenråd in Swedish). According to the water authority, local water council can be local cooperative partner when e.g. the characterizing will be carried out. One requirement is that the local water councils must have a wide representation of local actors such as companies, local authorities and interest groups. It is emphasized by the water authority that these local water councils can be local partners contributing with local knowledge. This knowledge is accentuated as vital when all watercourses will be characterized. For some existing associations this means that they have to include more interest groups in their organization in order to fulfill the requirements that the water authorities has put up. For example have two associations started such process which has resulted in two different suggestions of how the local water councils can be organized. In the process e.g. the importance of local political acceptance of the suggested models has been highlighted.

The water authorities cooperate in order to have the same work form when establishing cooperation with actors in each district. One course of action is to contact water conservation associations, and as mentioned above some of them have also contacted the water authorities, to see if there is an interest for being a vital partner in the working process, such as characterize the watercourses and develop programs of measures. This far, the way of working differs among the county administrations in Sweden. They have adjusted their work depending on their interpretation of the existing situation in their geographical area. For example one county administration board has invited actors they find relevant to the work concerning water conservation and the EU-WDF. It has involved both large meetings to inform interested parties of the EU-WFD but also meetings with very few specific organizations represented. In turn these actors can invite relevant local actors in order to create a local water council in the area later on. Other country administrations, with many more existing water conservation associations in their

geographical areas, have discussed the possibility to create water councils with the water conservation associations more directly e.g. in meetings. One aspect that has been recurrent in these meetings and discussions is how the future programs of measures will be financed. The programs of measures will focus on how to restore the watercourses to a status (so called good ecological status) close to a situation where humans did not have any effects e.g. from waste water. The actions that are needed can in other words be a heavy program for the local actors to accomplish. One solution that has been discussed, but not fully investigated by national authorities, is to raise the price of drinking-water etc. Even though finacial issues and responsibilities with in the framework of the EU-WFD are discussed and not fully solved it is important to remember that the water administration will also include consultation which is a way of working the actors is familiar with. In other words, also actors that are not part of the local water councils are able to make their voice heard in the process.

There have also been other suggestions of how the local work related to the EU-WFD can be carried out. A lot of seminars have been conducted by various actors and reports have been written concerning such suggestions. This has lead to that contacts have taken between different actors in the field. For example, the water authorities and the Association of Local Authorities and Regions have been given a joint seminar about the EU-WFD where different viewpoints have been discussed e.g. about roles and responsibilities, but also openings for how cooperation can be managed. The Swedish Water and Wastewater Association (SWWA) is one of the organizations that have suggested a similar local cooperation between local actors. SWWA claims that it is important that municipalities and companies that work with water and wastewater and other local actors must come together in an early stage of the process. If they do so, their local knowledge can be used. It is also a way to be able to take part of the important work of defining the goals of each local watercourse, which will be basis of the programs of measures later on. Also, the Federation of Swedish Farmers, has groups of farmers who cooperate in their local river basin area. The groups are based on voluntary work and each participant contribute as much as they can. The Federation also claims that modern science as well as the local knowledge of farmers and local citizens is needed for optimal solutions. The Federation work in the national context in order to find solutions that make farmers able to be involved in the local water councils without having to pay for their memberships since the federation claims that the farmers are already contributing to water conservation and other environmental effects by e.g. the fees for using manure.

The water authorities and the county administrative boards cooperate in order to characterize the watercourses and manage other classification aspects in the same way in order to have a national perspective on these issues and avoid local solutions that vary a lot, both in content and form. Pilot studies on various classification and measurement aspects are accomplished in the districts and joint groups are created in order to exchange experiences. But the aim is also to have a common way of acting towards other actors and avoiding mixed messages to local actors, since these actors can have relation to more that one district. In this process the work on databases are vital and representatives from the county administrative boards, not only the water authorities, are involved in various working groups in order to create a system suitable not only for the reporting to the EU but also for the local work on water conservation. Thus, one issue under consideration is to what extent the system could be developed in order to fulfill the needs for water conservation in general and not only connected to the EU reports. Issues on the agenda are how detailed the data system have to be and how huge and technically complex the system can be in order to be managed by potential users. Also, the water authorities have started new cooperations with several organizations who store environmental data in Sweden in order to make new solutions for generating, storing and distributing data on

water. Today, such a database system is under construction and has been done available on the web.

2.3 Discussion

In this paper I have elaborated on the ongoing process of translating a sustainable water administration based on local participation in the field of water administration. The legal system in Sweden is already based on environmental norms and classification systems and the new EU directive do not challenges that system as such even though they have to be modified. But still, the water directive changes the way various actors will be part of the process of defining objectives and take action in order to restore the water. The databases that the county councils are constructing are examples of how ideas on river basin management have been materialized. Nevertheless, cooperation is vital in the process and the water administration case shows that there is an ongoing translation process where new activities such as new form of meetings and cooperation between various actors that have not had that kind of contact before. Interesting is also all the activities related to the definition of the river basins. An example is the extended contacts between the county administrative boards in order to construct new databases.

The concept of boundary object has received much attention in studies of technology, as it permits to understand how coherence can be developed and maintained across different but intersecting social worlds. Various objects may have different meanings in different social worlds, but they are recognizable in all these worlds, and are therefore a means of establishing commonalities. A new database is developed by the county administrative boards and the water authorities that all have different practices. In other words, the parties are trying to build databases that will both fulfill the reporting to EU and be a useful tool for many local actors in their daily work. The GIS technology, which they are obliged to use, have both trigger various actions and connect these actions to one another. As shown in an earlier study of water conservation in Sweden the way of working and measuring water quality were very much connected to various standardized systems and various boundary objects such as local water programs (Adolfsson, 2005). It was an institutionalized work process with fairly stable relationships between the parties. It was an established action net according to Czarniawska's vocabulary (2000). In the case presented in this paper it is an ongoing process of creating a boundary object, that is the river basins and other boundary objects are also under construction, or at least are reconstructed from existing solutions, such as various databases become part of a new large database on water conservation. In the field of water administration, the standardized way of creating, storing, and presenting data also makes the aggregation of data possible. This is an issue that is important to the actors involved. This has also organizational implications since it is easier to market the system as effective and useful to many various actors and thereby connect them to the system and the way of working. Regional, national, or even international organizations can collect data from local contexts, translate it into large databases, repackage and present it to various geographical areas: a city, a country, the EU.

Nevertheless, the standardization process e.g. of how river basins should be characterized also gives the local actors room for local translations – why monitoring is conducted, for example, which can be for reasons other than legal ones. Various activities are connected e.g. meetings in order to communicate with actors about the need for a large database which lead to new ways of sending and storing data.

Consequently, it is lot of activities and actions that are connected – it is an action net under construction. In this process traditional organizational boundaries sometimes blur and transform. An interesting issue is the new actor, the water authority, who can be described as an actor with legal status. At the same time it can be seen as an action-net-to-be since the activities and actions that others can relate to when talking about and define the water authority has just begun. This situation has resulted in uncertainty regarding among the existing organizations (actors) since no one knows if their actions in the existing action nets in the field will be conducted by other (new or old) actors. Both authorities and local organizations put themselves out having contact and exchange experiences, and by doing so meaning and identity are also constructed. For example, some associations of water conservation prefer to act in order to be able to perform the actions presented as needed in the future by e.g. the water authority. In other words, as Lindberg and Czarniawska (2006) claim, for researchers the importance of focusing on actions and not actors is vital. Actions construct the actor and not necessary the other way around. You do not necessarily become a local water council because you name yourself like that. Instead by contacting several local actors and invite them to meetings you start to perform the activities and actions that others will perceive as a local water council.

Still, this is an on-going process and the future will show what connections that will be the strongest ones, if we use Latour and Callon vocabulary. The national government has created an obligatory passage point by letting all formal decisions on the EU-WFD go through the water authority's (actually it is five groups of persons, the Delegations, connected to each of the water authorities). At the same time actors are constructing a database that only can be interpreted as an boundary object but also an obligatory passage point for all data. In other words, it will probably be hard for someone to refer to any data that is not classified as valid and mentioned in the database. The question is then who's voice the database will store – data based on the local water councils local knowledge or based on the advanced calculation models of authorities and private organizations? Or, perhaps both?

As a conclusion before saying a few word on governance, meetings between various actors are a vital action in the implementation of the EU-WFD in Sweden. In these meetings the identities of the existing actors are questioned but the meetings also serve as occasions where new activities can be discussed and actors can join the process where new boundary objects such as databases are created. The creation of such objects connects actions and actors and are part of the process where both new actors and actions arise and old actors and actions are reconstructed in the field of water administration.

Pierre (2000) says that we seen “an ideological and cultural shift from collective solutions towards individualism” and that the concept of “the market” is strong. Governance can be seen as a reaction towards changes in the surroundings and the state has therefore started to act more informal e.g. by negotiations instead of control and in various public-private relationships. As Rhodes (2000) claims, governance has many faces in research and elsewhere. From New Public Management to governance as networks. Though, according to Holzinger et al (2006) these new ideas of governance are only partly expressed in changes in policy instrument. In the case of EU-WFD I would say that fulfillment of goals by local involvement and by that also cooperation are vital. These issues are discussed in Sweden and the authorities tries to find new ways of working in order to fulfill such demands. One important trend that I think is important to highlight is the wave of various forms of accountability system (Power, 1997). In one way the EU-WFD can be seen as part of this trend as it is goal oriented, letting the local actors control the measures and methods. Reporting the results is emphasized. In other words, the data is in focus and transparency, which Mörth and Sahlin-Andersson (2006) have recognized as an

important issue of the audit trend, is highlighted as the reported data must be traceable. The work of the authorities is then not only to encourage and create local involvement but also to collect, coordinate and report traceable data. As Mol (2006) claims, new ways of generating and using environmental information become (re)sources of power and transformation in environmental reform. The conventional powers of (state) authority are partly replaced by new governance arrangements. The implementation of the EU-WFD in Sweden with the processes of construction new databases and creating local water councils can be interpreted as a typical transformation from government to governance. Still, as the future will tell what actions that e.g. the formal part of the water authority, the Delegations, will take it is hard to say to what extent the local voices will be heard when it comes to setting goals etc. In the process this far the local parties have been invited and encouraged to participate and make their perspective and knowledge heard. But as mentioned the question for the future is to what extent their views will be included when they are squeezed, among other voices, into the obligatory passage point; the Delegation. At the same time the local voices might be such a strong actor in the generation of data etc. that in the end all important decisions are already made when they reach the Delegation.

To conclude, this far all parties are invited but the future will tell if everyone showed up at the party and if anyone had to leave the party earlier than the others. In other words the future will tell if this process will be an excellent example of governance including the views of the local interest groups or if the new activities and objects only contribute to the political control (local, national or/and European) of the water administration.

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Integrated Product Policy in the automobile industry – policies, strategies and challenges

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Abstract

The importance of a move towards sustainable production and consumption patterns has been topical since the United Nations Conference on Environment and Development in Rio de Janeiro in 1992. The increasing significance of production and consumption issues goes along with a transformation from a government to governance approach in environmental policy (Scheer and Rubik, 2006). Scheer and Rubik (2006: 11) judge this a 'traditional' environmental policy approach against a 'modern' environmental approach. Integrated Product Policy (IPP) exemplifies this new paradigm in environmental policy.
In this article, it will be analysed how and in what way IPP has been applied in the automotive product chain. The automotive industry currently faces increasing regulatory pressure to improve both its methods in production and the sustainability of its products. Many automobile manufacturers have adopted proactive environmental strategies and it is common practice to implement an Environmental Management System (EMS) at the production facilities. However, seen from a life cycle perspective, the automobile has an impact on the environment at each stage. The automobile is considered to be one of the most polluting consumer products.

1 Challenges and opportunities

In the developed world, the automobile is the principal means of personal transport. Without doubt, this will also become the case in developing countries in the 21st century. Historical data are consistent the world over: when incomes rise, people buy cars (MIT, 2001). In the EU, car ownership is growing even faster than per capita income (EEA, 2003). With this increase in car ownership, people have become more mobile, which has led to an increase in commuting. In Denmark for example, the average adult travels 35.5 kilometres a day, and commuting accounts for 30% of this, while the remaining transport is for leisure activities, shopping and other activities (Danish Transport Council, 2000).

Transport is vital for modern lifestyle. From an environmental point of view, transportation uses a significant amount of non-renewable resources. In Europe, the transport sector is one of the most polluting sectors in terms of CO_2 emissions, even though automobiles have become more effective in terms of CO_2 emissions. European individual automobiles today produce only around a tenth as much pollution for every kilometre driven as they did 35 years ago (Zaccaï, 2006). But environmental impacts are not really reducing because the steadily increasing number of automobiles on the road has outbalanced these improvements. A WHO study shows that health effects of transport-related air pollution in urban areas have increased substantially, and it is estimated that more than ten thousands people in the EU die each year because of transport-related air pollution (Krzyzanowski et al., 2005). Understandably, if emissions are not reduced, the current and the expected increase in the number of vehicles on the roads will have a huge impact on aspects such as human health and global warming.

Within an automobile's life cycle, the use-phase makes the greatest impact on the environment. Therefore, product development often focuses - among other things - on reducing climate-relevant emissions during the use-phase. The remaining environmental impacts are shared by production and disposal or recycling.

All these issues discussed above do also make clear that a strict focus on products (here: the automobile) is not suitable to deal with the challenge of sustainable production and consumption. Or as Nuij (2006: 181) argues, "a better starting point would be the societal functions that are fulfilled by the combination of products and services such as (…) transport. At this level people make the choices between taking the car or the train (…) and it is here that large potential improvements could be realised". Nevertheless, in this article we will analyse how and in what way IPP has been applied in the automotive industry. From an environmental point of view, the automobile – as a product – can still be improved and become significant more efficient.

2 Modernisation of environmental policy: from government to governance approach

In order to reduce environmental impacts from products the EU has adopted the Integrated Product Policy (IPP) strategy, which is one of the cornerstones in the 6th Environmental Action Programme. The IPP framework reflects a preference from less command and control regulation towards more economic and voluntary instruments and from less end-of-pipe towards more precautionary and internal production-process approaches (European Commission, 2001b). With this, IPP reflects a new paradigm in environmental policy: a transformation from a government to governance approach in environmental policy. Scheer and Rubik (2006: 11) judge this a 'traditional' environmental policy approach against a 'modern' environmental approach (see Table 2.1).

Table 2.1 *Idealised characterisation of trends of environmental policy approaches (Scheer and Rubik, 2006: 11)*

	'Traditional' environmental policy	'Modern' environmental policy
Political guideline	Control of risks and damages	Sustainability
Main policy principle	Command and control	Push and pull
Responsible actors	Government	Society ('shared responsibility')
Type of policy	Confrontation	Co-operation
Issues	Separation of issues, single issues	Integration of issues, system issues
Behaviour principle	Reactive behaviour	(Pro) active behaviour
Regulation principle	Government regulation, governmental control	Self-regulation, self-control, self-organisation

IPP is an example of the "modern" environmental policy approach. It is possible to express IPP in five key principles (European Commission, 2003: 5):

1. Continuous Improvement
2. Life Cycle Thinking
3. Stakeholder Involvement;
4. A Variety of Policy Instruments
5. Working with the market

Together, these five principles look at the whole of a product's life cycle, from cradle to grave. In other words, environmental impacts throughout the life cycle are addressed in

an integrated way – and are not shifted from one part of the life cycle to another (European Commission, 2003). In the following sections, it will be analysed how the automobile industry has applied continuous improvement and life cycle thinking in the process of 'greening' the automobile. Furthermore, it will be analysed how the other principles of IPP (i.e. stakeholder involvement, a variety of policy instruments and working with the market) have influenced and involved the automobile industry. This distinction represents both the environmental side as well as the organisational aspects.

At present, the EU IPP policy is still fragmented, lacking data and mostly on a voluntary basis (Scheuer, 2005). Nuij (2006: 177) argues that 'ever since the start of discussions about a product policy in the Community, the Commission has struggled to present a clear vision of its aims and objectives and, more importantly, of the ways in which these were to be achieved. Instead of becoming clearer and stronger, IPP seems to have become more vague and weaker'. We will come back to some major weaknesses, as distinguished by Nuij (2006), later. However, according to Scheuer (2005), the political agreement of April 2005 on the Ecodesign framework for Energy Using Products is an important step towards establishing legislative product policy. However, EU's IPP strategy has so far failed to materialise in any concrete form (Scheuer, 2005: 262).

3 Analysis of the environmental improvements of products: the automobile

It will be a huge challenge for the automobile industry to implement an IPP *strategy*. Several reasons can be mentioned that support this assumption. In the first place, so far, environmental regulations aimed at the automobile industry have been merely directed at single production phases of the automobile: raw materials extracting and processing phase, manufacturing phase, in-use phase and the dismantling phase. There is no area of the life cycle of the automobile, which is not subject to regulation. However, a holistic approach that aims at the interconnections between the different areas is currently lacking. In the second place, environmental regulation aimed at the automobile industry has been dominated by command and control regulation (e.g. IPPC permit, emission limit values, taxes on the use of virgin materials and so on). The dominant environmental discourse in the era of command and control has been based on a process-oriented strategy and it has neglected the product dimension (Smink, 2002). Nevertheless, the command and control paradigm has been successful. For example, since the 1960s tailpipe emissions have been reduced by 90-95%. However, these emission reductions have largely been realised through technological advances. In the third place, the automobile product chain consists of two more or less independent networks: a production network and a use-, recycling and disposal network. Co-operation and communication between the two networks are not institutionalised (Smink, 2002). Finally, consumer demand for 'greener' cars is still limited. Consumers in especially industrialised countries tend to buy bigger and heavier cars.

In order to analyse how and in what way IPP has been applied in the automotive industry we will present a model that will be used as a framework for understanding the relations within companies and between product chain actors. Figure 3.1 presents a simplified model of a product life cycle of a single product. As shown in the figure, materials and services, information and value/money flow throughout the product chain. So far, attention has been paid mainly towards the flow of materials, e.g. life-cycle assessment (LCA). However, the value and money flow is important as well (Smink et al., 2006). For example, it is important to know what expectations consumers have about a product's environmental characteristics, and how consumers rate environmental considerations related to other aspects such as price, quality, functionality, design etc. (Danish EPA, 2003). A major challenge is to connect the links in the product chain in order to focus on both environmental optimisation of the material flow in the supplier chain and on the consumer's expectations regarding environmental considerations in the value chain. Ideally, information exchange between all stakeholders involved will build connections between the supplier chain and the value chain (Danish EPA, 2003). To make information broadly accessible, information agencies, public Internet-based databases and other forms of publications can make large contributions (Illge et al., 2001). Since the automobile

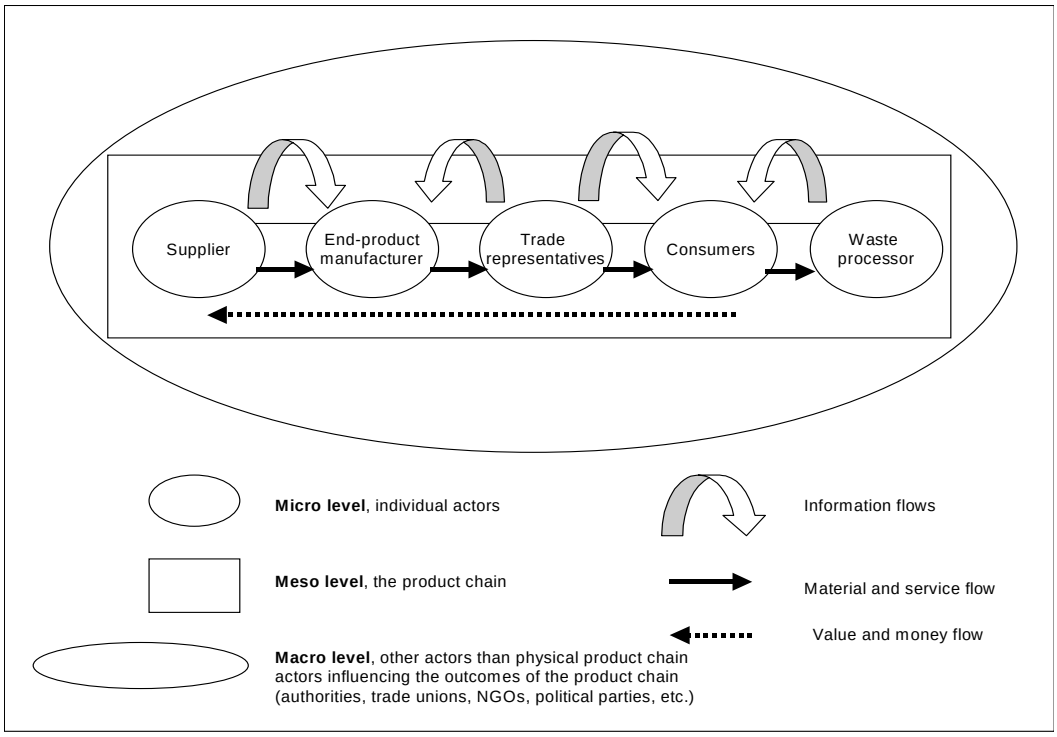
product life cycle is global in scope, informational instruments are needed on the global level to involve all stakeholders.

Figure 3.1 will also be used to analyse initiatives to implement IPP in the automobile product chain at three different levels: the micro, meso and macro level. The automobile product life cycle is highly complex and global in scope; therefore, national governments may have only a limited ability to influence product development. At the macro level, focus will be on the role of the government in implementing and facilitating IPP. Government is only one of the actors related to the product chain. Due to time restrictions, we will not pay attention to other relevant stakeholders (e.g. trade unions, NGOs or political parties). A major challenge for governments in implementing and facilitating IPP is to promote 'Life Cycle Thinking' and 'Stakeholder Involvement'. 'A Variety of Policy Instruments' will in this article be used as the way in which government facilitates IPP.

'Life Cycle Thinking' and 'Stakeholder Involvement' will also be analysed at meso level. The meso level refers to the product chain. That is how product chain actors – those actors that do have a commercial relationship to each other – co-operate, exchange information, make demands on each other and so on in order to produce 'greener' products. Obviously, there is an interaction between the macro and meso level.

Finally, at the micro level, we will pay attention to how automobile manufacturers have strived towards "Continuous Improvements". Due to insufficient empirical material, we will at the micro level not deal with "Working with the Market". Ideally, there is also an interaction between the micro level and the meso/macro level. It is our hypothesis that the more interaction between the different levels, the more an IPP *strategy* has been implemented.

Figure 3.1 *Different levels of analysis of the environmental improvement of products (adapted to Kärnä, 1999: 27)*



4 Continuous improvement and life cycle thinking

In this section, we will pay attention to how automobile manufacturers have strived towards continuous improvement and life cycle thinking. According to the Commission's Communication on IPP (European Commission, 2003: 5) '*can improvements often be made to decrease a product's environmental impacts across its life-cycle, whether in design, manufacture, use or disposal, taking into account the parameters set by the market. IPP aims for a continuous improvement in these rather than setting a precise threshold to be attained. As a result, companies can set their own pace and can focus on the most efficient improvements'*.

In our viewpoint, continuous improvement represents the physical improvements of environmental performance. Environmental continuous improvements can be obtained by applying cleaner production in each phase of the product chain. Cleaner Production can be divided in the following stages:

1. Good housekeeping
2. Substitution of raw materials
3. Technical optimisation of production
4. Radical change of productions processes
5. Cleaner products and services (advanced product design)

Continuous improvements can be achieved by applying cleaner production. The first four stages must be addressed in each phase of the product chain, whereas cleaner products can be achieved by incorporating environmental concern into designing the product. Life Cycle Management system (LCM) can be used to secure application of the cleaner production categories in the product chain.

So far, the automobile manufacturers have concentrated on the implementation of Environmental Management Systems (EMS) in their production facilities and to a certain extent of their tier-one suppliers (see also below).

Continuous environmental improvement requires incentives for manufacturers to make new product generations greener than their predecessors (European Commission, 2003). These incentives can be triggered by public environmental regulations (we will come back to this later), self-regulation and market regulations. At the micro level, company-specific features are important as well. These company-specific characteristics lead to different initial conditions of the companies in terms of their innovation activities, and these different conditions can explain the different effects and intensities of the determinants and effect of product-specific environmental innovations (Rehfeld, 2006: 304).

Table 4.1 shows various instruments implemented by the automobile industry in order to decrease the automobile's environmental impacts across its life cycle. Many of the instruments mentioned in the table do have an impact within the whole product chain. Most of these instruments are targeted towards environmental improvements in a number of phases within the product chain and thereby include different levels and actors. The significance of environmental improvements depends on the automobile manufacturer's ambition on product orientation. Automobile manufacturers can choose an incremental approach by redesigning their automobiles or they can choose to create totally new products – a technological break through. The targets for environmental improvement set by automobile manufacturers, based on the company-specific features, reflect different levels of ambition and different approaches: manufacture without producing hazardous waste, reduce product energy consumption, increase the use of recycled materials and reused components or improving the recyclability of products. Of course, public environmental regulations do already regulate most of these aspects, but automobile manufacturers can choose to move beyond compliance. In terms of cleaner production, manufacturers can make changes to the process design, to the material design and/or to the energy efficiency design.

Table 4.1 *Examples of product-oriented initiatives*

Development	Production	Use	Recovery
Design for Recycling (DfR) Fuel efficiency programmes Design for the Environment (DfE) Design for Disassembly (DfD)	Use of recycled materials Certified EMS	Dealership waste management Spare parts	Market-base ELV-recovery Dismantling manuals

To a large extent, automobile manufacturers have created many product-oriented initiatives in their corporate strategies. Most of the initiatives mentioned in table 2 have been implemented as single initiatives and are more or less uncoordinated with other environmental efforts. It is symptomatic that none of automobile manufacturers have implemented integrated product-oriented system covering the whole product chain. For example, at the corporate level, BMW has a number of environmental programmes, which can be labelled product-oriented initiatives and which aim at continuous improvement. Examples are programmes on Mobility, Life Cycle Assessment (LCA), Design for Recycling (DfR), Design for the Environment (DfE) and Design for Disassembly (DfD). All these programmes are placed in the Research and Development division. However, these different environmental programmes are organised in a fragmented way. The activities are not yet incorporated in all divisions and all sites of the BMW Group. Different initiatives are taken at each production facility. For example, so far, DfR has only been an issue within the Research and Development division. Furthermore, BMW is working on a LCA. As we will come back to later, in a new series BMW, introduced in autumn 2004, steel has been replaced by aluminium. This means, unfortunately, that water consumption in the production phase has increased (see Table 3). This example shows that LCA has 'not' functioned, as the EMS will not allow an increase in water consumption. The LCA is used as an analytical tool for specific development issues. So far, two persons in the development department and two in the

waste department use LCA. If BMW wants to use LCA more strategically, it must be integrated in all divisions. So far, BMW has no further plans for promoting LCA in the corporate strategy and specifically not in the development of new products. Therefore, these initiatives cannot be characterised as a product-oriented *strategy*. Consequently, environmental improvements remain at the micro level in a specific chain in the cycle.

4.1 Continuous improvement: Environmental Management Systems

The development of IPP builds largely on experiences with existing environmental tools, like EMSs. An EMS is an example of a process-oriented strategy striving towards continuous improvement at the micro level. However, a growing number of companies include some level of supply chain issues in their environmental policy. In addition, it is becoming more common for companies to include ISO 14001 compliance as a minimum standard in their procurement policies (BSR, 2003). General Motors (GM), for example, requires its tier-one product suppliers – those that directly supply parts for use in the vehicle production – to have an ISO 14001 compliant EMS in place at all manufacturing facilities that supply GM with materials or parts (GM, 2007). GM is one of the first automobile manufacturers to develop management systems that reward suppliers for responsible use of resources (ACEA and UNEP, 2002: 28).

In order to ensure a continuous improvement in process-oriented environmental protection – all major automobile manufacturers have implemented certified EMS at their production facilities. GM was the first automobile manufacturer to implement a certified EMS in 1995. Since then, it has become a trend in the automobile industry to have a certified EMS (ISO 14001 and/or EMAS). Globalisation can be mentioned as one of the major reasons why the automobile industry has such a large interest in implementing a certified EMS. All automobile manufacturers do have production facilities all over the world and an appropriate way for automobile manufacturers to implement a corporate environmental policy, which is applicable to all production facilities worldwide, is to implement an (certified) EMS. Implementing a certified EMS does have various advantages for automobile manufacturers, as automobile manufacturers can:

- be sure that all their production facilities comply with (local) environmental regulations
- compare the environmental performance of the different production facilities
- ensure that all production facilities live up till the corporate environmental policy

GM, Ford, Volkswagen and BMW have implemented EMSs at all their production facilities around the world. By implementing EMSs at all their production facilities, BMW – for example – was provided with an integrated approach to address the environmental impacts of their activities. In the period 1998-2002, implementing EMSs has contributed to a reduction of environmental impacts from production – measured per unit, see Table 4.2. However, since 2003, environmental impacts from production have increased for production process water input and waste. The increase in production process water input can be explained by the fact that in the new series BMW, introduced in the autumn of 2004, steel has been replaced by aluminium. From an IPP line of thinking, this has had some major consequences, as we have discussed above.

Table 4.2 *BMW Group key figures: environment (BMW, 2003; BMW, 2005b).*

	1998	1999	2000	2001	2002	2003	2004
Energy consumption (MWh/Unit)	3.56	3.42	3.16	3.08	3.21	2.94	2.94
Production process water input (m^3/Unit)	3.87	3.51	2.97	2.52	2.10	2.23	2.33
Production process wastewater (m^3/Unit)	1.23	1.15	1.06	1.07	0.92	0.98	0.83
CO_2 (t/Unit)	1.14	1.10	1.04	0.99	0.98	1.00	0.94
Waste (kg/Unit)	367	368	349	354	291	357	318

As mentioned before, a growing number of companies include some level of supply chain issues in their environmental policy. The promotion of the diffusion of EMSs along the product chain becomes more and more common. For example, BMW promotes the diffusion of EMS along the product chain by demanding most of their suppliers of their production facilities to be certified according to ISO 14001 or EMAS. One of the major reasons for this is that BMW had recognised that suppliers collectively bring more than 70% of the value of each car to the line and the supply chain failure impacts directly on the reputation of BMW. Approximately 90% of BMW's suppliers have an ISO 14001 certification or an EMAS registration (BMW, 2003) Furthermore, BMW communicates the results of its EMSs to their surrounding communities and their customers in a meaningful and personal manner in order to benefit the company as a whole. These supply chain issues reflect the interaction with the meso level.

Both BMW and GM have a common framework for EMS, which has to be taken as a point of departure, when EMS is implemented at the specific (production) facilities. BMW is in the process of developing a transnational environmental standard that reflects best environmental practice for relevant environmental issues that shall be applied in all corporate production units. So far, GM has adopted a common standard for a more limited amount of specific environmental issues. For environmental problems that are not covered by a common standard, they will ideally be regulated by local environmental regulations. Consequently, the environmental objectives for BMW sites are more or less determined by headquarter, whereas at GM both corporate as well as the local (national) environmental regulations are taken as point of departure.

EMSs are often not used in isolation. Other management programmes are used to ensure continuous improvement. GM for example, uses – in addition to EMSs – specific management programmes for certain issues, like Resource Management and Chemicals Management (GM, 2007). Resource Management and Chemicals Management have to ensure – among other things – that every effort is made to reduce, recycle and reuse resources before disposal (ACEA and UNEP, 2002). Ford, on the other hand, has developed a "Product Sustainability Index" (PSI) and a "Manufacturing Sustainability Index" (MSI) in order to track whether Ford's new products and production plants are moving toward the goal of sustainability (Ford, 2006). Both PSI and MSI are used in addition to certified EMSs.

5 Stakeholder involvement

According the Commission's Communication on IPP (European Commission, 2003: 5), stakeholder involvement "aims to encourage all those who come into contact with the product (i.e. industry, consumers and government) to act on their sphere of influence and to encourage cooperation between the different stakeholders. Industry can look at how to better integrate environmental aspects in the design of products while consumers can assess how they can purchase greener products and how they can better use and dispose of them. Governments can set the economic and legal framework conditions for entire national economies and also act directly on markets, for instance by purchasing greener products".

Nuij (2006) regards the way in which the European Commission recommends the involvement of stakeholders as a particular weakness of the current EU IPP policy. Nuij (2006: 177) argues, "the IPP Green Paper (2001) argued for the 'strong involvement of all stakeholders on all potential levels of action' in its development and 'local initiatives were seen as a major building block of a Community policy as they allow a practice-oriented bottom-up approach'. The Communication on IPP (2003) toned down this enthusiasm, stating that 'IPP aims to encourage all those who come into contact with the product to act in their sphere of influence and to encourage co-operation between the different stakeholders'. While the Green Paper still talked about product panels as a possible way to bring all these stakeholders together, the Communication refers to the use of voluntary pilot projects to ensure their involvement". Nuij (2006:177) concludes his argumentation by stating that both documents lack any significant detail on how such a stakeholder process should be organised, who should be involved at what stage and what is expected from whom.

As mentioned before, a major challenge for governments in implementing and facilitating IPP is to promote 'Life Cycle Thinking' and 'Stakeholder Involvement'. In Denmark, for example, stakeholder involvement has been established by the formation of product panels. The purpose of establishing a product panel is to bring together stakeholders from all stages of a product's life cycle in order for them to co-operate on trying to minimise the environmental impact caused by a product (Danish EPA, 2005). It is doubtful, however, whether product panels can be used with regard to automobiles, if facilitated by national governments. The automobile is pre-eminently a product that is global in scope, which might make it difficult for national governments to establish product panels that include foreign stakeholders. Besides, as mentioned above, in line with Nuij's (2006) argumentation, the Communication on IPP does not mention product panels as the way to organise 'involvement of stakeholders'; the use of voluntary pilot projects should ensure stakeholders involvement.

Nevertheless, at least one automobile product panel does exist. In 1995, the Bavarian government and the Bavarian business community concluded the Environmental Agreement for Bavaria. Initially the agreement was limited to five years, but in October 2000, the environmental agreement was renewed (Industrie- und Handelskammer für

München und Oberbayerns and Bayerisches Staatsministerium für Landesentwicklung, 2001). IPP is one of the themes the government and business work on. In the framework of the Bavarian Environmental Pact II, two automobile manufacturers, i.e. BMW and Audi, work on the IPP pilot project for product-related environmental management. In 2000 – among other things – the partners to the Environmental Pact decided to (Steinmetzer and Furnier, 2006: 139):

– Install a permanent working group between economy and government for a continuous dialogue on matters of IPP
– Realise a common pilot project 'IPP using the automobile as an example'

In the IPP pilot project, as carried out in Bavaria, the authorities, the industry and consumers are regarded as the main actors. In Table 5.1, it is shown which steps should be taken to make IPP a success (based on Industrie- und Handelskammer für München und Oberbayerns and Bayerisches Staatsministerium für Landesentwicklung, 2001: 79).

Table 5.1 *Conditions to success of IPP (based on Industrie- und Handelskammer für München und Oberbayerns and Bayerisches Staatsministerium für Landesentwicklung, 2001: 79)*

To make IPP a success, the *industry* must	**To actively promote IPP, the *authorities* should**	**IPP can only be successful if the *consumer***
Make IPP instruments an integral element of entrepreneurial actions	Create reliable framework conditions in line with market requirements	Actively demands information from manufacturers and service providers
Increasingly provide consumer-friendly and traceable information on product properties relevant to IPP	Limit itself to setting out the framework and allow sufficient scope for voluntary agreements and self-regulation of industry	Seeks information on the sustainability aspects of a product system
Further develop and use IPP tools on its own initiative and cooperate within industry on a comprehensive basis	Not interfere in product planning	Through his decision to buy, requires the development and preparation of products with minimum environmental impact
Formulate IPP-relevant goals for the sector, and use self-regulation as an instrument	Examine the provisions of existing state legislation and formulate an environmental law comprising all environmental aspects	Is ready in individual cases to pay more for products with low environmental impact
Comprehensively integrate all decisions, sequences and management systems throughout the economic and ecological product life cycle	Commit itself to international harmonisation	Assumes environmental responsibility during the usage stage
	Prepare and support society at large in terms of environmental education and training	
	Provide incentives for the introduction of environmentally friendly products	

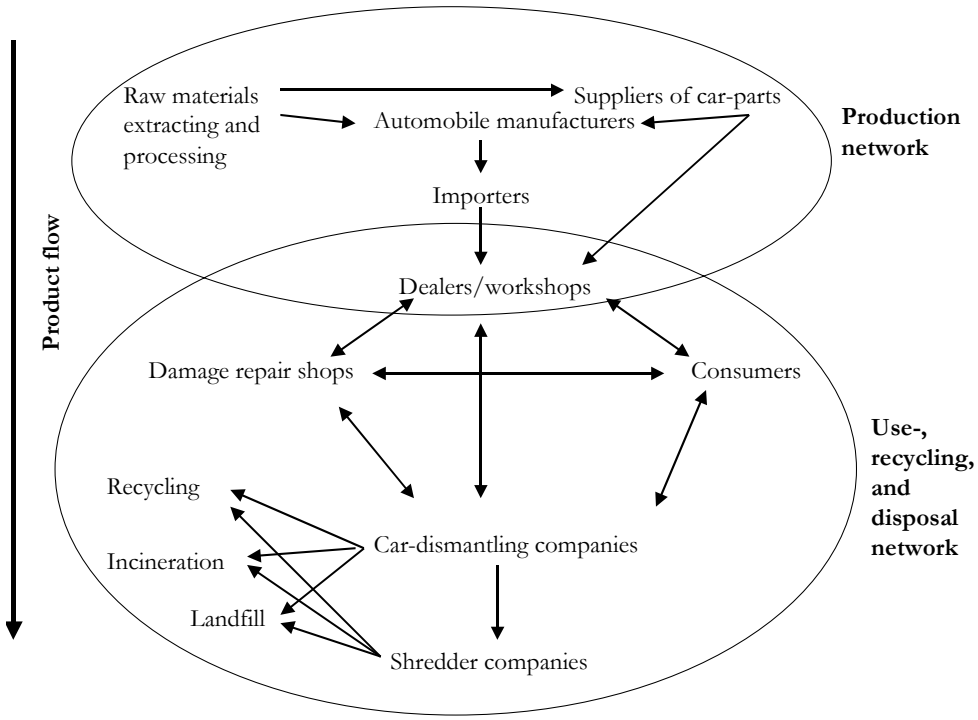
The environmentally more pro-active companies will typically expand their environmental initiatives beyond the company's own property. These companies will

expand their environmental initiatives to include, for example, environmentally optimised goods transports, co-operation with suppliers regarding phase-out of harmful substances, information to consumers regarding environmentally friendly product use etc. (Danish EPA, 2003).

The automobile industry faces some other barriers 'to encourage stakeholder co-operation' as well. As mentioned above, the automobile product chain consists of two more or less independent networks, a production network and a use-, recycling and disposal network (see Figure 5.1). Especially in Europe, contacts between actors in these two networks are limited (Smink et al., 2006). According to den Hond and Groenewegen (1993: 351), a reason for this weak link is that automobile manufacturers have had no specific interest in connecting with car-dismantling companies. In fact, they may even have tried to avoid association with dismantling activities which are often dispersed, sometimes semi-legal or illegal, and often directly competitive with dealers for the spare-parts market. Most interactions are incidental, focused on specific activities, or informal based on personal relations (Smink et al., 2006: 159). Co-operation and communication between the two networks are not institutionalised (Smink, 2002). This weak linkage has its roots in the specific history of the automobile-dismantling sector, a history that cannot be explained by economic considerations alone (Smink et al., 2003). The automotive chain is very much transnational in nature, and is subject of substantive environmental pressures put on them by local and international agencies. These pressures have resulted in the development of new, more sustainable products and production processes. However, retailers in the automobile chain do hardly make any efforts to establish a link between the sustainable production and the sustainable consumption of automobiles. Green automobiles are not made into selling points by car salespersons; they are promoted by public environmental regulations (Smink et al., 2003). Consequently, the predominant situation has been that environmental regulations have developed independently in both networks (Smink, et al., 2003).

The objective of IPP is to reduce the overall environmental burdens across the whole life cycle of a product. In other words, in order to implement IPP in the automotive product chain, the two networks have to be integrated.

Figure 5.1 *The automobile product chain and its two networks (Smink, 2002:163)*



Another reason why it will be a huge challenge for the automotive industry to encourage stakeholder co-operation is because of the huge number of actors involved in producing an automobile. As shown in Figure 5.1, in the production network, the automobile manufacturer purchases parts from suppliers of car-parts. These suppliers will also purchase parts from their suppliers etc. (not shown in the figure). For example, an automobile manufacturer purchases a seat from a supplier, a so-called first-tier supplier. This supplier is in charge of delivering complete seats to the automobile manufacturer. The first-tier supplier has a number of second-tier suppliers, which are companies that produce the different parts of the seat. These companies may, in turn, engage helpers in a third or even fourth tier of the supply pyramid. If we consider that an automobile is often made up of more than 10,000 parts, it might become clear that a wide variety of companies are involved in the production of an automobile (Smink, 2002).

Finally, it will be a huge challenge for the automotive industry to encourage stakeholder co-operation because the automobile industry involves a long and complex product life cycle. Take for example initiatives to reduce greenhouse gas emissions. Greenhouse gas emissions vary at each stage of the automobile life cycle. Ford (unknown: 5), for example, states: "approximately 10 percent of the greenhouse gas emissions associated with any given automobile or truck are emitted directly by our plants and facilities. Most of the remaining 90 percent of the emissions attributed to any automobile over the course of the lifetime is emitted during its use by the consumer". To act on their sphere of influence, a challenge for automobile manufacturers is – among other things – to engage consumers on their purchase decisions, driving behaviour and their choice of fuels. Ford systematically investigates the influence of driving style on fuel consumption and CO_2 per kilometre driven (Ford, 2004). Since 1998, Ford in Germany has jointly run a comprehensive test and training programme "Ford Eco-Driving" with the German Federation of Driving Instructor Associations and the German Road Safety Council. The

Ford Eco-Driving resulted in three major programmes designed for various target groups like professional drivers, private drivers and driving instructors (Ford, 2004). Driving instructors, for example, can be seen as a promising target audience for Ford's train-the-trainer seminars due to their multiplier status teaching young drivers the "right way to drive" (Ford, 2004). The objective is to enhance consumers' influence for a transformation towards sustainable mobility (Ford, 2004).

6 A variety of policy instruments

As mentioned in section 4, continuous environmental improvements require incentives for manufacturers to make new product generations greener than their predecessors (European Commission, 2003). In this section, focus will be on how public environmental regulations facilitate continuous improvements.

In the Communication on IPP the European Commission (2003: 5) writes about 'a variety of policy instruments': "The IPP approach requires a number of different instruments because there are such a variety of products available and different stakeholders involved. These instruments range from voluntary initiatives to regulations and from the local to the international scale. Within IPP, the tendency is clearly to work with voluntary approaches, although mandatory measures might also be required. The determining factor is the effectiveness of the tool to achieve the desired result with regard to sustainable development"

According to the Communication on IPP (European Commission, 2003: 8), an effective IPP does require the economic and legal framework to be conductive to greening products and to their purchase, ideally with minimum government intervention. Table 6.1 shows the tools for establishing the framework conditions for continuous environmental improvement as outlined in the Communication on IPP.

Table 6.1 *Establishing the framework conditions for continuous environmental improvement*

Tools for creating the right economic and legal framework	• Taxes and subsidies • Voluntary agreements and standardisation • Public procurement legislation • Other legislation
Promoting the application of Life-Cycle Thinking	• Making life-cycle information and interpretative tools available • Environmental Management Systems • Product Design Obligations
Giving consumers the information to decide	• Greening public procurement • Greener corporate purchasing • Environmental labelling

It is clear that the IPP approach focuses on a mix of policy instruments. It is however, less clear at which level of governance these instruments are most efficiently introduced (Danish EPA, 2006). Nuij (2006) does discuss the same point.

Nuij (2006) regards the way in which the European Commission recommends the use of a variety of policy instruments a particular weakness of the current EU IPP policy. More specifically, Nuij (2006) mentions the integration of different instruments and the use of

non-legislative tools as particular weaknesses. About the 'Integration of different instruments', Nuij (2006: 177-178) argues, "the Communication states that the most important role of IPP is to 'strengthen the co-ordination and coherence between existing and future environment-related product-policy instruments. In addition, … it will make product-related environmental policy measures more effective by highlighting the necessary trade-offs and, once political decisions are taken, co-ordinating their implementation. This strengthened co-ordination will benefit both business competitiveness and the environment'". Nuij (2006) concludes that there is no detail on how all this is to come about. About the 'Use of non-legislative tools', Nuij (2006: 178) argues, "the Green Paper and the Communication focus almost exclusively on the 'softer' side of the policy toolbox. While this might be the right approach to the problems, the Union does not necessarily have a great track record when it comes to establishing and implementing such instruments. The woes of the EMAS and the EU Eco-label schemes, and the difficulties encountered when establishing a framework for voluntary or negotiated agreements, point towards inherent problems with developing non-legislative instruments with an institutional context specifically set up for making legislation". Nuij (2006: 178) concludes "these weaknesses make it rather difficult to be optimistic about the future of IPP, at least at the European level".

7 Conclusion

A strict focus on the automobile is not suitable to deal with the challenge of sustainable production and consumption. Ideally, the starting point of our analysis should have been on the societal functions that are fulfilled by the combination of products and services such as transport. At this level, people make the choices between taking the car or the train and it is here that large potential improvements could be realised (Nuij, 2006: 181). Nevertheless, in this article we have analysed how and in what way Integrated Product Policy (IPP) has been applied in the automotive product chain. From an environmental point of view, the automobile – as a product – can still be improved and become significant more efficient.

In order to move towards a more sustainable automobile production both environmental policies and environmental strategies must move towards a more integrated product-oriented approach. It is necessary to extend the scope and focus of the IPP and it must be reflected to corporate environmental policies of companies. Especially for the automobile manufacturers, the global production system with changing preconditions and the wide range of stakeholders make it a huge task to incorporate and implement a product-oriented strategy. More dialogue, co-operation and exchange of information are needed, especially between the production network and the networks of use, recycling and disposal where the contacts so far are limited.

It is important to develop coherent integrated product policies that involve the relevant stakeholders and create a “green market” in order to stimulate automobile manufacturers to move towards an integrated product orientated strategy. This could bring forward radical innovation for automobiles but also other modes of transportation.

Automobile manufacturers could play a more active role by recognising their responsibility for reducing the environmental impacts through out the product chain and participate more closely in the other phases of the product chain. New types of policy instruments are needed. For instance, in the use-phase, training of drivers is able to reduce energy consumption for transportation by a car or truck with about 10%. This type of training, like implemented by Ford, could be offered in collaboration between automobile manufacturers and authorities and this offer could be included in the price of an automobile. It is a challenge for both authorities as well as for automobile manufacturers to develop an IPP.

Furthermore, it can be concluded that most automobile manufacturers have taken product-oriented initiatives but so far, the initiatives are isolated from the corporate “mainstream” strategy. Many initiatives seem to be ”showcases” that have little impact on the corporate environmental practice of automobile manufacturers. The product-oriented initiatives from authorities and manufacturers can potentially be a part of a more integrated product policy, which must be initiated and transformed by relevant actors and implemented in whole product chain in an integrative manner. Integrating products

policies must be a common target for the relevant domains, i.e. state, civil society and industry.

The expected rapid increase in the number of cars the next 15 years (about 75%) enhancing increased mobility, globalisation of trade, creation of wealth etc. will also result in a huge increase in the environmental impact in the whole life cycle of the automobile. This prognosis asks for a wide range of methods and incentives to reduce the pollution of automobiles if we are to obtain significant improvements of automobiles environmental performance. Though, governments do not seem willing to discuss and create more strict and radical regulations to promote new technologies like automobiles powered by hydrogen and alternative types of transportation. This is due to the important economic impacts on society from automobile production and the use of automobiles for transportation.

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Changes in Problem Definition on (Northern) Security

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Abstract

How to clean-up “the mess after a party”, i.e. the environmental degradation of the post-Cold War period like for example, nuclear wastes in the Barents Sea region and toxics in the radar stations of the DEW-line in North America?

This question was much a start of changes in problem definitions on Northern security in the 1990s. It interested me as a new kind of sensitive environmental question and research question with a keen relationship with traditional security and the military, which I have studied for a rather long time (e.g. Heininen 1994). It also fascinated me as an academic challenge, especially when trying to implement the social relevance of science. The question was followed by other questions like for example, does the public concern on trans-boundary pollution, academic discourses on a risk and threat, and international cooperation on environmental protection transfer into action? And if, does it also push decision-makers to make changes in problem definition when dealing with security in general and especially environmental degradation by the military?

1 Introduction

In the background there are and influence firstly, that the 20th century meant a militarization of the Arctic. The circumpolar North as a “military theater” of the Cold War period can be illustrated for example, by tens of Soviet naval bases in the Kola Peninsula, several US air bases and radar stations in Alaska, Keflavik and Thule, distant early warning (DEW) stations and lines on the rim of the Arctic Ocean, nuclear tests in Novaya Zemlya, Soviet and US as well British strategic nuclear submarines with ballistic missiles (SSBNs) patrolling in Northern seas, and finally by dumped nuclear reactors and nuclear waste. Secondly, environmental degradation became a local and regional problem and an issue on political agendas due to long range air and sea pollution of toxics, POPs and radioactivity. Thirdly, the North also faced in the 1990s a significant geopolitical change due to rapidly increased international cooperation in many fields like for example, in environmental protection and economics. Fourthly, not only long-range air and water pollution but also industry in the Russian North, nuclear accidents and risks of accidents of nuclear submarines in Northern seas and increased utilization of natural resources made environmental degradation both a local environmental problem and regional risks (e.g. Arctic Environmental Problems 1990). Fifthly, all this caused a growing concern on environmental issues among environmental organizations, Indigenous peoples and other local people, and local and regional authorities, and also put advanced scientists and scholars to (re)define environmental risks effecting societies and peoples by a new way.

Finally, followed from the previous issues policy- and decision-makers were pushed to do something to decrease or stop environmental degradation by the military, too. Nuclear safety in the North, particularly Northern seas, became one of the aims, even a focus, of the international cooperation for environmental protection in the North under the auspices of the Arctic Environmental Protection Programme of the Arctic Council (AEPS 1991) and the Barents Euro-Arctic Council (Declaration 1993). The case study of the article, the nuclear problem of the Barents Sea region is mostly due to nuclear safety related to the military and partly due to civilian use of nuclear energy like and radioactive contamination coming from the outside the region like for example, the nuclear power plant of Sellafield in UK. The problem has been defined to be a risk by many international experts and officials, and interpreted to be a threat by the Nordic and Western public. There is a common understanding that the nuclear problem of the Barents Sea region is the most severe and complicated environmental problem with relevant trans-boundary aspects - both as a threat and a risk - in North Europe and the circumpolar North, and also one of the most dramatic of all the issues in the EU-Russian cooperation.

As a result, nuclear safety became a new issue in international environmental politics leaded by the governments of the Arctic states on one hand. On the other, security issues became a part of every international negotiations agenda dealing with problems in the North, either they are environmental, social or economic on the surface, and as a consequence of this there are, or were, negotiations aiming at a reduction of military tension and threats. Followed from this and as a conclusion, it is possible to argue that

nuclear safety has meant a change in problem definition on Northern security (e.g. Heininen and Häyrynen 2002), and thus, it is also an example of policy implementation of environmental protection and politics.

At the beginning of the 21st century, although the Cold War is over, militarization continues, and in the circumpolar North there are still heavy military structures including the nuclear-weapons-systems of the USA and the Russian Federation like for example, strategic nuclear submarine (SSBN), and military training and testing. Thus, the North is a part of the global strategic thinking and a platform for military presence and activities of the USA and Russia. (e.g. Heininen 2004) There are also both increased utilization of oil and natural gas and increased flows of globalization, i.e. transportation of raw materials out, and also products in, the region. Especially the Barents Sea region is becoming a new hub of fossil energy sources for major actors in Europe and North America, particularly for of Norway and Russia, due to both rich oil and natural gas resources and the infrastructure for utilization and transportation of them. Further, the Northern-most part of the globe, especially the Arctic Ocean, has a great potential for new sea routes (especially due to smelting of the sea ice) and air routes. All in all, what I call "the geopolitical perspective" (Heininen 2005, 98-99) indicates a high strategic importance of the circumpolar North in world politics. Followed from that, energy security in the North has become a new big issue in hegemony competition as well as environmental politics and environmental policies of the Russian Federation, the European Union and the USA.

Both energy security and climate change can be looked through traditional security: Energy security deals with national interest and is a part of national security. Correspondingly, climate change can create a threat to territorial sovereignty of a state like for example, the case of Canada shows. If energy security is becoming a new kind of challenge of security, then climate chance is already that which is mostly due to its clear, partly even significant, impacts in Northern, arctic and sub-arctic regions meaning particularly melting of the multiyear sea ice and permafrost (e.g. ACIA 2004). Followed from this the hypothesis of the paper is that *energy security* and *climate change* which both are very relevant issues now and in the (near) future and represent global changes and / or global problems can be interpreted to mean new kind(s) of changes in problem definition on (Northern) security.

Firstly, this paper discusses theoretically on what to mean by changes in problem definition on security and the relationship between security and the environment, and what kind of change(s) nuclear safety has meant in Northern security. The second aim of this paper is to describe and analyze what kinds of political processes there are, and have been, and mention, which are the main political actors behind them, and what might be among the main interests of the actors. Thirdly, the paper discusses on how to define and by whom a risk and threat in environmental politics through the case study of nuclear safety in and of the Barents Sea region. Fourthly, it lists the main features of the nuclear problem of the Barents Sea region and the change in problem definition on security in the North. Finally, the paper includes a conclusion of nuclear safety in the North as a matter and implementation of environmental security, and also discusses briefly on the so-called regional security as an alternative approach to (comprehensive) security in circumstances where both nuclear safety, energy security and impacts of climate change are present.

2 Defining a change in problem definition

The first aim of the paper is to discuss what to mean by changes in problem definition on security in general and describe what kind of change(s) nuclear safety has meant in discourses and definitions on Northern security. In the background there are first of all discourses on comprehensive security, especially environmental security like for example, nuclear safety, and relations between security and the environment in the 1980s and 1990s (e.g. Galtung 1982; Westing 1988; Buzan 1991; Renner 1991; Heininen 1994; Deudney 1999).

There is also a discourse on environmental politics followed from the so-called environmental awaking, i.e. growing concern on environmental issues and demands and activities for environmental protection due to both environmental degradation, and new kinds of risks dealing with the environment and further (directly or indirectly) to societies and human beings. Thus, there is a keen connection between ecological problems and social order, and the environment have implications for all areas of human activity, but real solutions of environmental conflicts or environmental degradation cannot be authoritarian solutions and there is no solution to ecological problems once and for all (Haila and Heininen 1995).

What is mean by problem definition here is on one hand, a new kind of discourse based on an awaking in environmental issues due to both environmental degradation and new kinds of threats and risks dealing with the environment, and through it to human beings, and on the other hand, policy-orientated discourse followed by programs and policies, not necessarily activities or other kinds of implementation of them. Based on the interpretation, that maybe the most important question of environmental politics is "problem definition", i.e. to try to define a problem, which is *per se* a research problem (e.g. Haila 2001, 17-20). I have taken the concept of problem definition and applied it into my discourse on comprehensive security in general and especially on Northern security (e.g. Heininen 1997 and 1999).

Discourses on comprehensive, or common, security of the 1980s and 1990s included the aspects of the environment, societies and human beings to emphasize the point of view of peoples and their needs (Newcombe 1986; Buzan 1991). One of the aims was to replace the old-style thinking of traditional security which deals with the core of the unified state system, especially having a state as the main, and mostly only, subject of security, and the theory of (new) realism and geopolitics recognizing weapon-oriented security finally guarantied by the military. Unlike traditional security environmental security and human security directly deal with societies and individuals and their practical issues of like for example, health, social and economic conditions, and the environment. This point of view brings other actors as a state as subjects of security like for example, people(s), civil societies and communities.

A part, although no mainstream, of the discourse of comprehensive security is the relationship between the degradation of the environment and security matters which Galtung (1982) defined relevant. Indeed, there are links, relations and contradictions between the environment and traditional security and the military, which can be seen already in the routine activities of armies in a peace time for example, how they use the air, water and land, utilize natural resources and pollute the environment (Renner 1991). Environmental impacts of the military are universal, and environmental degradation of wars and warfare has been known for centuries (Westing 1988). In the circumpolar North this relationship is especially relevant first, due to the vulnerability of an arctic and sub-arctic nature and northern indigenous cultures, and second, because military presence became so high and activities so intensive during the Cold War period (Heininen 1994). This is very much the case in the Barents Sea region due to the largest concentration of nuclear weapons, reactors and facilities in the Russian Federation, the circumpolar North and possibly in the world.

Some sort of contradiction side of the technology models of geopolitics is a nuclear submarine. If it was once one of the most advanced technological proof of modernization and industrialization, like a heroic warrior to brave an extreme nature and defy an enemy, then a strategic nuclear submarine (SSBN) is still the most important tool either to project or defend military power of the superpowers far across national borders and continents all over the oceans. A nuclear submarine has, however, become a severe environmental risk, and thus also a problem to environmental and human security, either in an operation, or in a dock waiting for to be decommissioned (Heininen 1997 and 1999). And, actually not only a risk due to several accidents of nuclear submarines like for example, the accident of the Kursk nuclear submarine in August 2000 in the Barents Sea. For example, to the Icelanders and the Norwegians a nuclear accident in the main fishing areas of North Atlantic has been a real risk for decades, and thus a good reason for an anxiety of the governments (e.g. Palsson 1988). Behind are the catastrophic influences of possible radioactive contamination of a serious nuclear accident into an economy like for example, into that of Iceland which is highly dependent on fishery. Thus, here a nuclear submarine is a metaphor for a relevance of environmental security.

There are also responses against the relevance of environmental security in general and especially dealing with a keen relation between the environment and the military. It is even said to be some sort of trap and opposite to mean a militarization of the environment. Or, that the military comes to control ideas about environmental problems, and this ‘environmental rearmament’ of an army greatly strengthens authoritarian tendencies in environmental policy and will give a new mission to an army. (Haila and Heininen 1995; Käkönen 1995, 100-105) In the background there a debate on environmental security with an argumentation that alternative concepts of security by challenging traditional security carry a heavy militaristic, nationalist and ideological burden that is dangerous to label non-military issues (Deudney 1999). One conclusion from this might be that the presented security concepts with their mixed connotations appear less fruitful for comprehensive security than the proponents expected as was seen in the case of the Kursk submarine (Heininen and Häyrynen 2002), and therefore, the result of that discourse was much opposite.

There are, however, also responses against this counter-argumentation especially dealing with a keen relation between the environment and the military: Already the viewpoint of armies as polluters is new, complicated and very political, and has been seen as a real problem for a short time, and therefore there is no monitoring but lack of knowledge about the real effects, much due to the secrecy of armies and their environmental impacts. All elements of pollution and risks of environmental catastrophes are, however, there and

there are also acts for cleaning-up like for example, an environmental assessment the DEW Line Clean Up Protocol with the categories of contaminated soil, landfills and dumps, and physical debris and demolition (Poland 2001). There are also good reasons to emphasize the importance of a rapidly changed state of the environment due to climate change to national security and sovereignty with a possible cause of growing military patrolling like for example, the Canadian North (Huebert 2001).

At the beginning of the 21st century there might be another kind of change in problem definition dealing with relations between the military and the environment due to "energy security", i.e. on one hand, a growing need of energy and on the other hand, a scarcity of oil and a high prize of oil in the world market. At the turn of the 21st century there are both scarcity of oil and a growing need for energy and high prize of crude oil in the world market and therefore a need to save energy even by the military like for example, the regulation of 5% save by Pentagon (Komarow 2006).

The nuclear problem of the Barents Sea region is the case study of this article, because it is a good example, actually a real illustration, of changes in problem definition in international negotiations on nuclear safety including radioactivity from military sources (e.g. Heininen and Segerståhl 2002). In the background there is the conclusion that in the 1990s there happened a change in problem definition on Northern security in general and particularly in the relationship between the environment and the military (Heininen 1997). As an evidence of this, nuclear safety as well environmental degradation in the Arctic in general was taken onto the political agenda of the unified states and inter-governmental organizations (IGOs) and forums in the beginning of the 1990s. Further, in Russia there was a discourse on security with clear influences in the public, that in the case of the accident of Kursk submarine foreign help was demanded and offers were accepted.

3 Political processes, and political actors behind them

The second aim of this paper is to describe and analyze what kinds of political processes there are, and have been, and mention, which are the main political actors behind them and their main interests. I will, however, analyze neither processes nor actors per se. This aim directly deals with environmental governance, simply because political processes and political actors behind them had tried, and try, to solve problems.

At the turn of the 20th and 21st centuries in North Europe there were many international - both intergovernmental, interregional and scientific – political and negotiation processes dealing with nuclear safety in the North generally and especially in the context of the Barents Sea region. Behind these processes there are several, both internal and international, governmental and also non-governmental actors. Several international studies on monitoring and assessment of the Arctic environment including radioactivity and impacts of climate change have been done (e.g. AMAP 2002, esp. 59-76; ACIA 2004), and more projects are in a process for example, in order to find proper technology. These studies are international, mostly multinational, and have been done under the auspices of the Arctic Council, the body connecting eight Arctic states. This kind of political process officially started in 1991 through the Arctic Environmental Protection Strategy (AEPS 1991).

In the background there were especially two things, firstly, the influences of, and threats due to, the Chernobyl accident in Ukraine in April 1986 in Northern regions. Indigenous peoples' organizations and regional environmental organizations became concern on environmental and social influences of the radioactive contamination from the accident, and also the gradually better-known problem of the Russian North. Secondly, there were the initiatives by the last Soviet President Mikhail Gorbachev in October 1987 to start Arctic international cooperation for both arms control and in several civilian fields such as environmental protection for the Arctic nature (e.g. Heininen 2004, 208-209). Although the West could not take the initiatives on arms control and disengagement of military activities in northern seas as constructive proposals at the time (Scrivener 1989), the governments of Nordic countries became more active in arms control, also due to more known risks of accidents of submarines and the Finnish government made a proposal for an international cooperation to create an Arctic environmental protection strategy.

As some sort of follow-ups of these two things there is a rich chronology of several relevant, even critical, steps in international cooperation for nuclear safety in the Barents Sea region, as well the whole Arctic by governments and inter-governmental actors. They all are both to recognize the nuclear problem of the Barents Sea and to include it as a part of international negotiations on nuclear safety and to aim at reduction nuclear risks in the European North.

Here I mention some of the highlights (for more details see Heininen and Segerståhl 2002, 250-263):

First, due to unofficial reports and rumors of dumping nuclear waste by the Soviet Union the Joint Russian-Norwegian Expert Group on Radioactive Contamination was established in April 1992 (Miljövernedepartementet). In May 1998 the prime ministers of Norway and Russia signed an agreement on environmental cooperation including dismantling of Russian nuclear powered submarines withdrawn from the Navy's service in the northern region;

Second, the Arctic Environmental Protection Strategy (AEPS), which was signed by the governments of the eight Arctic states in June 1991, is the first intergovernmental forum for international cooperation on environmental protection of the Arctic including radioactive contamination (AMAP 2002). Due to the fact that the AEPS became a part of the Arctic Council, the Action Plan of the Arctic Council is also to eliminate pollution of the Arctic including radioactive wastes. The cooperation does not, however, separate the radioactive contamination related to military sources from that of the civilian sources and the agenda does cover neither traditional security policy nor military issues;

Third, not only Norway but also other Nordic countries became active in environmental protection in the North much due to trans-boundary environmental threats and the nuclear problem of the Barents Sea region, and the first ministerial meeting between the Nordic and Russian ministers of the environment was held in autumn 1992. The nuclear problem also became onto the agenda of the Barents Euro-Arctic Region (BEAR), although the cooperation does include neither the Barents Sea and other northern seas nor security-policy, from the beginning in 1993. Nuclear safety has been high in the political agenda of the BEAR cooperation like for example, the Multilateral Nuclear Environmental Programme in the Russian Federation (MNEPR) to dismantle the nuclear reactors of decommissioned nuclear submarines and to clean up and further to plan storage of nuclear wastes in the whole Federation, starting in the Kola Peninsula (Declaration 1999; Norendal 2000; HS 12.1.2003);

Fourth, the join US-Russian announcement on environmental protection cooperation in the Arctic with nuclear safety as a special focus was signed in 1994 and was followed by the established Gore-Chernomyrdin Commission with a special focus of nuclear safety, especially to prevent dumping of liquid radioactive waste including that from military sources in the Russian North. The Arctic Nuclear Waste Assessment Program (ANWAP) was "to determine the levels, transport, and fate of radioactivity from the practices of the former Soviet Union and its potential to contaminate Alaska" (ANWAP 1997). Behind these activities was an US allocation of the total funding of $753 million into projects in Russia to reduce new kinds of military and environmental threats and risks due to the collapse of the Soviet Union by the Cooperative Threat Reduction program (Heininen and Segerståhl 2002, 253-254);

Fifth, the happened change in problem definition became, however, visible by research projects and analyses by international expert groups like for example, the Joint Russian-Norwegian Expert Group and NATO and NACC research projects on radioactive pollution related to the military. More ambitious effort is the Arctic Military Environmental Cooperation (AMEC), which was signed in September 1996, to address environmental issues caused by the military and create technological methods and equipments such as a TUK-MBK-WMF container for ecological security of disposed nuclear fuel of nuclear-powered submarines (OMRI 1996);

Sixth, based on the strategy of the Partnership and Cooperation Agreement (PCA) between the European Union and the Russian Federation there are also EU financial programs such as TACIS and EU policies such as the EU=s Northern Dimension. For example, the 2nd Action Plan of the EU=s Northern Dimension (for 2004-2006) includes nuclear safety with priorities of the management of spent nuclear fuel and waste and the decommissioning of nuclear subs and other facilities. Finally, the ND=s Environmental Partnership (NDEP) initiated to focus on environmental protection in Northwest Russia includes nuclear safety and management of nuclear waste (The European Union 2003; Europe Information Service 2003);

Seventh, the G8-Group promised in the Kananaskias Summit in June 2002 a financial support of $ 20 billion through the established "Global partnership Against the Spread of Weapons and Materials of Mass Destruction" for to destroy the storages of nuclear, biological and chemical mass-destruction weapons in the former Soviet Union. If the USA has promised to cover a half of the sum, Canada has committed to provide up to $ 1 billion US dollar programming over ten years through the Global Partnership Program. The Program was promoted by the G8 Summit at Sea Island in June 2004 with a special emphasis on four priority fields, the dismantlement of nuclear submarines one of them. (for more details see Department of Foreign Affairs and International Trade 2005, also www.globalpartnership.gc.ca);

Eighth, since the G8 Kananaskis Summit Canada has continued this track and been actively involved in helping Russia in the field of nuclear and radiological security for example, to dismantle decommissioned Russian nuclear submarines and to expedite the shutdown of the Zheleznogorsk nuclear reactor (one of the remaining weapons-grade plutonium-producing nuclear reactors in Russia (Department of Foreign Affairs and International Trade 2005, 10-11).

As a conclusion, in early 1990s trans-boundary pollution became into negotiation processes between governments and further onto the political agenda of governments and IGOs. For example, both the AEPS / the Arctic Council and the BEAC include environmental cooperation dealing with nuclear safety as one of the most important fields of functional cooperation. The nuclear problem of the Barents Sea region was recognized by international experts and governments due to its several environmental impacts across national borders to be challenging in international and regional cooperation. Much due to this nuclear problem environmental degradation in general, and especially trans-boundary pollution and risks related to the military, were taken seriously, and further security issues became onto an agenda of international negotiation processes on nuclear issues. The nuclear problem also became a challenge from the point of view of international negotiation processes on nuclear weapons, power and facilities aiming to increase nuclear safety.

4 Defining a risk and threat

The third aim of the paper is to discuss on how to define, and by whom, a risk and threat in environmental politics in general and in the case study of nuclear safety in and of the Barents Sea region. In the background there is the interpretation that a relevant part of security and nuclear problems, or what ever environmental hazards, is a discourse on a risk and threat both in a local context and a global context, especially from the point of view of people and the citizens mof a state. Indeed, many aspects of security are taken as risks including both hazard assessment and risk assessment (e.g. Gunnarsson 2007), and how to control of a risk.

There is a principle difference between a threat and a risk: A threat can be physical, social or economic and it is multi functional, mostly subjective and psychological. It is based on the perception of the seriousness of perceived threats in a public consciousness of a society (Haila and Heininen 1995). Unlike, you are able to qualify, rank and measure a risk based on quantitative analysis on a probability calculation. A risk is, however, relative, because people interpret different things as a risk, and it is socially real, if it is interpreted to be real, either it has materialized or not (Wahlström 1994, 37-40). A risk is also conscious, and therefore risks are present in the world, in our “risk society”, and said to be a part of a normal human life like Ulrich Beck (e.g. 1992) has claimed.

Nuclear power, which promised cheap and safe energy, became a symbol of a new kind of risk and a modern society. The military, especially the nuclear weapon system, is another example of modernization and industrialization, and a secret agenda of the major nuclear weapon states. The advanced technology has not, however, meant a decrease of risks but opposite due to nuclear accidents caused by either human mistake or technical error, or combination of these two. Further, there are evidences that under the umbrella of secrecy and national security interests most military systems have caused, and still cause, environmental damages on a scale that would not be acceptable within other sectors of a state.

The recognized threat pictures are in general flexible and changing: If old, traditional threat pictures dealt with a war against an external invader or natural catastrophe, then after the Second World War these were supplemented with a nuclear war and scenarios of the so-called nuclear winter. These are hypothetical, but nuclear accidents are real and used to be hidden. In general the relative weight of environmental threats incorporated into trans-boundary pollution grew rapidly in the 1980s. And, in the 1990s there started a general concern on the so-called =soft= security problems like on one hand, global issues such as populations growth, pollution and climate change, and on the other hand, organized crime, smuggling of drugs and illegal immigration coming from the neighboring countries[1].

[1] For example based on the questionnaire of three main global environmental threats and categorized them (by 41 Finnish members of the environmental elite): climate change,

Followed from this a new foreign policy aspects of many states was global problems like e.g. security problems e.g. arms race, proliferation of nuclear weapons and nuclear waste, terrorism; environmental problems. Especially in North Europe there has been much concern on long-range air and sea pollution, in general and radioactive contamination especially, going across national borders and polluting and creating risks to marine ecosystems. Behind is the fact that in North Atlantic is a large and complicated toxic pollution like for example, radioactivity from the Sellafied nuclear complex in UK on the shore of the Irish Sea. Sellafied is a re-processing plant with bad reputation and opposed by many protests to blend plutonium with uranium and produce "pellets of 'mixed oxide fuel', or Mox, which can fuel other reactors". (Newsweek 2002, 44-45)

Followed from the first international agreements on the environment and trans-boundary pollution were signed in the second half of the 20th century like for example, the Oslo Dumping Convention and the London Dumping Convention of 1972 (not to dump radioactive material into a sea), which was strengthened in 1993 with a permanent ban on the dumping of radioactive waste and industrial waste. There have been several processes of international negotiations, and many international treaties, on nuclear security aiming at reduction of nuclear risks coming from nuclear weapons and nuclear power plants. In spite of these processes and agreements, official declarations and citizens' activities the concern of trans-boundary pollution and other environmental risks has not, however, always turned into action if we mean either changes in legislation or common state-activities to stop or decrease pollution. Neither the concern nor agreements have been enough to stop arms race and proliferation of nuclear weapons and start a real nuclear disarmament, although the Cold War ended in the early 1990s, and this is critical when trying to promote nuclear safety and solve nuclear problems.

populations growth, ozone layer and pollution of waters as 4 top risks, and 5. nuclear power incl. nuclear power plants and arms technology (wars where in the top of the 3rd category) (Järvelä - Wilenius, 1996, 48-60).

5 Main features of the nuclear problem of the Barents Sea region[2]

The fourth main aim of the paper is to list the main features of the nuclear problem of the Barents Sea region and the change in problem definition on security in the North. Briefly saying, the Barents Sea region has the highest concentration of nuclear-armed and -powered submarines, nuclear infrastructure for the military and nuclear wastes in the Russian Federation and the circumpolar North, and most probably in the whole world. Followed from this there are radioactive pollution and risky hot spots.

The list of relevant radioactive sources and radiological hazards in the current risk context in the Barents Sea region covers more than those indicated above and includes a multitude of different entities, of which the following are known or expected to be major concern (see Map):

1. The Northern Fleet of Russia with more than hundred nuclear-powered submarines (under or out of operation waiting for decommissioning) and two battle cruisers with about 200 nuclear reactors in total and nuclear weapons they carry in several naval bases or shipping docks;
2. The Kola Nuclear Power Plant, Polyarnye Zori with two old reactors of VVER (PWR)-440/230 type and two reactors of VVER-440/213 type;
3. Eight nuclear ice-breakers plus the newest Russian nuclear ice-breaker “50 Years of the Victory”, one nuclear container ship and five storage ships with radioactive waste (e.g. Lepse);
4. Tens of storage areas and hundreds of storages for nuclear waste with large amounts of spent nuclear fuel like e.g. the Bay of Andrejeva;
5. Nuclear weapons storage sites and bases for nuclear warheads;
6. Radioactive waste depositories and spent nuclear fuel storage facilities;
7. Dumped radioactive waste into the Barents Sea and the Kara Sea and 15-17 nuclear reactors from submarines and ide-breakers dumped into the Kara Sea or buried into the fjords of Novaya Zemlya;
8. Sunken ships and nuclear submarines with their nuclear reactors (e.g. the accident of Kursk submarine);
9. Building and repair shipyards for decommission of old nuclear submarines;
10. Two nuclear weapons test ranges on Novaya Zemlya with 117-132 tests;
11. Testing of submarine-launched ballistic missiles (SLBMs) and torpedoes in the Barents Sea;
12. Underground nuclear explosions for civil purposes;

[2] This chapter is based on the article of Heininen and Segerståhl 2002, "International Negotiations Aiming at a Reduction of Nuclear Risks in the Barents Sea Region”.

13. Transport of radioactive fuel, materials and waste; and
14. Mining of radioactive raw materials, i.e. lopartite near Lovozero.

Based on the list there are three risky hotpots with relatively high probability of serious accident or environmental hazard: first, a reactor meltdown of the Kola Nuclear Power Plant; second, accidental radioactive releases from the storehouses of spent fuel and the old storage vessels, or in transportation of radioactive material; and third, accidental releases from the nuclear reactors of the decommissioned submarines in the naval bases or shipyards.

Further, besides the contributions by the nuclear weapons testing in the atmosphere at Novaya Zemlya the present radioactive contamination in the Barents Sea region mainly reflects trans-boundary pollution and a transfer from sources outside this region, namely: Firstly, most radioactive contamination in Arctic lands is either from atmospheric nuclear explosions in other regions contributing to the global component of the radioactive fallout, or the radioactive deposition after the Chernobyl accident in 1986 in some regions. Secondly, major sources of radio nuclides in the Northern marine environment are on one hand, Russian nuclear installations in Siberia (Mayak in Chelyabinsk, Tomsk and Krasnoyarsk), and on the other, and even more, discharges from the reprocessing plant of Sellafield (UK) (and partly from that of Cap de la Hague in France) with direct environmental risks when leaking and indirect ones due to transportation of used nuclear fuel and plutonium both in and out. For example, technetium-99 leaks from Sellafield to the Irish Sea and moves from there through the North Sea and along of the Norwegian coast into the Barents Sea and further to the North, thus, indeed, radioactive pollution in the Barents Sea region is also coming from outside the region.

At certain sites on land and in sea significant contamination has been recognized as a result of explosions, accidental emission or problems at radioactive waste depositories. In some cases radioactive contamination affects the conditions at local and regional levels like for example, a naval base in Andreeva Bay with storages full of used fuel and other radioactive wastes. The actual and potential risks, associated with these sources for radioactive contamination and significant radiological consequences, in some cases mainly affects the conditions at local and regional levels, yet in other appear to be far reaching, and of considerable concern for large parts of the Arctic region and North Europe.

The most areas of the Kola Peninsula are, however, at present clean in comparison to some other parts of Europe. Actually, the Barents Sea and the Kara Sea largely exhibit very low concentrations of radioactive contamination like for example, Russian scientists recently said that the Barents Sea is one of the cleanest seas of the Arctic (ITAR-TASS 2002). The situation can, however, easily getting worse as the amount of nuclear waste is increasing while efforts to manage the waste are inadequate, and already an uncertain and unsafe situation in the region is a threat both to the people and the environment with socio-economic consequences, and of considerable concern for a larger area. All in all, the nuclear problem of the Barents Sea region is complex and complicated due to several special features, which are listed above, that are typical characteristics of the Barents Sea region. They are not necessarily all exceptional, but the fact that the case includes all of them is rather unique.

First, the Cold War legacy: One particular reason for the complexity of the nuclear problem in this remote region is simply the Cold War period with military competition and arms race between the Soviet Union and the USA. In the Barents Sea region, especially in the Kola Peninsula, the Cold war legacy consists of military structures,

deployments, patterns of military action and also deterrence via nuclear weapons and facilities including nuclear accidents, which are a relevant part of the =hidden= agendas of the super-powers.

The second feature is that it is also a Russian problem. In the background there are on one hand, Stalin=s modernization process, which included the fact that the Soviet Union located its most toxic and hazardous industries in the North, and on the other hand, the high important geo-strategic location of the Kola Peninsula. This all means that the problem includes both highly relevant environmental and socioeconomic influences in the Russian side and possible serious trans-boundary impacts. Therefore, from the point of view of the people and societies of the region the problem solving needs deeper regional cooperation by regional and local actors which would require a broader understanding of security.

Third, military and civilian processes: A special feature of nuclear affairs in general, and also in this nuclear problem, is that the issue is connected to national security, and underlying this relationship is the fact that the nuclear problem is mostly related to activities within the military system. Civil-military relations were relevant, and mysterious for the West, in the Soviet Era, and the Soviet legacy is still partly there making these relations relevant to study for example, what kind of civil-military relations there are in the Kola Peninsula like for example, the special Soviet/Russian phenomenon of closed cities (seven of them in the Murmansk Region and the Arkhangelsk Region (for more details see Hönneland and Jörgensen 1999). The military establishment has still a tendency to “solve” environmental problems by denying their existence, and in Russia there have been efforts to separate the military and non-military agendas which does not work if serious environmental hazards would like to be solved.

Fourth, as discussed earlier behind are different interpretations of security, and a principle difference between the Russians and the Nordic citizens how to interpret a threat / risk: What is taken as a threat in the Nordic societies located just beside Russia and a risk by experts, is not necessarily taken as a threat within the Russian societies in the region, where people are not afraid, because a life is simply dangerous (e.g. Heininen 1999; HS 29.9.2002). A bit different picture is given by the analysis by Nina Häyrynen (2003) based on a study of material collected from Russian newspapers addresses the question of the perceptions of security in the Russian public discourse and the environmental threat posed by the case of the Kursk submarine. The nuclear problem, as well in general environmental influences of military activities, was widely discussed in Russia due to the accident of the modern nuclear submarine Kursk. Mainly military and state officials in addition to some ecologists have contributed to the discussion, the former first denying the risk of radioactive contamination and then, in connection with the debate on the raising of the Kursk=s wreck, emphasizing it.

Fifth, international trade in nuclear waste: In 2000 the Russian Duma accepted a new law that allows the import of nuclear waste from abroad like for example, Germany, Japan, South Korea, Switzerland and Taiwan; the old law forbad the import of foreign radioactive materials for storage and burial on the Russian territory. The Russian Ministry on Atomic Energy (Minatom) has officially informed that the money received from the storing of imported radioactive wastes - estimation of $ 20 billion - will be allocated into to build proper store houses for nuclear wastes and to remediate land that has been polluted by radioactivity. The new law was opposed by environmental organizations, Russian Nobel Prize-winners and Jabloko-party, and many protests around Russia for example by arguing that the received money “go into building new nuclear power plants,

factories for reprosessing spent nuclear fuel, and other environmentally and politically dangerous projects (Popova, Yablokov, Kriusanov and Gale).

Sixth, multidimensional processes: There are many actors, both Russian and non-Russian, who are interested in and active in nuclear safety issues and other trans-boundary and =soft= security issues like for example, organized crime, smuggling of drugs, diseases and trafficking in human beings (e.g. Pursiainen 2001). This has meant on one hand, different and multidimensional, both civilian and military, processes with bureaucracy, and on the other hand, many steps in international cooperation first, to recognize the nuclear problem and second, to include it as a part of international negotiations on nuclear safety. A part of these multidimensional processes is the fact that the nuclear complex of Sellafield, although its bad reputation as a leaking nuclear plant has been known for decades, did not become an issue of open discussion in international meetings before the beginning of the 21st century through many protests and international pressure for example, from Ireland, Denmark and Norway toward the government of UK to stop the leaking of radioactive pollution and close the Sellafield nuclear complex.

Final, there has also been some sort of slowness of progress: By January 1, 2004 a total number of 117 nuclear submarines have been decommissioned and 60 of them have been dismantled, and 57 more nuclear submarines are waiting for dismantling, 38 subs of them contain spent nuclear fuel in their reactors (Ruzankin 2000). This means that about 18-20 nuclear submarines are dismantled each year and in addition, plus there are all the nuclear wastes and spent fuel in storages.

As a conclusion, the nuclear problem of the Barents Sea region is a multi-functional and complicated issue and to gain nuclear safety is complex in the sense that issues are interconnected, frameworks are overlapping, scales are oscillating, and the more interaction there is, the more coordination is needed. Indeed, efforts to try to solve the problem have started, and this has required a political will from the Russian side to be open for international cooperation, and correspondingly, technical and intellectual assistance and financial support from the international community, especially from other European and Arctic countries.

6 Discourse on potential changes in problem definition

Based on the above-mentioned arguments there has been a change in problem definition on security and nuclear safety, especially in the relationship between the environment and the military. As a result of this, nuclear safety related to the military has become onto the political agenda of unified states and IGOs. In the Kursk case this shift was best seen on the practical level, when foreign help offers were accepted by Russia. Reasons for this deal on one hand, with the end of the Cold War period and the advanced military technology. On the other hand, the environment has become more in a focus and there is more and active international cooperation for environment protection. At the same time when the issue became onto the political agenda, there was, and partly is, some sort of euphoria to forget the miserable topics of the Cold War period. These conclusions show that the happened change in problem on security much deals with environmental governance.

Though it is possible to argue that the change in problem definition has happened and is thus evident, it is not clear how real it is. Not at least in the case of the Kursk accident due to on one hand, old patterns of thought such as a strong Aus versus them@ dichotomy still seem to remain in some respect. On the other hand, although, the environmental threat posed by the Kursk=s nuclear reactors was an issue of some concern, one may expect that if the concern on nuclear safety is serious the issue would have been linked to other environmental problems, too. Thus, the Kursk case indicates that in general it is too early to analyse if the change in problem definition in the Barents Sea region is real or tactical (Heininen and Häyrynen 2002). Correspondingly, it is not clear how permanent the change is for example, there is not a real cost and benefit calculation of environmental influences of the military. Further, there is no real disarmament, and arms control is not under serious negotiations, but unlike arms race continues. Thus, there is a challenge both from the point of view of international negotiation processes on nuclear safety, and when trying to implement the concept of comprehensive security (including collective environmental and social security) by guaranteeing nuclear safety international cooperation is required.

There is no clear emphasized relationship between nuclear safety and energy security in the North as matters of security, in addition that they both are implementations of environmental security. However, in practice there in the Barents Sea are projects going on to clean dumped nuclear wastes before starting oil and natural gas drilling in the shelf. More cleaning activities are also needed on shore the more space for oil and gas terminals is needed on the Kola Peninsula. These activities, and may indicators of the (still) high strategic position of oil in world market and possible reflections of a more global crisis, which might start for example in Central Asia, in Northern regions due to the military facilities of the major nuclear powers there. Thus, if nuclear safety was one of the main paradigms on the discourse of Northern environmental security and one of the main fields

of the intergovernmental cooperation for Arctic environmental protection in the 1990s, then there are several indicators saying that on one hand, energy security and on the other hand, impacts of climate change might become those of the two first decades of the 21st century. Here I will concentrate on climate change as security aspect.

Impacts of climate change, i.e. rapid warming of climate (e.g. ACIA 2004), include for example, crushing building due to melting permafrost (e.g. in the Russian North), melting of sea ice and followed from this increasing marine transport and access to resources, causing multiple influences to people and ecosystems, challenging a state sovereignty like that of Canada, and the conscience of the fact and its growing risks causes human feelings such as uncertainty, insecurity and even feeling of guilty (the last one is possible to ignore by pointing that others are guilty). There are already discourses on impacts of climate change on environmental and human security of Northern regions like for example, the term of food security indicates (e.g. Paci et al. 204), and discourse on influences of energy security have started like for example, on impacts of increased oil and gas drilling and transportation to the environmental security of the Barents Sea region.

Followed from this my hypothesis is that there might be another change in problem definition on security due to climate change. Evidently rapid global warming represents an environmental category of global problems and concretizes global changes. It can also be interpreted as a threat and to implement a risk society and thus, represent human / peoples' everyday security. And if so, then it needs human responses and requests activities such as immediate adaptations in many levels in economics, politics and governance.

The conclusions on the change of problem definition on Northern security, which are mostly coming from the case study of the nuclear problem of the Barents Sea region on one hand, and on the other, the first sights of the security dimension of impacts of climate change in the North and tentative evaluations, or maybe speculations, on energy security open a new challenge and complicated issue, how and by whom to define and conceptualize security in the circumpolar North based on a region and from the point of view of its citizens and authorities. Here regional security does not mean traditional security of an international region based on intergovernmental cooperation, or a political or military union, but comprehensive security of a distinctive cooperative region based on both international and inter-regional cooperation. Behind this is thinking that security issues should be a part of an agenda of every international negotiation process also dealing with regional development, which would give an opportunity to discuss on democracy, identity and culture as a part of every day's security of citizens, or civic security as one of the definitions of security. (Heininen 2007, 215-1216 and 232-235)

All this is both relevant and possible in regions with a rich tradition of regional and local cooperation. This is much the current geopolitical situation of the western part of the Eurasian North due to the real achievement of the region-building of the Barents (Euro-Arctic) Region by the Nordic countries and Russia to decrease tension and increase (regional) stability by confidence-building in the former "military theater". It is interesting that when launching the initiative for the Barents cooperative region the Norwegian government used the rich tradition of regional cooperation as a metaphor for international cooperation in the post-Cold War situation (e.g. Stoltenberg 1992). Today the Barents Region is both a success story to manifest region-building as one of the main themes in the post-Cold war Northern geopolitics and an example for conflict prevention in hegemony competition on natural resources, and finally a "workshop" for to build regional security.

In Northern regions there is not yet anything called a “regional” security, which is without an exact theoretical definition, but the discussion has already started (e.g. Heininen 2007). Regional security, or security defined from the point of view of a distinctive region, is an alternative approach to (comprehensive) security in circumstances where changes, threats / risks and challenges like nuclear safety, energy security and impacts of climate change are present. In this context a region with its people and regional and local actors is the subject of security, not a state which is the main (and only) subject in traditional security. This is one more reason to wait for another kind of change in problem definition on (Northern) comprehensive security which is my hypothesis as a follow up to the discourse of this paper.

There is, however, regional stability as a precondition for security defined from the point of view of a region emphasizing regional and local actors as subjects of security. This stability has already shown how useful it might be both for the region and its actors per se, and for the rest of the world meaning the BEAR as a laboratory or workshop for lessons to learn and for conflict prevention. Followed from this the next question as well as a challenge is, how could this regional stability be kept under the pressure of global security problems and global changes going beyond (traditional) security, when a region, like for example, the Barents Region, continues to play a role as a reservoir of resources for the rest of the world like the Barents Region?

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Emissions trading – market, hierarchy or governance network?

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Abstract

Norway implemented its emissions trading system 1.1.2005. The paper analyses how different governance modes, like hierarchy, market and networks, have an impact on which forms of knowledge that occur and dominate in important decision-making processes in the Norwegian emission trading system. The analysis is based on data from the Norwegian case study in the European project "Governance for Sustainability (G-FORS)", funded by the EU 6th Framework Programme. In the project an analytical model for the study of governance for sustainability is developed, focusing on the synergy between new governance modes and different forms of knowledge, taking into account the rapid changes in the knowledge society. The project identifies a range of different forms of knowledge and analyse how these different forms of knowledge may interact in the context of particular governance arrangements to produce `reflexive knowledge' and contribute to a more legitimate understanding of sustainability.

1 Introduction

The right to emit carbon dioxide and other greenhouse gases into the atmosphere is in the process of becoming a scarce commodity. As public awareness about climate change seems to be rising, and the commitment period of the Kyoto protocol is drawing close, the pressure for effective political action is mounting. Emission abatement policies are on the agenda on all levels, from the upcoming G8 meeting to the board room of a small enterprise in central Norway, which is one of the empirical cases that will be presented in the following.

In carbon-intensive societies, where transportation, industry, heating and other basic functions to a large extent is based on the consumption of fossil fuels, the economical and political costs associated with effective political action may be very steep. The flexibility mechanisms of the Kyoto protocol were introduced to address such problems. By commercialising emission rights in the context of a highly regulated yet market-based scheme such as the emissions trading system, emission cuts should ideally be made in the least costly locations – thereby minimising the overall costs.

The use of market-based mechanisms in public government is hardly groundbreaking in itself, following two decades of "New public management" reforms. Even so, the quota system is quite a novelty. It is actually difficult to think of a very similar type of policy measure having been implemented in any sector of government. Following this, analysing the quota system is interesting from a more general perspective, besides assessing its effectiveness as a climate policy measure.

CO_2 emission abatement can be seen as a problem of social coordination. The complexity and costliness of this coordination problem puts high demands on the coordinating mechanism and the institutions set up to implement it. Introducing tradable emission quotas, the Norwegian government apparently relied on the market as the coordinating mechanism – or "mode of governance" – of choice. Yet preliminary findings from our ongoing study of this system have revealed several points of divergence between the actual quota market and this generalised mode of governance. In this paper we will discuss the different types of coordination mechanisms, or modes of governance, that is characterizing the Norwegian emission trading system. By analysing the system we intend to reveal how traces of other modes of governance, notably hierarchy and networks, modify and supplement the supposedly market based coordination mechanism. We will argue that the quota system is in fact less of a "market" than meets the eye, and a good deal more like regulation or even negotiation. If true, this contention may have consequences for the systems' ability to provide social coordination in the form of cost efficient emissions abatement.

As noted, the issue of CO_2 emission abatement is characterised by complexity – an argument which will be elaborated upon below. A key dimension to this complexity has to do with knowledge. Whereas uncertainties concerning the effects on the climate from emissions from human activities prevails (although seemingly with decreasing political

impact as evidence of the relationship is mounting), actual abatement decisions require a compound of political, economical and not least technological knowledge. For instance, in some cases CO_2 emissions may be reduced by switching to alternative technologies or energy forms, but the availability and costliness of such options varies greatly between the industries. Such technological differences means that uniform policy measures may have different impacts in individual lines of business. A market-based mode of governance, such as the quota market, would lead to a gradual shift to activities involving less CO_2 emissions as some enterprises make substitutions and those who can't reduce or terminate production. In terms of climate change policy this is not in itself a problem, but political considerations (such as employment in challenged regions) may require a more differentiated approach. But if governments wish to treat various lines of business differently to accommodate such considerations, for instance by choosing a mode of governance based on direct regulation, great demands would be put on the technological knowledge available to the pollution authority.

In short, we will argue that the knowledge issue has profound implications for the choice of governance mode. Our analysis of the operation of the quota system will highlight the way it requires decisions involving a variety of knowledge types. Our main empirical focus will be on the relationship between the Norwegian Pollution Authority (SFT) and individual companies subsumed under the quota system, as well as on the strategic choice processes within those companies. For SFT, the knowledge issue partially has to do with monitoring – deciding the requirements to each enterprise for measuring and reporting emissions – but also about assessing this information and deciding the volume of quotas allocated to each enterprise each year.[1] As the lines of business made subject to the quota system vary a lot in terms of production technology, the knowledge issue is no small matter. For the individual enterprises, the knowledge issue is particularly relevant in situations with shortage of quotas. These companies have to choose between buying additional quotas, shifting to alternative technologies and/or energy forms, or reducing production. These decisions proceed based on technological knowledge (availability of options), political knowledge (interpreting signals concerning climate policy developments) and market knowledge (price sensitivity, degree of competition and so forth).

Following a brief introduction of the Norwegian quota system, the issue of social coordination will be discussed based on general terminology. After this, empirical evidence concerning the functioning of the quota system will be discussed in light of the theoretical concepts.

The paper is based on ongoing research conducted by the authors as part of the Norwegian case studies for G-FORS (Governance for Sustainability), an international comparative project funded by the EU 6th framework programme for research, under priority 7 – "Citizens and Governance in a Knowledge-based Society".

[1] For most enterprises, this volume was actually decided in the first operational year of the system. However for some enterprises, the volume of quotas may be modified annually. These and other practical aspects of the system will be presented in the following section.

2 The Norwegian quota system

At the time of writing, the Norwegian quota system has been operational for almost two and a half years. Norway introduced its emissions trading system in January 2005 (Ministry of the Environment, 2004; Parliament, 2004). The system is managed by the Norwegian Pollution Control Authority (SFT). Emissions permits (quotas) are issued annually by this agency, based on applications from enterprises that are made subjects to the arrangement. Applications are granted based on criteria laid down in the law on climate quotas.[4] The permits for each individual enterprise are calculated on the basis of average emissions in the period 1998-2001 (the *baseline period*). Applications from enterprises established later that January 2001 are treated based on estimated emissions.

The deadline for applications for the period 2005-2007 expired January 15. 2005, and a total of 51 enterprises were granted emission permits. The total number of emission quotas were set to 20,5 million, corresponding to 95% of average emissions in the baseline period for these 51 enterprises. As a consequence, the enterprises have to either reduce their emissions, or buy quotas. The enterprises have individual accounts in the *quota registry*, which keeps track of all transactions of quotas.

Although this emissions trading scheme was established unilaterally by the Norwegian government, it is set up to be compatible with the greenhouse gas emissions trading scheme of the EU. Both systems were set up as pilot schemes, anticipating the introduction of the international emissions trading scheme that will be established in the Kyoto period. Quotas issued by the EU scheme are valid in Norway, and may be purchased by Norwegian enterprises for use alongside their Norwegian quotas.[5] However, the opportunities for quota trading is limited for the Norwegian enterprises, because they are only allowed to purchase European quotas, not to sell their quotas to European enterprises. The "project-based" mechanisms of the Kyoto protocol (Joint Implementation and the Clean Development Mechanism) are compatible with the Norwegian scheme. As a consequence, Norwegian enterprises may obtain quotas by making investments in emissions reducing projects in other countries.[6]

In order to develop a quota system compatible with that of the EU Norway did not include all the sectors and branches of industry emitting CO_2 in the quota system. Among others, the offshore industry and the aluminium industry were exempted from the quota system. As a consequence, only 10 – 11 per cent of CO_2 emissions from Norwegian sources are covered by the Norwegian quota system from 2005 – 2007.[2] From 2008 the Norwegian quota system will be revised, and will probably be more directly linked to the European quota system. The new system will be regulated by the revised quota act, which will probably be decided upon by the Parliament by the end of June 2007.[3]

[2] Ot.prop. nr. 66 (2006-2007)
[3] See the following white paper: Odelstingsproposisjon nr. 66 (2006-2007) om kvotesystemet 2008-2012.

3 Social coordination/modes of governance

Making good on its Kyoto commitments is a challenge of some magnitude for Norway as a society, due to the fact that emissions have been increasing steadily since the ratification of the agreement. Emissions from Norwegian sources increased by 8 per cent in the period 1990-2006, whereas the Kyoto commitment is to limit this increase to 1 per cent.[4] Furthermore, in light of recent IPCC projections future obligations will probably by far exceed the Kyoto commitments. Although Norway's vast reserves of foreign currency allows substantial purchases of quotas from abroad, actual cuts in emissions will also have to be made domestically. This issue is currently a hot political topic in Norway, not least in government.

The key question is how to ensure sufficient emissions abatement as efficiently as possible. In the narrow sense, cost efficiency would demand that emission cuts are made in the least costly locations thereby minimizing the aggregate costs to society as a whole. In this context however, a narrow definition of cost efficiency would seem insufficient. A number of considerations modify the prominence of the aim of maximizing aggregate cost efficiency. These include the need to protect industries exposed to international competition. It has been argued that the exemption of the light metals industry from the carbon tax as well as from the quota system should be explained in light of such arguments (Vevatne et al, 2004, Klausen 2005). The government-appointed Quota Commission (2000) noted that some aluminium plants in Norway are located in rural areas, in places with an over-specialised economic base and limited opportunities for alternative activity. As they are often cornerstone-enterprises in their communities, termination of activities could in some cases have devastating consequences.

The conclusion is firstly that cost efficiency for society as a whole cannot always be given priority. From this follows that the allocation of emission cuts is a fundamentally *political* issue, having to do with making priorities between emission abatement, growth, competitiveness, employment and other potentially diverging concerns. The question about localisation of large emitters adds a territorial – local and regional – dimension. Other political concerns include fairness (who should shoulder the burden), predictability (a prerequisite for making capital investments) and legitimacy (how to gain acceptance for abatement measures).

To simplify, the problem of climate policy is basically to co-ordinate the actions of a of high number of actors – corporations, households, public agencies – so as to achieve abatement while simultaneously minimizing costs *and* managing the broad array of political concerns. The potential adversity between these considerations adds to the complexity, as do the fact that the sources of these emissions are highly dispersed throughout society.

[4] Source: Norwegian Pollution Authority

One generalised approach to the management of such problems is to address them as problems of social coordination, or *governance*. Theorists have identified a very limited number of methods for societies – be they families or international organisations – to coordinate in order to achieve collective action. We shall refer to these as *modes of governance*. The four generic modes of govenance identified by Polanyi (1944) may be supplemented with a fifth, in line with the literature of recent years. In the discussion to follow, this conceptualisation will be used to analyse the nature of the quota system.

(1) *Hierarchy* is characterised by centricity and vertical power distribution. Desicions are made in the centre, communicated in the form of rules and directives, and implemented through a vertical chain of command. Formalised procedures and specialised organisational structures are hallmarks of this form of co-ordination.

(2) *The Market* is a mode of governance characterised by decentralisation and self-regulation. The price mechanism is the mechanism of self-regulation and the sole means of communication between the (autonomous) actors. Prices will be set so as to balance supply and demand, and suppliers and demanders will adjust their behaviour accordingly. In the ideal type market, no single supplier or demander is able to affect prices.

(3) *Associations* or *federations* are formalised institutions for voluntary co-ordination between autonomous actors. It is a mode of coordination characterised by symmetry between the participants for the pursuit of the common good. This form has been developed in the shape of formalised cooperation buildt on trust, reciprocity and voluntary cooperation for solving shared problems. Examples include guilds, partnerships, mutual companies and co-operatives.

(4) *Community* or *house holding* is a mode of governance used for coordinating production and consumption in a closed group or household. It is a system of selv-substenance originally developed by societies of hunters and gatherers, and further developed during the advance of agriculture. In contemporary society it is used by self-reliant communes or communities, and of course in regular families. Households are communities governed by strong traditions, norms and social control, in many cases based on shared blood.

As the governance modes 3 and 4 are of limited relevance as policy instruments, we will in what follows focus on hierarchies and markets – plus an addittional mode of governance prominent in the current debate. In recent years, notions concerning a fifth mode of governance has gained considerable attention in the literature. The basic contention of this perspective is that policy development and implementation to a decreasing degree is the prerogative of the state and its institutional system. The increasing complexity and fragmentation of modern-day societies, marked by complex patterns of interdependence and widespread diffusion of power and resources, decreases the coordinating capacity of the public sector. A growing body of literature points rather to empirical evidence indicating that policy is developed and implemented through broad processes in society, blurring the boundaries between state and society. We shall refer to this mode of governance as *network governance.*

(5) *Network governance* has been defined as “self-organizing, interorganizational networks characterized by interdependence, resource exchange, rules of the game and significant autonomy” (Rhodes 1997:15). Key characteristics of network governance include informality, self-regulation, non-hierarchical relationships between the participants and a blurring of the distinction between different spheres of society, notably that between the public and the private sector. *Informality* is a strategy to counter the cumbersome and time-consuming tendencies of coordination through formal institutions.

Self-regulation denotes the need for flexible coordination determined by the actors involved, and the absence of a centrist organising authority. Because network governance is a form of voluntary cooperation between operationally autonomous but mutually interdependent actors (Schmitter 2002), the relationship between the participants is basically *non-hierarchical*.

Polanyi presented his four modes as a part of his discussion on the development of economic organisation in society, based partially on historical and anthropological observations. The models have commonly been used to conceptualise the distinction between seperate spheres of society. Hierarchy has been associated with the state, as it is the basis for the traditional model of representative government: Hierarchical government authority is legitimised by the ballot and excercised through the rule of law and the state's monopoly on coercive power by a vertically organised administrative apparatus funded by taxation. Correspondingly, markets were associated exclusively with the coordination of private sector production and consumption. However, as generic forms, the modes of governance may be used to characterise institutions regardless of sectoral affiliation. Firms are for instance commonly organised as hierarchies, although they operate in markets. Following the diffusion of "New Public Management" reforms in the recent decades, states often use market-like arrangements to implement public policy. As for network governance, a basic assumption of this perspective is that the distinction between sectors such as the state and the market is becoming irrelevant.

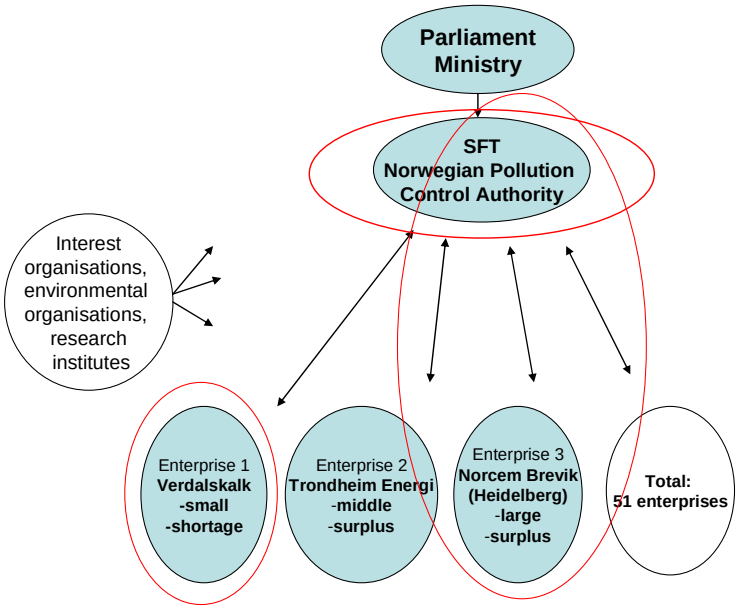
The market logic of a system with tradable CO_2 emission quotas is that the emission reductions should be done where it is least expensive. For the market mechanism to function in this way, there must be a certain amount of purchasers and sellers, a certain amount of transactions, and a price formation process. If this is the case, the price will ideally balance the supply and demand for quotas, and the system will ensure that emission cuts are made where it is least expensive.

4 Analyzing the Norwegian quota system

Turning to preliminary findings from our case studies in the project "Governance for Sustainability" (G-FORS), three arenas are being studied. The purpose is to identify the governance modes and the knowledge types to be found in the decision-making processes at these arenas. The arenas are illustrated in the figure below.

4.1 Action arenas

Figure 4.1 *Presentation of the action arenas studied in the Norwegian case*



a) The first arena: The development and implementation of the Norwegian Quota system (national level)

On the national level our focus has been on the decision-making processes in the Norwegian Pollution Control Authority (SFT) on how the rules in the Quota act are to be

implemented. SFT is responsible for allocating emission quotas among the enterprises subsumed by the system, and for making decisions concerning the implementation of rules and regulations. These decisions include deciding the methods for measuring of emissions – a tricky issue due to the fact that the enterprises use a number of different production technologies, each with their own set of technical particularities. As will be shown, the system puts high demand on the technological competence of SFT.

As noted, the Norwegian quota system has been operational from January 2005, and will last until April 1st of 2008. All transactions must be carried out prior to this date. The trading scheme is set up to be compatible with the EU system. Enterprises may purchase quotas in the EU, cancel these in the EU and get credited in the Norwegian system by presenting the receipt. However quotas from the Norwegian system may not be sold for use in the EU. The volume of quotas allocated to each individual enterprise were calculated based on average emissions in the period 1998-2001 (the *baseline period*), while permits from enterprises established later that January 2001 were decided based on estimated emissions. The enterprises were granted a volume of quotas totalling 95 per cent of their historical or estimated emissions. In 2005 the enterprises were granted annual emissions permits for the period from 2005-2007. However, SFT is authorised to alter the original decision every year, and so the enterprises cannot know for sure what volume of quotas they will receive the following year. Quotas are issued and cancelled annually, following this timetable:

- January: The enterprises submit reports on previous year's emissions to SFT, in accordance with the set measuring methodology.
- March: Quotas for the current year are issued by SFT.
- May: A volume of quotas equal to *previous* year's emissions are cancelled by the enterprises.

Our focus of study has been on the procedures for calculating quota allocations and patterns of influence on these decisions.

All enterprises subsumed by the quota system have been set up with an account in the National quota registry, a "bank" for quota trading managed by SFT. Quotas allocated by SFT are deposited on the accounts of each individual enterprise. The enterprises cancel these quotas by asking SFT to transfer a specific amount of quotas to a separate cancellation account. Because quotas for the current year are issued prior to the deadline for cancellation of quotas for the previous year, enterprises may use the current year's quotas for covering previous year's emissions – thereby postponing emissions abatement or quota purchases.

b) The second arena: The decisions taken in three Norwegian case enterprises

The individual enterprises subsumed under the quota system basically face a choice between three strategies in response to demands posed by the quota system:

- Changes in production volume
- Altering production technology or energy form
- Purchases or sale of quotas

Three companies were selected for case studies. These represent different branches of industry – energy, cement and chalk production. We chose enterprises of different sizes, in terms of turnover and number of employees, because of the assumption that small

enterprises may find it harder to manage the quota system than large enterprises with specialised, high-capacity administrations. Furthermore, we wanted to include enterprises with surplus of quotas as well as enterprises with shortage, in order to see how they utilize the market opportunities. The two large enterprises chosen have a surplus of quotas, while the small enterprise has a shortage of quotas.

Trondheim Energy Remote Heating Company (Trondheim Energi Fjernvarme, TEV):

TEV provides remote heating to 5000 houses and 450 enterprises in the Trondheim region, covering approx. 30 per cent of the region's energy use. The company has 70 employees. Remote heating is produced using a wide range of energy carriers; bio fuel (waste), gas, propane/ butane, electricity and oil. Whereas gas and butane are covered by the quota system, the other energy carriers are not. In 2008, 70-80 per cent of the energy will be produced by bio fuel. The company is owned by Trondheim Energy, which is in turn owned by Statkraft – a state owned company which is Scandinavia's third larges energy provider.

Norcem Brevik AS:

Norcem Brevik is producing cement. In cement production, powdered limestone is exposed to intense heat in large kilns. This process releases CO_2, which is an essential aspect to cement production. Two thirds of the CO_2 emissions are caused by this decomposition process, and one third is caused by the energy carriers used for heating. The cement industry is responsible for substantial emissions considering the industry's modest size – 5 per cent of the total level of emissions in Norway. Norcem Brevik AS has increased their use of bio-fuel for heating in this process, in order to reduce their emissions.

Norcem Brevik AS is part of an international enterprise, the Heidelberg Company. The Heidelberg Company also has divisions in Sweden, the Baltic countries, Germany, Great Britain, among others. The Norwegian branch has around 450 employees.

Verdalskalk:

Verdalskalk is producing chalk for use in drinking water, food production and other purposes. Chalk is manufactured in a similar way as cement. Powdered limestone is decomposed using heat, in order to release CO_2. Two third of the CO_2 emissions are caused by this decomposition process, and one third is caused by the energy carriers used for heating. A crucial difference between cement and chalk production relates to the purity of the end product, especially food grade chalk such as is produced by Verdalskalk. Because the end product has to be cleaner than cement it is impossible to use bio-fuel (waste) in the heating process. Verdalskalk has 45 employees, and is owned by Franzefoss – an international company.

c) The third arena: The interaction between SFT and the enterprises. By this we mean interaction and contact between enterprises and Norwegian Pollution Control regarding how the rules are to be implemented and specified, the annual report on emission and the distribution of quotas. Also other actors interact with SFT regarding these subjects (interest organisations of the industry, environmental organisations).

4.2 Analysing the action arenas: what *governance modes* characterize the Norwegian quota system?

To what extent has the quota system functioned as a *market* so far? Preliminary findings from our study suggest that empirical realities confirm hardly at all with theoretical expectations.

Firstly, although transactions involving the EU system seem to have been absent so far, there is apparently no price formation process independent to the Norwegian quota market. Trading has taken place mostly by phone, between buyers and sellers agreeing to use EU market prices in stead. From a theoretical perspective this is highly unfortunate. Prices in a functioning market provide a balance between supply and demand, and this balance results from costs and demand intensities particular to the market in question – both of which may well be different in Norway from in the EU. For instance, if EU prices are artificially high compared to the actual balance between supply and demand in Norway, some enterprises with quota shortage may choose to reduce or terminate production although there are enterprises with a surplus of quotas that would profit from selling these for a price acceptable to the enterprise with shortage.

Secondly, and related to the first issue, very few enterprises have actually engaged in trading. One of the reasons for this may be that the quota system seems to have become rather less restrictive than originally intended. For many enterprises, it turns out that the baseline period used to allocate quotas was set rather favourably. These enterprises were apparently doing very well in the period 1998-2001, and so they have accumulated a surplus because production volume has been lower in the subsequent years, regardless of the climate issue.

Thirdly, it should be noted that the very limited number of enterprises subsumed under the trading scheme may in itself be an impediment to the development of a functioning market. Because it has been difficult (if not impossible) for the enterprises to trade quotas with European actors, the market has included only the 51 Norwegian enterprises. As a respondent stated:

> "In Norway, it is only one real buyer and seller, Statoil need quotas and we have enough of quotas. This is not a real market. In Great Britain they consider 3000 enterprises to be too few actors to be a real market – and we only have 51!"

Fourthly, the quotas for most of the enterprises – 46 of 51 – were issued on the basis of exception from the procedures and rules described in the Quota act (Ot.prop. nr. 66, 2006-2007, pp 11).

Nevertheless, even if the Norwegian quota system has failed to function as a real marked, we can trace some effects of the market-based mechanisms of the system in the enterprises we have studied. Two of the enterprises have included the prices of CO_2 quotas (the European prices) in their cost estimates. This implies that the decisions about which type of fuel (energy carriers) to be used in the production are based upon knowledge about the prices in the European quota market (in addition to the more common types of knowledge, like knowledge about the prises of types of fuel, the effectiveness of the different types of fuel etc).

As noted, the total volume of quotas allocated in the system was set to equal 95 per cent of emissions from the enterprises in the baseline period, alternatively 95 per cent of expected emissions. Accordingly, the 5 per cent gap was meant to encourage emission

cuts. The companies can reduce their emissions in several ways – by technological improvements, for example by introducing Best Available Technology (BAT), by reducing production or by choosing other types of energy carriers. The respondents report that already in the 1990ties the expectation of a CO_2 emission trade market (both the preliminary market from 2005-2007, and an integration in the European market) had great impact on the long term planning in the enterprises. As one of the respondents illustrated:

> "We do nothing if it doesn't lead to economic profit. We introduced bio-fuel in our production because it was the most in-expensive in the long run. And we also anticipated the CO_2-effects, and that a future quota system would increase our savings".

However, several of the 51 enterprises have a surplus of quotas, due to the use of new technology or other energy carriers after the baseline period. In some of the case-enterprises, we have also seen that the quota system leads to an unintended effect, in that these enterprises get an incentive to actually increase their production and thereby also their emissions:

> "How we will use the quotas? We will increase our production, that is our objective, thereby the level of emissions will remain constant. If we replace coal with other types of fuel, we accumulate quotas. These quotas we can use to increase production."

To conclude, even if the Norwegian quota system builds upon market logic, the market does not seem to be a functioning governance mode in this case. The system can, at best, be characterized as a quasi-market. On the other hand, our preliminary observations indicate that other modes of governance may be of relevance in describing the quota system. Notably, there is a rather surprising element of direct regulation, which we would subsume under the heading *hierarchy*. By "direct regulation" we mean governmental intervention aimed specifically at individual subjects, partially contravening the logic of the market system. One such element pertains to the annual allocation of quotas. As noted, these allocations may vary from year to year and so some enterprises have received fewer quotas than they expected. On the other hand, some enterprises have retained their relatively high allotment of quotas even though emissions have been cut extensively. SFT makes these decisions based on an assessment of the individual enterprises, and this is an example of direct regulations.

In addition to hierarchical direct regulation, other observations seem to be primarily in line with expectations following a perspective on the quota system as *arguing and bargaining networks*. These seem to modify and supplement the supposedly market based coordination mechanism in several respects. The system apparently leaves ample room for negotiations, for arguing as well as for bargaining. Representatives of the enterprises report that bargaining has taken place both concerning the distribution of quotas and the methods of measurement.

First, *about the distribution of quotas*. Our preliminary findings indicate that the largest companies – and particular branches of industry – had great influence and superior negotiating positions when the Norwegian quota system was developed. Thus, according to some of our respondents, the quota system ended up being favourable for these branches and companies. In the interviews respondents from all three enterprises reported that defining the baseline period was subject for extensive discussions, and that the period chosen (1998-2001) was favourable for some of the largest companies. A respondent from a small company reported;

> "We can not conceal that in the 1990ties, when the premises for the Norwegian quota system were set, the Norwegian quota policy was influenced by the huge actors, like Hydro, Yara and Statoil, the iron industry and the metallurgic industry".

A respondent from another enterprise had the same impression:

> "Why was it that the years from 1998 to 2001 were chosen to be the baseline period? Because in those years, the large enterprises had the highest level of emissions. Is this a coincidence?

The largest case company, enjoying such "favourable treatment", confirm this impression;

> "[Interviewer: Were you able to influence the choice of baseline period?] It was a subject in the discussion we had with the authorities. And at these meetings we all were present, my company, Hydro – all the large companies. We were all expressing our opinion about this (the baseline period). In our case, originally I think it was 1991 that was meant to be the baseline period. But in that period one of our factories was rebuilt, and had no production. If this period had been chosen as the baseline period – it would not been favourable for us. This was the kind of concerns that were taken by the authorities".

However, small enterprises experienced that such concerns were not taken into account related to all enterprises:

> "The baseline period was a terrible period for us. Our parent company opened a new calcium carbonate incinerator in Finland, which resulted in a drop in our production. For us, the baseline period was extremely disadvantageous. .. The lime (calcium carbonate) industry is not big, even if you add the cement industry as well. And this industry has a production where we to a great extent use BAT (best available technology) - that is the most energy effective and emission effective technology. The problems are more severe in other branches, where they still use old technology. Their production development implies that the baseline period is very favourable for them…"

As for the *measurement of emissions* the negotiation space appears to be even larger. One of the companies reports that they were in negotiations with the Norwegian Pollution Control Authority about what measurement tools to use and the level of the measurement values;

> "In the verification process we had a lot of discussions with the agency, both related to measurement methods, procedures and values, standards and sampling. The agency has a pragmatic attitude. If they want us to have a measurement value which is 0,9, and we rather want a value which is 0,8 – the result is an agreement where the value is decided to be 0,85. We compromise. If they want us to change our procedures for measurement we respond; "Listen, this is the way we do it – it is very expensive for us to change the procedures". Since we are part of an international company, which is subject to EU regulations, the agency has accepted our procedures".

As this example illustrates, the Norwegian Pollution Control Authority accepted the measurement methods of this company, although they diverged from their original interpretation of the rules described in the Climate Quota Act. Another company reported about having had similar discussions about the interpretation and operationalization of the rules and regulations;

> ”We argued that our production was small in the baseline period – and that we have had an increase in our production, and therefore needed more quotas [than would follow from the levels in the baseline period], and SFT approved this. We also had a good dialogue regarding the interpretation of measurement values. 25 megawatt – is that per unit, per pot, per remote heating system? We got approval for our view, that a coherent remote heating system is a unit”.

The negotiation position of the enterprises seems to a great extent to be related to size and to the kind of knowledge the enterprises represent. Our impression from the interviews is that smaller companies do not experience the same room for negotiations. The relationship between the Norwegian Pollution Control Authority and the smaller enterprise seems to be somewhat less symmetrical than between the agency and the largest enterprises. As a representative from one of the large enterprises stated;

> “Of course large enterprises have a stronger position in negotiations with the Norwegian Pollution Control Authority. Size is important”.

The respondents from the smaller company reported that they saw the Norwegian Pollution Control Authority as bound by rules and regulations – and that the room for negotiation and manoeuvre was small, while the respondents from the large enterprises described the agency as being pragmatic and reasonable. Despite the fact that the agency appear to be more responsive to the suggestions and interests of the large companies, respondents from all three companies expressed *a high degree of trust* in the agency. They had several explanations;

> ”It is a difference between small and large countries, like Norway and Sweden, in the relationship between enterprises and the authorities. In Norway we talk to each other. We had representatives from the Belgium offices of our parent corporation visiting us. They were astonished and asked; how can you have a constructive discussion about measurement values and procedures with the agency one day and the next day they come and control the enterprise? But here in Norway, this is not a problem”.

Another respondent explained the high degree of trust in this way;

> “We trust the judgements of SFT, they are open for practical adjustments. They have a lot of knowledge about the enterprises; several of them have worked in the industry and in the relevant enterprises earlier – where they have gained knowledge and experience. They are both practitioners and theoreticians”

Here relevant experience and competence in emphasized. But what is more important for us is the fact that enterprises consider the Norwegian Pollution Control Authority to be “open for practical adjustments”, which implies they are considered to be responsive to arguments and suggestions from the individual enterprises.

4.3 Analysing the action arenas: what *knowledge types* are dominating/ represented at the different arenas in the Norwegian quota system?

According to the theoretical framework of the project, the choice of governance mode affect the types of knowledge represented in the action arenas, as well as the knowledge transfer between the action arenas. Thus, an important question is what knowledge types we can identify in the different action arenas, which knowledge types that are dominating and which are filtered away.

For the Norwegian Pollution Control Authority, the knowledge issue partially has to do with monitoring – deciding the requirements to each enterprise for measuring and reporting emissions – but also about assessing this information and deciding the volume of quotas allocated to each enterprise each year.

For the *individual enterprises,* different knowledge types are important. The knowledge issue has to do with the choice between buying additional quotas, shifting to alternative technologies and/or energy types, or reducing production. These decisions proceed based on technological knowledge (availability of options), political knowledge (interpreting signals concerning climate policy developments) and market knowledge (price sensitivity, degree of competition and so forth). An important observation in the case study is that different knowledge types are dominating at different levels of the enterprises. Another observation is the necessity of knowledge transfer between these different levels.

4.3.1 Institutional and political knowledge

The concept *institutional knowledge* refer to knowledge about the institutional rules of the game (rules, regulations, norms, procedures). *Political knowledge* describe knowledge about political values and signals, both at the national and the EU (or international) level.

The need that the enterprises have for political and institutional knowledge is not new. These enterprises have always been dependent upon governmental regulations, due to their production being polluting. In the interviews we got the impression that this subject is a major concern in the Board and among the leadership in these enterprises. As one leader of a Board stated;

> ”In remote heating companies – being so dependent on the general conditions – the Board is specially trained in having a focus of the political development. The general conditions are decided upon in the political system, so we are continuously observing what is happening in terms of changes in taxes and fees, and changes in the incentive structure.”

Nevertheless, the enterprises emphasize that the need for these knowledge types have become even more important the last couple of years, because they now observe a stronger political will - and face a more comprehensive regulatory system - to regulate the emissions of CO_2. The Norwegian quota system can be seen as a symptom of political will at international, European and national level – to impose severe regulations upon private enterprises in order to reduce the level of CO_2 emissions. Signals about changes in policy is important strategic information for the enterprises – in their daily work as well as in their long term planning. By reading the political signals, the companies are able to adapt more smoothly to the changing policies;

> ”All general conditions set by the government works as incentives for us... It is the signals from the authorities, including the quota system, which has stimulated us to use more bio-fuel. The signals from the authorities are strong, and these signals are crucial for our survival as a company – we have to adapt to them. When we make decisions in our company, we always ask ourselves if these comply with national climate- and energy policy objectives.” (CEO in one of the companies)

In the enterprises, the Board and the CEOs were responsible for obtaining this kind of knowledge. However, the enterprises that were part of huge international companies reported that the parent company had experts specializing at obtaining institutional and political knowledge;

> ”One element is political knowledge. You have to understand the system, both the national and the European. Our parent company knows a lot about the European system, and is engaged in Cembureau (the european interest organisation for cement industry). In this way we are continuously follow what is happening. The meetings in Cembureau keep me updated. Usually my company know a lot more than the Ministry of Environment of what is happening in EU on this field. Often the Norwegian Pollution Control Authority calls me to be informed.

The large enterprises in our study emphasized the importance of these types of knowledge, not only in order to adapt to changing policies, but also to be able to influence public authorities (the political levels) in the policy making processes.

4.3.2 Market knowledge

Knowledge about the market situation is of course essential for market actors. On all levels, the companies stressed the importance of this type of knowledge. In the interviews, the respondents reported that one of consequences of the quota system was that they now had to relate to a new market. It is no longer sufficcient to know the markets for raw materials, end products and so forth, in addittion they now have to know the (EU) quota market as well. The three enterprises all used the websites of Norpool to be updated on the prices on the European quotas, and they also used external consultants for this.

One interesting finding was that two of the enterprises combined the knowledge about these different typeds of markets, by adding the prices of quotas to the price of different energy carriers in their cost estimates when they were to choose types of energy carriers.

4.3.3 Technological knowledge

Technical knowledge about the production system is crucial for the enterprises. Whereas all the enterprises in our study are technology intensive, the enterprises that are part of large, international companies can benefit from huge research units as well as from knowledge exchange with sister companies. As this statement illustrate;

> ”[Interviewer; Do you use external experts when you are doing this research?] No, we do not ask any others to assist us. In this matter, it is a huge advantage to be part of a large international company. The parent company has all the expertise we need”.

Access to external technological knowledge gives these companies an advantage in adapting to the new regulations, because they are more capable of changing their production system to use other types of energy carriers, or to implement other emissions reducing measures. The smaller companies seem to be more dependent upon research done in other companies than their own, even if they also report of conducting their own experiments.

Another interesting finding is that the technological knowledge of these enterprises seems give them extra weight in negotiations with SFT. The interviews indicate that there is a knowledge exchange between some – but not all – of the companies and the agency. SFT seems to be particularly responsive when relating to knowledge provided by these enterprises. This is a cause for frustration among the smaller companies. Respondents from the smallest case-company lamented the relative lack of broad technical knowledge among national government politicians. In the opinion of these respondents, the Norwegian quota system reflects inadequate understanding among politicians concerning the important principles of production in all the different branches of industry.

> ”The problem is lack of knowledge among the national politicians. We accept the logic of the quota system; that they want to change undesirable behaviour. However, the problem occurs when there are no alternatives. In some branches of industry there are no alternatives, we already use BAT (best available technology). We are not able to reduce 72 per cent of our emissions, because this is caused by the manufacturing processes. And there is no other way to do it”.

While the current system is favourable for some of the branches of industry, it is not seen as favourable for their type of production.

One of the companies registered their frustrations concerning contradictory technological knowledge. The existence of contradictory results has been a major issue in the local public debate. Local political parties and environmental organisations refer to scientific findings not in line with the research that the enterprise rely on.

4.4 Summing up: How does the different governance modes accomodate for knowledge exchange?

The Norwegian quota system – stimulating processes where tacit knowledge is made explicit.

One of the findings from the empirical study is that the quota system seems to force the enterprises to introduce procedures and routines in which tacit knowledge about the production and the levels of emissions is reported, systemized and made explicit. Routines are established for reporting to SFT. While tacit knowledge is informal, often non-verbal and therefore hard to measure and hard to report, explicit knowledge can easily be expressed in words and numbers, and is easier to measure and transfer (Polanyi 1967, Takeuchi and Nonaka 2004, Matthiesen 2005). The knowledge is not necessarily new, - it might has existed in the enterprise all the way, but by means of systemizing this knowledge is made more available – and easier to transfer – for internal use as well as for use at the national level. Through these processes, decision-making about CO_2- emissions are becoming more well-informed, at the national level as well as in the enterprises.

Arguing and bargaining networks – stimulating knowledge exchange and knowledge flows between private enterprises and public authorities

As mentioned earlier, we find several elements of the network mode of governance in the functioning of the Norwegian quota system. This mode of governance seems to be favourable for the development of trust between the actor groups – the private enterprises and actors representing public sector (SFT).

While the European system is described as rule oriented and unflexible, the respondents from the private enterprises see the Norwegian quota system as pragmatic, flexible and egalitarian. SFT seems to have adopted a deliberative approach to the interpretation and operationalization of the rules and regulations, and furthermore SFT seems to be responsive to comments from the enterprises. Several respondents report that the agency has altered the way they interpret the regulations following inputs from the enterprise. Because of these experiences, the enterprises have a high degree of trust in the agency, which again result in mutual knowledge exchange. The threshold for exchanging information and knowledge has been lowered, improving the utility of the system.

So, what types of knowledge are dominating? And what types are not? The quota system is characterized by strong national regulation implemented by the Norwegian Pollution Control Authority. These regulations force the enterprises to establish routines and systems for making tacit knowledge about production activities and emissions explicit, and for reporting this information to the authorities. As a consequence, a process of mutual learning occurs. The authorities are enabled to draw upon knowledge from the enterprises, concerning production technology, practical solutions and the effects of the emissions trading system. Even so, preliminary findings from our study suggest that small enterprises and modest branches of industry feel that their knowledge is not taken into account. The search for standardised interpretations valid for everyone may not sufficiently take into account particularities concerning certain methods of production.

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Conducts of environmentality and politics of scaling – Agri-environmental policy and practice in Finland

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1 Introduction

In one sunny afternoon I sat in a meeting room with a group of environmental scientists and agricultural economists coming from different parts of Europe. The group tried to find a common ground for modelling the impacts of so called Best Management Practices (i.e. environmentally friendly farming practices) to water quality. The even more ambitions aim was to integrate the economic and environmental models in order to get a more holistic picture of the agri-environmental problem. I as a sociologist was forced to listen quietly as the group discussed detailed issues of modelling and tuning of parameters. I felt bored.

Then the voices faded in and discussion got interesting. The economic and environmental modellers could not get their model parameters talk the same language. They were confronted with the question of scale. The economists started from the functioning of the farm economy and then – depending on a model – scaled up to the regional or national economy. Whereas, the environmental scientist started from a plot scale. They evaluated the water economy, inputs and outputs of one particular plot, scaled up to watershed level and estimated the total nutrient load caused by agricultural practices within that water system. The farm the plot belonged to was of no concern to them.

I asked my self what is going on here. The discussion resonated with the arguments I had heard earlier from the agricultural and environmental civil servants in charge of the implementation of agri-environmental policy in Finland. The agricultural sector had stressed the role of nationwide support mechanisms in the agri-environmental governance, while the environmental sector had argued for a throughout rescaling of the policy in order to increase the environmental effectiveness of the measures. It was at that moment in the meeting room, I realized how deeply rooted the problem of scale is in the debates over alternative solutions of agricultural pollution. It is an integral part of the political rationalities and technologies of government used in the daily practices of problem solving.

Finnish and European agri-environmental policy has gone through significant changes over the past decades. The Common Agricultural Policy (CAP) of the European Union (EU) has tried to engage in wider processes of agricultural trade liberalisation while, at the same time, developing an environmental and rural policy that would recognise the *multifunctional* role of agriculture in our societies and mitigate the impacts caused by the intensification of production to rural areas (e.g. Buller et al. 2000; Potter 2004; Evans et al. 2002).[1] In addition to food production, the notion of multifunctionality acknowledges

[1] The main principles of the current agri-environmental policy model were laid down in the CAP reform of 1992, which introduced the agri-environmental programme (EEC 2078/92) followed by the rural horizontal programmes (EC 1257/99) in the Agenda 2000 reform. The integration of environmental and agricultural policy in 1992 was carried out along with the shift from the price subsidy system to the direct subsidy system. The Agenda 2000 reform has further emphasised the need to better incorporate consumer demands and environmental concerns into the CAP (CEC,

agriculture's role in the management of rural landscapes and providing environmental services, as well as the social role of keeping rural areas inhabited and viable. Multifunctionality relies on a public goods model assuming a complex relationship between environment and agriculture and a degree of shared dependency (Buller & Morris 2004). It also implies that farmers should be paid for providing public goods. The most relevant policy measures, in this respect, have been the de-coupling of agricultural support from production and support for agri-environmental and rural development measures.

The policies of multifunctionality can be understood as an attempt to govern local activities at-distance with specific conducts of governmentality (Foucault 1991) - or *environmentality*, as e.g. Darier (1999) and Agrawal (2005) have suggested. It aims at promoting health of environment and living conditions of rural population by spreading knowledge on environmentally sound practices and by offering economic incentives for independent actors to self-regulate their activities. This new kind of environmentality should find its place within an agricultural policy system, which is multi-level by its nature (e.g. Greer 2005; Winter 2006; see also Schout & Jordan 2005; Bache & Flinders 2004). The policy principles are negotiated among the Member States of the EU (as a response to global world trade negotiations), then translated into national policy programmes implemented by the regional and local level actors. Although, the process follows vertical top-down model, due to its voluntary nature and integrating features, the policy allows significant degrees of freedom at all policy levels (e.g. Billaud et al. 2006; Buller et al. 2000; Lowe et al. 2002; Winter 2000). The policy has also explicitly promoted horizontal co-operation between the agricultural and environmental sectors. The ways in which the different vertical and horizontal policy levels are associated together is critical for sustainable rural development (e.g. Marsden 2003; Goodwin 1998; MacKinnon 2000; Thompson 2005; Winter 2006).

In this paper I will elaborate how Foucault's ideas on governmentality would enable us to analyse how discursive and material elements intervene in policy processes and constitute the change within government at various policy levels. I will start by discussing the concept of governmentality and what insights it can offer to analysis of policy practices. I then turn to empirical analysis and elaborate how different actors try to make the agri-environmental problem governable through their implementation practices and how these practices constitute various subjects of government. I pay special attention to how various scales of agri-environmental management are constituted, and how this is linked with actors' capacities to act and to co-evolution of agri-environmental policy. I also identify some novel openings in the implementation practices, that have caused ruptures in the power positions different actors are holding against one another. I close the paper by discussing the contribution of governmentality debate to the understanding of politics in environmental policy processes.

1998, 2002). Critics have argued that several CAP reform measures have, in fact, very limited environmental content, even though they have been promoted as “environmental”. It is also argued that the EU has affected the environment perhaps more through its free-trade principles and intensification of agricultural policy than through its environmental measures.

2 Environmentality and policy practices

The understanding of practices in analysing policy processes has been emphasised increasingly by several authors (e.g. Foucault 1991; Rose & Miller 1992; Schatzki et al.2001; Hajer & Wagenaar 2003). In particular, the study of policy practices has been found critical when studying environmental policy processes since they, as a rather new policy field, are often novel, unpredictable and institutionally ambiguous (Hajer 2003; 2006; Haila & Dyke 2006; Meadowcroft 2002). Also Marsden (2003) has emphasised the need for middle-level concepts and understanding of policy practices in creating possibilities for sustainable rural development.

This increasing interest in practices is born out of frustration towards too much concentration in language and cognitive aspects of discourses in policy analysis. The majority of discursive analysis have looked policy processes in terms of argumentation and placed emphasis on how different actors frame the policy problem (e.g. Majone 1989; Schön & Rein 1994; Hajer 1995; Fischer 2003). In this line of thinking the policy frame, argument or story line precedes action. The discursive turn has provided a welcomed supplement to the study of formal institutional relationships within political science, but the conceptual devices fail to recognise how material artefacts and planning tools co-participate in the problem framing and affect the different actors' capacities to act. Murdoch (2004) has also argued that emphasis on discourse and language has a tendency to idealize policy processes in such a manner, that the complex ways in which discourses interact with localized patterns of political activity are neglected and any local resistance to given policy goals and their implementation become lost from view.

The notion of discourse is often associated with Foucault. In his work on human sciences, he developed a genealogical approach that sought to uncover how discursive formations construct subjects of various kinds. Yet despite this preoccupation with the discursive realm, Foucault's work is explicitly aimed at uncovering the materiality of discourse. This concern with materiality of discourse is nowhere more evident than in Foucault's discussion on *governmentality* (Foucault 1991, see also Gordon 1991; Dean 1999). By governmentality Foucault refers to the mentalities of rule by which governing authorities seek to shape the conduct of diverse actors and agencies. Foucault used the term in an effort to show how the problem of government occurred during the fifteenth and sixteenth centuries in the West, when one of the functions of state became the administration of life through the notion of population.

As an analytical optic governmentality is obviously relevant also for other places and historical periods. Lately it has gained momentum among rural and environmental researchers as well. Dárier (1999) and Agrawal (2005) have stressed that governmentality of life, as a mentality of rule, or environmentality as they call it, is in particular relevant for understanding the conduct of environmental politics and polity in our societies (see also Haila 1995). Lockie and Higgins (2007) have also found these conceptual tools useful when making sense of the appearance of neo-liberal agri-environmental governance in Australia. When studying European rural governance, this optic has

highlighted the developments of governmentalities that rely on 'government through community' (e.g. Murdoch 1997) and on the partnerships, which transcend the divides between public and private (e.g. Edwards et al. 2001). The optic of governmentality provides analytical depth into the changing forms of governance and allows to examine the various forms of power the different societal actors, among them state itself, are exercising through neo-liberal forms of government (see esp. Rose 1999).

Governmentality is about *how to govern* (Gordon 1991:7). It involves questions such as: what is our power; to what ends it should be exercised; what effects has it produced; how can we know what we need to know and what we need to do in order to govern (Rose & Miller 1992:)? Foucault's formulation on government refers not just to multiple and diffuse sites of power, but to fundamentally heterogeneous forms of rule and contestation. Reference to heterogeneous forms of rule is important, for it indicates that the practice of government can take place through multiple media, including both discursive and material resources (Dean 1999; Rose 1999; Murdoch 2004). Government is an undertaking conducted in plural (Dean 1999: 10).

Rose and Miller (1992; see also Rose 1999) direct attention to two main features in governmentality: first, the development of *political rationalities*, that is, the changing discursive fields within which the exercise of power is conceptualised and the moral justifications for particular ways of exercising power by diverse authorities within different sectors. Political rationalities are concerned with the proper ends, means and limits of government; they have an epistemological and cognitive character. They render reality thinkable in such a way that it is amenable to political deliberations. The Finnish agri-environmental programme can thus be seen as a specific programme of particular mentality of rule. It embodies knowledgeable accounts of what are considered as legitimate problems, and the goals and objectives to be pursued in addressing them. It also gives rise to and is informed and reshaped by various forms of knowledge which are regarded as relevant for the mentality of rule, such as agronomy, economy, limnology or ecology.

Rose and Miller also suggest, that governmentality involves the use of *governmental technologies*, that is, the complex mundane programmes, calculations, techniques and procedures through which authorities seek to embody and give effect to governmental ambitions. They are the technical means that enable rule and the programmes of government to be practically possible. Technology is not just a matter of implementing the ideal schemes in real, rather it is a question of a complex assemblage of diverse technologies through which the decisions and actions of e.g. farmers, consumers, tax-payers or organisations come to be understood and regulated in relation to authorative criteria. However, technology is not deterministic. As Dean (1994: 188) argues: 'political rationality may codify and assemble particular technologies within various programmes, but the technologies themselves are a condition for that rationality and have forms of rationality inscribed to them'. Political rationalities and technologies of government are relational and fluid.

Not only is the concept of governmentality useful means of investigation those forms of power that seek to shape conduct, but it also bears the promise of connecting the political rationalities and technologies of government to transformations in *subjectivities* (esp. Foucault 1978). The relationship between subject formation and power rests for Foucault, on an utter refusal to view power simply as the ability to constrain actions or people; it as much about the possibility of producing them (see also Latour 2005). For Foucault, the exercise of power has normalizing effect on population. Governmentalities, however, do not determine forms of subjectivity. Modes of government are never

complete, closed totalities; they always generate uncertainties, ambivalences, transgessions and resistances. Each actor, each locale, is the point of intersection between powers, and hence a point of potential resistance to any way of thinking and acting, or a point of organization and promulgation of a different or oppositional programme. They can and will utilise and deploy whatever resources they have for their own purposes, at any given time and at any point. I would further argue, following the argumentation of Bowker and Star (1999) and Murdoch (1998), that rather than to see government and resistance as in opposition, it is important to ask how they come to depend upon one another within particular sets of heterogeneous relations and how these complex relations are woven into various spatial forms.

The question on various spatial form and scale deserve special attention here. As the example I told in the beginning showed, the different actors have rather different views on what would be the appropriate scale of agri-environmental management and policy. These political aspects of scaling have lately gained increasing attention among human geographers (e.g. Brenner 2001; Swyngedouw 1997; DuPuis & Goodman, *in press*). They state that territories and scales are not just social constructions, but contested ones and configured trough socio-political struggle. Conflicts over appropriate scale for organising environmental management each evoke different power relations and may lead to radically different socio-ecological conditions. Scale is directly linked to actors' capacities to act.

Another scholar, who explicitly has linked the question of scale to power is Bruno Latour. He stresses that neither power nor scale are pre-given sets of conditions, they are achievements highly dependent upon actors' achievements. Similarly to Foucault, Latour argues that collective – which in this case can be understood as government – is an achievement highly contingent with how the associations between heterogeneous human and non-human elements hold together and how far they are able to reach (e.g. Latour 2004; 2005; Callon 1986). Latour also reminds us that if any action is to be transported from one site to next, one needs a conduit and a vehicle: a mediator. Mediators do not just transport a meaning; on the opposite, they transform, translate, distort, and modify the elements they are supposed to carry (see also Laet de & Mol 2000).

In this study I use the analytical optic of governmentality in order to analyse the heterogenous ways in which the change in the conduct of environmentality has taken place within agricultural policy in Finland during 1995-2006. The period presents a moment in history, when a major shift in the mentality of rule has taken place. I examine how this change is constituted by looking at the concrete implementation practices and the dynamics between political rationalities and technologies of government within those practices. I put special attention to the processes of scaling and what kind of subjectivities these processes produce. Treating policy means as mediators renders visible the long chain of actors linking the sites to one another.

3 On method

Analysis of environmentality implies a detailed and genealogical look on policy practices. For Foucault genealogy is grey, detailed and patiently documentary (Foucault 1988). It is interested in the detailed and mundane aspects of how government has taken place in a given point and time in history. Although Foucault developed the method in particular for the study of alternative histories, the principle can offer fruitful lenses for the study of policy practices as well (see also Hajer & Wagenaar 2003; Latour 2004).

The genealogy of agri-environmental implementation, that I present in this paper, builds upon a substantive amount of empirical material. I have conducted case studies in two regions in Finland, namely, West and Southwest Finland. The regions represent critical cases of regional implementation practices (Flyvberg 2006:232). Both areas have a vital agricultural production and strong farming culture. They have both tackled with conflicts caused by agricultural pollution and, in so being, taken also an active stance towards agri-environmental policy. The high regional stakes make visible and clarify the involved political rationalities and technologies of government making them fruitful cases for studying the changing environmentalities. The empirical results gained from these regions have a strategic importance in understanding the co-evolution of environmentality in Finnish agricultural policy.

In these two regions I have interviewed the key persons in charge of the policy implementation at the regional and municipal level, including the agricultural and environmental administration, the advisory organisation, the Farmers' Union and the environmental NGO's (all together 33). At the national level, I have also interviewed the key persons from the Ministries of Agriculture & Forestry and Environment, the Farmers' Union, the environmental NGO's, research organisations and other institutes involved in the policy preparation (all together 12). The interviews have been carried out at several occasions during years 2000-2005. In addition to interviews, I have observed watershed level riparian zone planning (Kaljonen 2003) and regional biodiversity management planning (Kaljonen *submitted*) in action and taken part to one farmer course arranged by the Pro Agria Rural Advisory Centre. I have also interviewed farmers from 36 farms and carried out an survey among the farmers in Western Finland (Kaljonen 2006; Kaljonen & Rikkonen 2004). In addition to interviews, I have analysed policy documents, evaluation reports and background memos produced by the administration and regulatory science.[2]

[2] A more detailed description of the empirical material can be found from the subsequent articles. I have chosen not to use too many direct citations from the interviews. If I have used some, they are marked with *italics.* The genealogy should be read as a re-constructed narrative of different actors arguments, roles and practices within the implementation network.

4 Genealogies

4.1 Emergence of new environmentality

The membership of the EU in 1995 changed Finnish agri-environmental policy significantly. Finland came part of the CAP and was to translate the European principles on multifunctionality and enviromental policy to its national legislation. The Finnish translation puts special emphasis on water protection, wide coverage and voluntariness of measures (MAF 1994; 1999; 2006). The new environmentality, in this respect, was built upon previous national policy approaches (Jokinen, 2000). What was new, was the monetary support given for the production of public goods and minimising environmental damage. The policy offers farmers *general (GPS)* and *special protection schemes (SPS)*, in which they can contract to. The GPS sets out the basic level for environmentally friendly farming practices; the SPS offers more targeted contracts for environmental protection.[3]

Building up a dual policy model like this in Finland was very much imposed by the national interest during the membership negotiations. The GPS was specifically built to compensate the decline in farm income caused by the EU membership in 1995. The money distributed through the agri-environmental schemes is significant: in 1995, when the policy came to force it constituted nearly half of the environmental protection expenses of the Finnish state (Statistics Finland 1996). Largely due to the importance of support to farm income, some 90 % of Finnish farms have been enrolled to the GPS all through the years (MAF, 2004:31-34; Koikkalainen & Lankoski 2004). The implementation of SPS contracts has been more challenging.

The implementation of agri-environmental schemes is conducted within regions. The regional rural administration is in charge of the final decision-making and control of the schemes. They govern and control the GPS and decide upon the SPS contracts on the basis of the comment given by the Regional Environment Centre. In addition to commenting, the Regional Environment Centres take part to advice and planning of the schemes. Advisors (mainly from Pro Agria Rural Advisory Centres) and the municipal rural officials also take part to the marketing of the schemes, arrange courses and advice farmers on the various support possibilities. Locally also other actors may take part to advice.

[3] When enrolling to GPS a farmer accepts to follow the rather detailed terms of agreement on e.g. how to fertilise, how much, and when; how wide headland is to be left along the ditches and watercourses; how much pesticides can be used and with what kind of machines they can be spread; how to take care of the landscape and biodiversity. In SPS a farmer can get support for constructing a riparian zone (a 15 meter buffer left uncultivated between the field and a water course), biodiversity or landscape management; building up a controlled drainage system or to effective use of manure.

According to my interviews with the implementing officials, both agricultural and environmental sector cherish the significant amount of resources that have been allocated to agri-environmental protection and to production of public goods. The mentality of government, in which farmers are given financial incentives and advice, gains support over the sectoral boundaries. Especially during the first years of the programme, the old saying according to which '*the mark is the best consultant'* was commonly used phrase by all parties.

The agri-environmental schemes have managed to integrate the environmental goals into economic considerations in such a manner that the different parties, which traditionally have looked agri-environmental questions from a rather different angle, have been able to translate the mentality of rule to support their political rationalities, aspirations and activities. With the introduction of agri-environmental schemes, the discussion in Finland has moved from the principal disagreement on agriculture's impacts on environment to discussion on *how* the impacts could be most effectively diminished and *what kind* of agricultural production and rural environment should be promoted. On this the different actors seem to have rather different ideas and courses of action. I elaborate these below.

4.2 Support for prosperous agriculture

According to my interviews, in particular the agricultural sector stresses the motivational character of the financial incentives. They argue that the nation wide coverage of GPS ensures the best results both in terms of social equity and environmental impacts. According to this argument everybody would benefit the most if as many actors as possible participated. Farmers would get support enabling them to continue agricultural production whilst keeping rural areas viable. Slowly through the changes in attitudes the environmental aspects will get better integrated to the production. The wide coverage of the programme should then also be in the interest of the environment, lakes, rivers and the Baltic Sea.

According to this political rationality the agri-environmental schemes should be seen as part of the whole agricultural support-package, which aims at ensuring the continuation of Finnish agriculture within European markets. In other words, with farmers compelled to intensify their production in response to constantly declining terms of trade, it is appropriate to compensate them for activities that limit their ability to optimise production. Behind these arguments one can also find the welfare state's idea of equality between different production sectors and regions, which has been the guiding principle of the Finnish agricultural policy from the 1950's onwards (Granberg 1999).

This political rationality pursues towards *prosperous Finnish agriculture* stressing the relational character of the environmental impacts of agriculture (see also Jokinen 2000). Relational in a sense that, for example, the impact of the nutrient load from Finnish agriculture to the eutrophication of the Baltic Sea is minimal compared to the share of other countries or polluters. This view sees the environmental impacts caused by the agriculture as minor problems compared to the deterioration of rural areas. The supporters of this rationality also argue, that compared to European agriculture the Finnish farming is far more environmental-friendly already and the task of environmental policy is to ensure that it stays that way. In this manner, the agri-environmental schemes have enabled the agricultural sector to reassert Finnish farmers' claims to be the stewards of nature and countryside. This idea of stewardship has weighed heavily the political rationality of Finnish agri-environmental policy all through its history (Jokinen 1997; Luoma 2002).

This political rationality is supported especially among the agricultural sector and is particularly strong on a national scale. In its purest form it can be found from the arguments of Finnish Farmers' Union, at points when it is to defend the resources invested in GPS. At the regional level this political rationality is reproduced by bureaucratic controlling acts of the agricultural administration. The interviewed regional rural officials described as their main task to take care that the decisions are made in time and money is transferred to farmers' account in a just and fair manner. The most important technologies, through which this rationale can be safeguarded, are the support blankets, cultivation and management plans, control reports and satellite maps. These technologies control the whole conduct of farming by normalising the object of control into detailed lists of farming actions. For example, the cultivation plan makes visible all the actions taken and fertilisers given during the season. For the controlling of acreage-based support system, the European Commission has developed a satellite mapping system. These technologies of government render the management actions visible enabling control farther away.

With the administration of agri-environmental schemes the environmental issues have arrived to the desktop of regional rural officials in a new manner. However, while the timetable and resources of the agricultural officials are scarce, they do not interfere that much with the environmental content of the scheme applications. That is left to environmental officials. The expertise of agricultural administration lays on their knowledge and know how of agricultural production and the subsidy system. In the implementation of agri-environmental schemes the regional rural officials have taken a role of an bureaucrat taking care that the decisions are made in a just and equal manner – and hence safeguarding the welfare effects of the policy. With the help of various technologies of government they are able to upscale their administrative conduct to national and even further to European level.

4.3 Towards environmental effectiveness: rescaling practices

Also the interviewed regional environmental officials saw the governmental rationality of agri-environmental programme in principle as good. Schemes consist a good deal of those basic farming methods that environmental sector has pushed through for a long time. The policy has offered concrete means and resources for the environmental sector to strive for their goals. Previously all what they had was advice and co-operation (e.g. MoE 1992; see also Niemi-Iilahti & Viikki 1995; Jokinen 1997). Compared with the agricultural sector, the environmental actors speak, however, more forcefully for the increasing of the effectiveness of the policy. They stress the absolute character of the agri-environmental impacts (see also Jokinen 2000): the decreasing of the environmental impacts should be the only justification for the spending of public resources.

The speeches for more effective policy have increased in number as new results from the impact assessments of the programme have become available. According to these assessments, the programme is far from reaching its goals (Pyykkönen et al. 2004; MAF 2004; MoE 2006). The regional environmental officials argue, that the agri-environmental support should be allocated to environmentally critical areas and to more effective measures. Now farmers have gained environmental support on too loose grounds and in some cases it has been given to actions with solely productive goals. They criticise the nation wide GPS model and emphasize the technologies offered by the SPS. They also stress the need for normative environmental control. The Nitrate Directive

implemented in the turn of the century as well as the new legislation on environmental permits are the first steps towards this goal.

At the national level environmental NGOs and environmental administration with a group of environmental researchers have created an ally to put forward this policy rationale. At the regional level, the environmental officials see that it is ultimately they who ensure that the environmental goals of the agri-environmental schemes are met. While I interviewed the regional environmental officials, they, in fact, many times associated their interests with nature's interest.

4.3.1 They saw themselves as spokesmen of nature.

The practical actions of regional environmental officials concentrate upon SPS schemes. The regional environmental officials by duty give a comment on the environmental content of the SPS applications. This was a new opportunity, the agri-environmental schemes gave for environmental officials. At the same time, as the commenting has opened new opportunities to influence farming practices, it has also locked a lot of environmental centres' resources. Both in terms of working hours and expenses. For example, in Southwest Finland in 2005, there were 300 applications alone on the biodiversity management, and only three persons to give a comment. Despite the high numbers, they have decided to visit each site *in situ*. This is not a practice in every centre. On the contrary, elsewhere they deem it impossible. In Southwest Finland they have consciously invested resources in developing co-operation with farmers. They see farm visits not only as inspection visits (only less than 10 % of the applications have been rejected), but as having a strong advisory potential.

The implementation of the SPS has proved to be a challenging task. The first years of the programme were spent on introducing the schemes and their requirements to farmers, e.g. by arranging courses. The main goal was to secure as many contracts as possible and contract-sites became sporadically distributed in an otherwise intensively farmed landscape. Quantity was emphasised over quality. In order to increase the environmental effectiveness of the policy – the environmental actors argue - the management contracts should be allocated to ecologically critical areas and to a large enough group of farms. Reaching these goals, however, calls for rescaling of policy.

The regional riparian zone and biodiversity management plans offer an interesting example of the rescaling technologies. The first riparian zone plans, which aimed at reducing the nutrient loads from cultivated fields, were made in the late 1990's in Southwest Finland. After the first good results, the practice has spread around the whole Finland, and to new areas such as biodiversity management and wetlands. The ministries, who fund the planning, have also published guidelines in order to promote the good practices (Salmela 1999; Heikkilä 2002; Karhunen 2007).

The concept *jalkautuva yleissuunnittelu*, the environmental officials have given to the method, describes the practice well. In Finnish the term includes a notion of planners coming out of their offices out into the fields, while, at the same time, safeguarding the general interests of the region. In English the approach could be called *grounded general planning*. The Regional Environmental Centres have mainly been in charge of the planning. In practice the planning consists of field and map work as well as participatory meetings. In the regional biodiversity management planning in Vehmaa, for example, the intense field work and farm visits formed a central part of the planning (Kaljonen *submitted*). In Vehmaa they also tried to involve different parties to planning in various ways. The planning had a wide advisory board, where all the concerned parties were

represented. They also organised two general meetings for the farmers, where they could ask and comment about the plan and bring their own ideas about the potential sites. The riparian zone planning basically follows the same procedure (Kaljonen 2003).

The grounded general planning acts as a device through which environmental protection gets a voice and moves through various kinds of inscriptions to support the aims of the Environment Centre on different scales. Regional planning brings consistency to the implementation and facilitates the complicated decision-making procedures of the schemes. To get farmers inspired about the voluntary contracts requires time. The planner's visit to the farm gives voice to environmental protection and coloured spots on the map make the critical sites visible in the region. Furthermore, the plan can be used for other planning purposes. The map as an artefact remains: it can be revisited again and again. Through the plan the Environment Centre can also show the other regions and the ministries what the state of environment is in their region, how they have succeeded with the uptake of the SPS schemes, and for which areas they would require more resources from the central government. The plan is capable of moving from farm to regional administration and further to national and European level. It has travelled as far as European Commission under the label of good practices identified by the evaluation studies. The plan also allows the follow-up of SPS schemes and what has been accomplished with all the Euros devoted to agri-environmental schemes. In so doing it contributes to the symbolic image of agriculture and rural environment. The practice of rescaling is further supported by various watershed level models, maps of critical areas and planning tools developed by the regulatory science of environmental administration.

As environmental officials have a marginal position in the farming community, they are compelled to create good arguments to justify their actions, and develop tools which enable co-operation between different actors. Grounded general planning has proven to be powerful tool for this, which can directly be seen in the amount of SPS contracts made in the planning areas (Härjämäki & Kaljonen 2007). According to empirical results, the planning has at the same time allowed a detailed and thick exchange of ideas of how one particular site could be managed and funded, together with a broader perspective on the rural environment. Furthermore, it has been able to take into account the locally varying environmental conditions as well as to somewhat use farmers' experience based local knowledge, that is central to their relationship with nature (see also Kaljonen 2006).

4.4 Pragmatics of implementation: need to collaborate

Despite the differences in their political rationalities the regional agricultural and environmental officials have slowly during the past ten years found a functional division of work. Niemi-Iilahti and Vilkki (1995) studied the regional networks of agri-environmental policy in the beginning of 1990's, before the period of agri-environmental schemes. According to their findings, although co-operation was promoted on a political level (MAF 1991; MoE 1992), the policy of that time did not really offer concrete means for regional co-operation. The unclear division of responsibilities and formal power hampered the collaboration. Looking against the situation back then, the implementation of agri-environmental schemes has changed the situation significantly. The statutory division of work in the implementation has established a co-operational routine between these sectors (see also Jokinen 2000; Juntti & Potter 2002; Kröger 2005; Soini & Tuuri 2000).

According to my interviews, the increased co-operation is a feature all actors appreciate highly. Regional actors have also actively developed their ways of collaboration:

organised farmer courses and created various procedures and standards to smoothen the decision-making processes. They have also participated in regional strategic planning and various projects thinking together the rural development needs in their region. The grounded general planning is also one example of collaborative implementation practice. The yearly meetings arranged by the Ministries have acted as a place where experiences and ideas can be exchanged between the regions. Working together and getting to know each others competencies and personalities has created a trustworthy relationship between the two sectors. The practice has also taught that agri-environmental management requires actions, competencies and knowledge of both agricultural and environmental sectors. One cannot do without the other and this requires compromises from the both sides.

4.5 Buffer between government and resistance: spokesmen for living countryside

The implementation of agri-environmental programme has rendered visible the importance of local level actors in agri-environmental protection. According to a survey carried out in the Western Finland in 2000, farmers' most important information sources in environmental issues were the Farmers' Union newspaper Maaseudun Tulevaisuus, courses arranged by the Rural Advisory Centre and the municipal rural official (Kaljonen 2002; see also for similar results Niemi-Iilahti ym. 1997; Soini & Tuuri 2000).

In Finland the Rural Advisory Centres have traditionally taken care of the farm-level advice, also what comes to environmental issues. Advisors had, for example, in the beginning of the 1990's a large advisory campaign "*Our common environment*", during which they made environmental management plans to farms and gave general advice. The campaign was based on voluntariness. The agri-environmental programme has given them a chance to continue this work. During the first agri-environmental programme period advisors carried out the environmental management plans required by the GPS; they have also helped farmers in taking the soil samples and making cultivation plans. The biggest resources have, however, been invested in the farmer courses, which have been compulsory for each farmer contracted to GPS. The Rural Advisory Centres have arranged most of them and, henceforth, have had a strong influence on how schemes have been introduced to farmers. In addition, advisors have offered farmers consultancy in making farm and village biodiversity or landscape management plans.

Another group, who is important in translating the scheme conditions to practice is the municipal rural officials. The local rural office is a place where farmers take all their applications for agricultural support. Coping with the EU, CAP and changing policies has required new abilities from farmers: one has to be in the right place at the right time in order to be abreast of the support conditions. For this the advices of the municipal rural officials are highly appreciated. In practice, farmers visit the local office regularly.

Similarly to regional agricultural officials the interviewed municipal rural officials saw the good governance of support system as their main goal. Their task is to handle administration in such manner that it goes as smoothly as possible and farmers get their support in time and in a fair manner. The bureaucratic control should ensure that the welfare effects of the policy are met. At the municipal level, there is however another, perhaps even more important rationale: to work as a *buffer* – to use a concept developed by my interviewed - between the government and resistance. Also the interviewed advisors identified this rationale important for them. What then does this buffer entail?

First of all it means the capability to translate scheme conditions to farmers. This requires a lot of work: one needs to follow the development of the agricultural and environmental policy, be aware of the latest interpretation of the scheme conditions, and most importantly, have the ability to translate them to practice. The situation is challenging both from the point of view of the farmer and the local official or advisor. Dependency on agricultural support makes farmers also dependent on the implementation networks. The uncertainties in the policy implementation have however created a situation, where not even the officials know the latest interpretation of regulations.

The environmental impacts of agriculture is fairly new regulated field and new openings and developments are coming all the time. At the points when practices of implementation are still being sought and co-operation is not yet stabilised, the space and need for translation at the local level is wide. In these occasions municipal rural officials and advisors form their interpretations with the help of local and practical knowledge they possess. The advisors and local officials also stressed that the information has to flow also the other way around. The experiences gained from practice need to be translated back to administration: *'so that they won't become too alienated from real life'*, as one advisor put it.

According to my study, farmers criticise the environmental policies of neglecting the elements of a local situation, both in terms of social organisation of work and natural conditions including specialist farming knowledge (see in detail Kaljonen 2006). Advisors and local rural officials want to assist in mediating this criticism up to higher administrative levels. They also stress that agri-environmental schemes should be used for diversifying livelihood in rural areas and safeguarding that the conditions for practising vital agriculture remain. Advisors and local officials are, first and foremost, spokesmen for living countryside. In a similar vein, landscape management is a route to express their love and caretaking towards living countryside. For realising this political rational the most appropriate scale of action is from farm to village and up to regional level.

The local rural officials and advisors act as buffers between policy and practice, but also between different cultures and scales of action. They stress that they know the farming culture and understand their way of thinking. Often they also have an own farm to run part-time. They are the lowest administrative level and closest to farmers. Together with the regular face-to-face contacts with farmers, especially the municipal rural officials have developed a close local relationship with farmers, which needs both trust and dependency to exist. Michael (1992) has underlined that a deferential relationship from public to particular institutions may be based more on inevitable dependency rather than on decisive investment on trust. Hence, the reason for farmers relying on the information of the local rural official is not necessarily an indication of trust, but more a reflection of their sense of dependency. The social dependency in this case could be better characterised 'as-if' trust (see also Wynne 1996:50) and as an indication of uncertainties and network dependency of the policy. Farmers act as if they trusted these institutions, since they cannot do otherwise. The dependency is expressed as a risk to social identity.

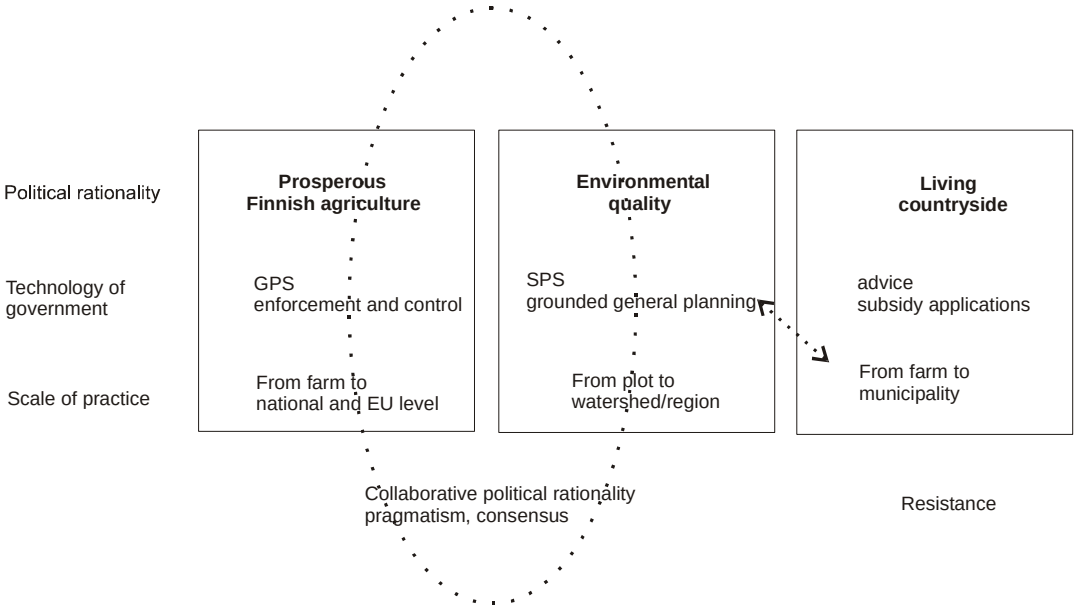
However, in the case of local rural officials something else seems to be at stake. Farmers are dependent on the information the officials possess, however, at the same time their relationship seems to be flexible enough to accommodate farmers' own accounts of subjectivity and soften the ambivalence taking part in the environmental conservation might have provoked. They have been capable of addressing the social problems felt in the Finnish countryside and support the farmers' cultural identity. At best they have managed to associate the agri-environmental management to agricultural production in

such a manner that farmers have been able to incorporate the production of public goods to the developing of their farm activities. Many local officials have however felt the bureaucracy consisted by the subsidy system so devastating, that they have not had resources for anything else. The role of municipal rural official and advisors in the implementation of agri-environmental policy is characterised with many institutional uncertainties and variety between the different localities. The way in which the local official has interpreted the scheme conditions and the scientific justifications behind the proposed farming practices can directly be seen in the number of SPS contracts made in that particular municipality.

5 Politics of scaling and transformations in power

Above I analysed the experiences gained from the first ten years implementation of agri-environmental programme. The opening up of policy practices revealed three distinctive political rationalities, re-produced by various technologies of government operating at different scales (Table 1). They are all based on distinct ideas about the object of control and subjectivity within environmentality. Next, I will weave these different elements of environmentality together and analyse the contribution of implementation practices in a wider setting of agri-environmental policy evolution. By paying special attention to mediators travelling between different policy levels, I will render visible the transformations and fractures in the relationships between power and knowledge.

Tabell 5.1 *Rationalities and technologies of environmentality*



The regimes of practices that have evolved out of collaboration between the agricultural and environmental sector is critical for understanding the conduct of environmentality within agricultural policy in Finland. The environmentality of Finnish agricultural policy is very much based on dynamics between the political rationalities of agricultural sector aiming at prosperous Finnish agriculture and of environmental sector, which stresses the need to move towards more environmentally effective policy. These rationalities are re-produced by various technologies operating at different scales, most notably GPS and

SPS. This dual structure in the regime of practice has placed the question of scale at the very core of environmentality.

The environmental sector has tried to act in various fronts in order to rescale the policy and increase its environmental effectiveness. The grounded general planning is one good example of this. This technological device has innovatively rendered visible the problem of scale in agri-environmental management. However, despite several attempts, the environmental sector has not been able to reframe the policy at the national level. At the national level the political rationale of safeguarding the continuation of the Finnish agricultural production and environmental stewardship has been so strong, that the discussion on the environmentally based allocation of the resources could really take off. In this manner, the agricultural policy community, as Jokinen (2002) has argued, is still a powerful player in defining the conduct of environmentality within Finnish agricultural policy. The way in which the GPS was built to compensate the decline in farm income caused by the EU membership in 1995, and how this rationale still holds, is a durable indication of the policy community's impact.

In the Europe the community of environmental NGOs, administration and research have usually formed a counterforce to the agricultural policy community (e.g. Winter 1996; Jokinen 2000). In Finland the environmental NGOs have not been that active in agricultural issues, compared to e.g. forestry issues. They have raised up issues concerning agriculture's impact on the eutrophication of the Baltic Sea. Lately they have also increasingly acted for the farmland biodiversity (e.g. Heikkilä 2001). Since the 1980' the environmental NGO's and environmental researchers have participated closely to the preparation of policy programmes through committee work. This has become their main channel in putting through their views. This method of working may have contributed in dissolving the conflicts between the agricultural and environmental interests and helped in bringing their views closer. Kröger (2005) has argued that the active committee work has contributed to policy learning and generated a new political rationale for administering the agri-environmental policy. This rationality does not acknowledge the intrinsic value of environmental protection, but sees it necessary for maintaining the legitimacy of agricultural production in Finland. The shared worry of the continuation of Finnish agriculture in European markets has rendered actors ready for compromises.

As my analyses has revealed, this kind of new collaborative political rationality is also detectable at the regional level. Despite their differences in political rationalities, the practical implementation has taught regional agricultural and environmental officials that, if they wish to take forward their own political rationalities they need to co-operate with the others. This has led them also to develop various governmental technologies to facilitate the collaboration.

The risk within this kind of collaborative political rationality, is that it may easily lead to co-operate on those fields, where agreement exists and issues of conflict are left alone. One interviewed environmental official, in fact, said that they have explicitly decided to go forward with those issues where there exists consensus between the different parties. They do not want to risk the trustworthy relationship, which has been developed between the agricultural and environmental sector. The collaborative rationale leads easily to such pragmatism, which demarcates problems and solutions within the policy system and enforces technocratic problem solving. This inhibits open political discussion on the goals and means of the policy. Technologies of government become the very means of exercising politics.

The analysis of implementation practices has revealed, that from the local level there is a third political rationality arising, which heavily questions the conduct of rule imposed by

the agri-environmental schemes. In particular farmers farmers confront the normalised accounts of environmental management and resist the subjectivity proposed for them. The municipal rural official together with the advisors have very much joined the farmers in this resistance. They argue that policy should give greater recognition to the importance of local ecological and social conditions and in so doing support the use of farmers' local knowledge within the environmentality. The policy should support the living countryside and the diversity in the rural livelihood.

Advisors and local officials have however, found themselves in a double alliance (see also Rose & Miller 1992). On the one hand, they have allied themselves with the political authorities, focussing upon their problems and problematizing issues, translating concerns about environmental conduct or economic performance. On the other hand they seek to form alliances with farmers themselves, translating their daily worries, decisions on investment, economic burdens and practical agricultural work.

The political challenge posed by the living countryside arguments and the critic towards the technocratic regime of administration has not really reached the national level policy formation – or at least led to any significant changes in the content of the programme. Despite, the several attempts to ease the bureaucracy of the schemes, the outcome has been the opposite. The system itself seem to regenerate the technologies of government in such away that allow more scrutinised control. The farther off the decision-making happens, the more important these technologies – or mediators - become. They should enable the control from as far as European Commission and in such a manner that restrain the failing of government (see also Higgins 2004). In this respect, the agri-environmental schemes have been able to act-at-distance so forcefully, that the criticism has been bound to stay local (cf. Latour 1987).

The analytic look on policy practices has shown, how the relationships between knowledge and power are closely related to that of scale. The ways in which knowledge is able to move between the different scales of environmentality is critical for the success of government. In this respect, the subject positions produced by the agri-environmental programme seem rather one-dimensional and closed. Each actor is bound with their own scale of practice.

It is, however, possible to detect also some novel openings, where the boundaries of knowledge have been stretched, the pre-given scales of action questioned and the dispersed practices brought together in an unusual and fruitful ways. Grounded general planning has enabled flexible movement between the scales and created conditions for local learning. It has been the mutability of the plan and ability to move across the scales that has made it a powerful tool in agri-environmental management. Farmers' engagement in their local environment as well as with the long networks of science has allowed them to identify themselves as knowledgeable actors in areas where claims based on local understanding in many respects outweigh the more universal claims of other actors such as the environmental authorities. Despite this potential for rescaling and empowerment, the planning practice is very much restricted by the limited interpretation of environmental management and subjectivity of environmental manager provided by the agri-environmental schemes. The contender – the living countryside argument – has remained in marginal position. It has not been able to develop such a full-fledged practice that would enable their argument to move from local to national scale and truly contest collaborative rationale held by the agri-environmental policy implementation networks.

6 Conclusions

Through the agri-environmental programme the complex relationship between agriculture and environment is made governable in a very technocratic manner. The genealogy of implementation of agri-environmental policy in Finland has rendered visible the subtle mechanisms of power and knowledge comprised in administrative practices. The analysis has highlighted the politics of policy implementation. It has showed how various administrative institutions actively put forward their own political rationalities through their implementation tasks, develop new technologies of government and, hence, dynamically constitute the subjects of government.

The detailed and concrete genealogy of environmentalities has enabled to open up the government for politics: the change is to be seen as transitions or shifts in power. This kind of view blurs the division between the different policy levels and questions the hierarchical top-down policy model, which starts from the formulation of policy goals and ends to policy implementation. By highlighting the role of policy practices in changing environmentalities, the Finnish experiences from the agri-environmental policy suggest that there is a need to further develop the understanding of the politics of environmental policies. Policy practices should not simply be analysed with goals of effective implementation in mind, they should also be analysed and indeed appreciated as sites for the articulation of conflict and difference, as a place of social and cultural contestation. They should allow a public space for societal debate and room for change. In order to regenerate, the Finnish agri-environmental policy needs to open itself up again. The first step would be to question the fixed scales of action various actors are currently bound to.

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Whose knowledge? The role of participation in environmental decision-making

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Abstract

The Finnish Environment Protection Act (EPA) of 2000 broadened participation rights in reformed environmental permit processes, enabling a broader range of actors to access the decision-making relating to potentially polluting activities in their environment. These changes can be seen as a part of a general shift towards environmental governance, and were expected to improve conditions for public participation and consequently accountability and acceptance of permit decision-making. The environmental authorities are faced with a broader knowledge base from which to obtain the elements necessary to make permit decisions, but what is actually happening 7 years after the EPA came into force? Is participation taking place effectively and has the mode of environmental management actually shifted towards greater governance? Or is the hierarchical mode of decision-making and traditional technocratic expertise-led knowledge base still dominating? This paper examines the question of whose input, or knowledge, actually contributes to the permit process and therefore who the true participants are.

This paper is based on work done within the EMLE project (Effective Environmental Management: law, public participation and environmental decision making) which is a collaboration between the Finnish Environment Institute (Jonathan Tritter, Eeva Furman, Jukka Similä, Aino Inkinen) Åbo Akademi (Marko Joas, Åsa Lindström, Tea Nõmman, Sam Grönholm, Niina Hakanpää) and the University of Turku (Anne Kumpula, Stephen Davies) funded by the Finnish Academy through the Environment and Law research programme, and a study commissioned by the Finnish Ministry of Environment, the results of which are published (Similä, Inkinen et al. 2006).

1 Introduction

Participation on many levels is one central aspect of good environmental governance, and through ratification of the Aarhus Convention (UNECE 1998) most EU member states are committed to delivering opportunities for citizens and organisations to participate in decision-making relating to their environment. As the increased use of new environmental policy instruments in Europe has been called a 'symptom of governance' (Jordan, Wurzel et al. 2003), so broadened participation rights and increased public involvement in decision-making can also be considered a symptom of governance.

Participation itself is many-faceted, and there is a large body of literature dealing with the definition, merits and desirability of participation in decision-making, as well as studies concerning methods for improving the inclusiveness of participation (Balducci and Fareri 1998; Beierle and Cayford 2002). Based on principles of social justice and democracy, it is argued that participation in political decision making is beneficial in legitimising decisions and policy-making by limiting conflict as well as facilitating their implementation (Arnstein 1969; Balducci and Fareri 1998; Cowie and O'Toole 1998; Appelstrand 2002; Sjöblom, Sahivirta et al. 2003). Nonetheless, there are few prescriptions for effective participatory processes, and multilateral agreements offer only general principles rather than guidelines for what is often a highly specific issue tied intimately to local conditions and circumstances.

Participation in environmental decision-making also has its critics, from the debate on the compatibility between the aims democracy and sustainable development where 'it is not obvious that the participation of ordinary citizens promotes the goal of sustainability' (Laessoe 2007) to more specific concerns. For example, the juxtaposition of the capacities of lay persons and experts to engage in decision-making can lead to situations of mutual distrust and conflict, but also authoritarian and non-democratic decision-making processes (Verschuuren 2005). Studies on participation in environmental decision-making indicate (Peuhkuri 2004) that conflicts of knowledge can and do arise in environmental decision-making situations, and that expert knowledge is valued above local, often lay knowledge.

Some of the problems mentioned above arise partly from the broadness of the issue that is participation. There are many forms of participation, both in practice and purpose. Arnstein's classic ladder, although a simplification of reality, is useful in exposing many participatory processes as tokenism or even non-participation (Arnstein 1969), where communication and the transfer of knowledge and information is largely one-way, top-down and hierarchical. An important element of participation in environmental governance, and probably key in any definition of successful participation, is precisely an exchange which is multi-way and not confined to traditional hierarchies; either of power or expertise. Faced with the challenges of environmental governance, decision-makers must learn to obtain, process and use knowledge from many sources and of many forms in order to make decisions. Public participation can be a key element in balancing this

knowledge mix, but the purposes of the participatory process and the role of the different actors in the process should be clear.

The EU highlights five terms that lie at the core of good environmental governance, namely openness, participation, accountability, effectiveness and coherence (EUROPA 2006). Many of these concepts are also embodied in Finnish environmental policy, where something of a regulatory reform was undertaken beginning in the 1990's, aiming to move away from traditional command-and-control policy instruments. This reform also appears to be changing traditional power/knowledge relations, and '…natural-scientific and judicial expertise is shifting towards multidisciplinary understanding, where economics, planning professions and social sciences are also important for the governing practices…' (Sairinen 2003).

The Environmental Protection Act (EPA) (86/2000) has been a part of this reform, regulating pollution and transposing the Integrated Pollution Prevention and Control Directive (IPPC) (96/61), as well as taking into account Finland's commitment to the Aarhus Convention requiring certain levels of participation, access to justice and access to information. However, the environmental permit system which the EPA regulates is still constructed along traditional hierarchical command-and-control lines, being based on the form of the previous environmental permit structures. Where participation is taken explicitly into account, the power to be given to participants is unclear. Finnish environmental policy has long developed along consensual lines which allows for informal dynamics to operate within decision-making (Sairinen 2003), potentially symptomatic of greater governance, and yet these traditions may also restrict a broader redistribution of power and influence beyond existing informal networks and arrangements.

With this background, our current interest is focused on the environmental permit system and the investigation of the role of participation in it. We have studied its implementation in order to examine if participation is taking place effectively and if the mode of environmental management has indeed shifted towards greater governance from the hierarchical mode of decision-making. This paper examines the question of whose input, or knowledge, actually contributes to the permit process and therefore who the true participants are.

1.1 Participation in Finland

To gain some insight into the significance of participatory processes in Finland, the relevant legislation gives some indication of the intended role of participation. Crucially, participation in environmental decision-making in Finland is formalised in the Finnish Constitution (section 20) and, Finnish environmental policies are '*designed to increase well-being and create an eco-efficient society by promoting sustainable development, by actively improving our environment, and by ensuring that natural ecosystems can continue to function well'*.[1] providing through the law for the implementation of stakeholder participation.

Opportunities for participation in Finland are provided at different levels of decision-making through various means. National policy documents and legislative proposals have traditionally been prepared in committees and working groups, where different interest

[1] Finland's environmental adminsitration's common information resource: http://www.ymparisto.fi/default.asp?node=4069&lan=en, accessed 23.05.2006

groups have their representatives - as is typical for Nordic countries. The public authorisation for individual projects and activities causing harmful effects on the environment is granted in an administrative process which involves public consultation measures such as public hearings and provisions for the submission of opinions on applications (written and oral) as well as appeal rights.

Participation rights have gradually developed during the last decades. Traditionally the participatory rights at the project/activity level has been restricted to those affected by the environmental impacts of the project or activity, though the concept of "those affected" covers a range of potential participants like citizens and corporations. Recently also non-governmental organisations (NGOs), which can be seen as advocates of interests, have obtained better status and the right of appeal. Appeal rights have a dual role, in a sense that such a right does not only make it possible to be heard after the decision is made, but it also strengthens the voice of potential litigants while a permit decision is prepared.

The developments evident in these regulatory reforms appear to follow a general trend towards network governance where decision-making is decentralised and the range of parties actively involved in and contributing to decision-making is broadened. This trend has also been described as regulatory pluralism (Gunningham 2002) where public agencies seek to use resources outside the public sector to further policy objectives, with goals of increased policy effectiveness, greater social acceptance and less cost to the state.

1.2 Environmental permit policy in Finland

Of particular interest in the implementation of participatory processes in environmental decision-making is the environmental permit process. Environmental permits are a regulatory tool for controlling the emissions of harmful substances into the environment, and the extent and nature of activities which cause environmental disturbance. Environmental permits are used by EU member states to implement the IPPC Directive[2] as well as other international and national legislation for environmental protection. The stated aim of the environmental permit system in Finland is to preserve the good condition of the environment.

Environmental permits have long been used in Finland, particularly in the field of water protection and management. The current integrated permit system covers a larger field of activity, incorporating emissions and pollution to air, water and ground, and is regulated by the Finnish Environmental Protection Act (86/2000) (EPA) which came into force in March 2000. The EPA introduced changes to streamline the environmental permit process and improve opportunities for public participation, particularly for NGOs which were faced with participatory restrictions in previous legislation. A key change involved the removal of access to judicial review being conditional to prior participation in the process. Those not active at the permit deliberation stage did not have the right to make a complaint at a later stage. The integrated and participatory permit process is now intended to act as a framework for enabling mutual tolerance between the polluting activity and its neighbours (Kuusiniemi, Ekroos et al. 2001).

At the time of legislatory change, the improved opportunities for participation were the focus of some debate surrounding the risk of increased nuisance participation, particularly from the NGOs whose rights had been strengthened through the new legislation (Kainlauri 2003). No evidence was found that this was happening either in an early study

[2] Council Directive 96/61/EC concerning integrated pollution prevention and control

following the first two years of implementation (Sjöblom, Sahivirta et al. 2003) or after the first five years (Similä, Inkinen et al. 2006), as although the position of parties such as NGOs appears to have been strengthened, overall participation remains low, and nuisance participation is negligible. Nonetheless, participation rights may be curtailed through future changes to the system which although aimed at improving efficiency and 'lightening' the administrative burden (Ekroos, Järvinen et al. 2006) may also result in the constriction of participation, for example through the introduction of limitations to the types of activities that require hearing in their deliberation.

In practice, the current permit process is administered by three types of environmental authority: the environmental permit authorities; regional environmental authorities and municipal environmental authorities. The 'division of labour' or permit activity remit allocation between the two types of regional authorities is largely based on their existing expertise. The first authorities, of which there are three in Finland, are derived from the old Water Courts and are geared towards managing environmental permits with links to water pollution. The authorities each administer permits in a region covering approximately one third of the country. The regional environmental authorities, of which there are 13, cover smaller regions but have a broader work remit dealing with issues relating to air pollution and waste. Environmental authorities also have a dual role in the permit process as they are responsible for both processing and monitoring environmental permits. These first two environmental authorities are a part of the national environmental administration, whereas the third category of authority belongs to the municipal administration. These latter authorities deal with permits on a smaller scale with more local impacts, such as petrol stations and small-scale quarrying.

1.3 The possibility space

When thinking about the role and impact of participation in the environmental permit process, a key issue is the actual potential impact, i.e. what impact can participation have? and what limits the role it can fulfil? This can be thought of in terms of possibility space, the space within and around the process where participatory input or knowledge, and the participatory process itself can be of influence. The possibility space can also be thought of in terms of contrast space as introduced by Alan Garfinkel. His contrast space or possibility space is limited by the perceived alternatives to a state of affairs, and two different parties can be '..embedding the problem to be explained in two different spaces of alternatives, which produces two different things-to-be-explained, two different objects of explanation' (Wilkins 1998).

The environmental permit process in Finland is a structure underpinned by the legislation as described briefly above, and is administered by environmental authorities. Other direct actors in the process consist of the permit applicant, participants and other stakeholders which can include other authorities and advisory bodies. Therefore, there are several potential spaces for alternatives, as seen by the various parties involved in the process, but also those spaces created or enabled by non-human elements in the process such as the law. The permit process is strictly regulated by the law, which prescribes minimum conditions for legal permit conditions. It leaves little room for interpretation as to which types of activity require a permit to operate, what the minimum level of informing and hearing of the parties should be and what constitutes a legal activity. Some degree of standardisation is also sought after in the permit process, and therefore certain permit conditions are to be applied across the board.

The permit process can be thought of as system existing within several frameworks of perception: the legal framework; a local setting with cultural, environmental and socio-economic factors; a temporal framework with changing trends in technology, environmental concerns, policies etc. and finally the personae of the decision-makers themselves. 'Mature' modern law, as Tuori argued in 2002, is multilayered and consists of a surface of regulations but also '…includes deeper layers, which both create preconditions for and impose limitations on the material at surface level.' (Tuori 2002). The surface gives a general structure within which the environmental permit process operates, but the closures and contrast spaces are also formed at different levels and are affected by the tacit knowledge and background of the interpreter of law.

The local setting is also multilayered, and will include personal and professional social dynamics, particular environmental conditions and an environmental history, specific economic circumstances and geographical conditions. These, and other features of the locality form a part of the fabric of possibility space. In terms of persona, the professional role of the decision-maker presupposes an objective decision-making capacity, with concerns first and foremost for the environment and the legality of activities. However, as Wagenaar notes, administrative work is affected by factors like tacit knowledge, practical judgements and personal feelings '..that constitute the core of administrative work' (Wagenaar 2004), partly reflecting the layers of Tuori's law.

For some examples of 'space' in the surface law, the permit system is based on the notion of Best Available Technology (BAT), the application of which can be challenging and requires the decision-maker to either have (or be able to obtain) knowledge of the salient economic, environmental and technical elements to assess what BAT is for each permit application, or to accept the permit applicants' interpretation of BAT[3]. Another element that cannot be determined exactly by the law is the sensibility of an area to particular activities, ie. the local environmental risk. This is to be determined by the decision-maker and affects both the permit conditions if a permit is granted and also the likelihood of rejecting a permit on grounds of excessive environmental detriment.

The issues listed above make up some of the possibility space where participation - particularly the knowledge that participation can add to the decision-makers' knowledge base – can be of influence in the decision-making and the outcome of the permit process. In part, we are looking for what triggers the awareness for interpretation (i.e. is there realisation that there is flexibility or a need for flexibility?), and what then, or who, directs that interpretation.

1.4 Empirical work

In order to understand and assess the significance of the changes introduced to the environmental permit process in 2000, the appellate procedure was studied in 2005 to determine both the extent of participation and its effects at this stage of the environmental permit process (Similä, Inkinen et al. 2006). This included the analysis of all court decisions following from complaints made between March 2000 and June 2005, as well as interviews with members of the Vaasa and Supreme Administrative Courts who manage the complaints and judicial review process. A key conclusion from this study was

[3] The environmental permit itself does not contain details of which technology or methods the permit applicant is to use, but sets emissions and operating time limits, within which the applicant can operate freely. Setting the limits does require an understanding of the capacity of BAT to meet certain emissions restrictions, within the economic and procedural capacities of the permit holder.

that participation through initiation of judicial review of permit decisions had a clear effect on permit content and quality, '..without judicial review each year hundreds of permits which violate environmental law would be accepted..' (Similä, Inkinen et al. 2006). To some extent then the participants, through the initiation of judicial review, enabled the reopening of the possibility or contrast space after the permit decision closed the process.

Further study of the participatory processes implemented in the permit process has involved extensive interviews with all 13 regional environmental authorities and three permit authorities to identify any variation in attitude to participation from the authorities, as well as case studies of ongoing permit deliberations to gain a broader understanding of the dynamics at work in practice, but also to uncover attitudes and beliefs held by the different parties with regards to the role and significance of participation. The case studies were chosen from four regional environment centres with differing attitudes to participation and one environmental permit authority, and where possible relating to similar fields of activity, namely animal shelters, waste treatment and a third category of various industrial activities. The case study empirical material consists of interviews done with permit applicants, permit authorities as well as stakeholder participants in the process, documentary evidence applying to the cases and in some cases also media material. Case study work is still ongoing but initial findings are presented here.

1.5 Attitude survey

From each of the 16 government permit authorities a key decision-maker was chosen for interviewing with the purpose of assessing the prevailing attitude towards participation in each authority[4].

In general, the regional environment authorities recognized both the necessity and value of including participatory processes in the environmental permit system, and were also very clear on their responsibilities to the public vis-à-vis the law. The authorities fulfil these requirements but have a pragmatic view on any further actions they could take to encourage participation, such as public meetings and the development of useful and accessible information channels. Differences between authorities were found in two main areas: action taken beyond the strict legal minimum to facilitate participation and expressed opinions on the usefulness and value of participatory input.

Beyond the legal requirements for enabling participation, most authorities recognised a role that participation can have in facilitating the permit process and permit implementation if stakeholders are involved early enough in the process. For example, one interviewee from a regional environmental centre stated that 'From our experience it has been beneficial for the whole permit consideration process from our perspective as well as the applicant's that we involve as many as possible [at the application stage], it reduces complaints later'. In terms of procedural facility and efficiency, participation as involvement is thus seen as important in the environmental permit process. Participants' input is seen as having a potentially strong negative influence on the process through the delaying or blocking of both process and permit activity, whereas a more positive scenario involves reassured citizens and the process proceeding uninhibited by local resistance. For example, 'Then there is the bad side that there are these clients who get enthusiastic and make trouble for years. They won't believe us when we say that this is how it is and won't change, regardless of what we say, and then they make complaints

[4] All interviews were done in Finnish, and therefore any quotes given in the text are translated

everywhere. And do things that can cost financially. And people don't always see the big picture..'. There appears to be little impetus for seeking out the options as presented or implied by the participants, and their opinions are seen mainly as impossible or irrelevant.

The participatory process also enables communication, the role and extent of which was perceived in different ways. The 'minimum requirement' view was limited largely to dissemination. Some authorities recognised the value of informing neighbours and stakeholders about the permit application for purposes of transparency as well as process facilitation. In the words of one interviewee; 'Well of course it's good that when the inhabitants come in from the start they're told the right things so they don't end up with false impressions and usually we notice it when comments are submitted when there are misgivings like – terrible and you can't allow this thing here – but usually at that stage the most active ones will call or visit with questions and we can tell them, and usually when we grant the permit and the restrictions and the activity is described then the inhabitants are reassured..' The main purpose of the legal participatory process was seen as one of informing to limit conflict, delivered from the top down and largely being restricted to this. Any comments delivered to the authorities from the stakeholders are treated more as concerns to be placated rather than the source of new information.

A broader view was shared by a larger group of authorities, where the communication related to the permit application was seen as being multi-way. Rather than merely channeling information relating to decision-making happening in a predetermined way, most authorities view the participatory process as a chance to gain information as well as disseminate it. From the attitude that participation could somewhat surprisingly provide useful information, 'Sometimes [participation] even provides knowledge..' the range of opinion swung to participatory input being essential to decision-making, '..so I must admit that it's often that the neighbours have that knowledge and understanding that we here behind the desk, even if we do go on site, cannot see..'.

The role of participation in the process as a device to enable communication between permit applicant and stakeholder was also recognized by some authorities. The formal nature of the process and role of the authority as a kind of mediating party was seen to enable an indirect communication that was otherwise impossible due to local conflicts. As applicants are required to respond directly to comments made by stakeholders, this applicant-stakeholder communication can make applicants more aware of their neighbours' needs and according to one interviewee '..there are benefits for applicants for those who want to adapt to their environment and take into consideration [the inhabitants'] circumstances…'. This element of the participatory process can lead to the applicant modifying planned activities to adapt to local wishes.

The substantive content of the permit is determined largely by laws and regulations which define what is legal. This is the starting point for the permit authority, built on by the permit applicants' proposals for projects implementing certain regulations and restricting emissions to certain standards. When asked directly, interviewees gave the permit application itself, their own knowledge and the statements from expert bodies to be the most important sources of information for setting permit standards. The technical understanding of these parties was seen as their value, whereas input received from non-expert participants is often considered to be '..emotional and subjective..'. In some cases, authorities admitted to receiving hard facts relating to tangible issues such as smell and noise, and particularly sensitive local areas. One permit authority stated that '…for small damage we really do get information about previous effects from the locals…' which the applicant may not have mentioned.

However, if not delivering facts to the drawing board, all authorities acknowledge that participatory input affects their own thinking and deliberations. Whether this takes on the form of greater care taken by the decision-maker, or the request for more details and information from the applicant, this gives the participants an influential role on both procedural and substantive terms. A more thorough process can uncover facts overseen or concealed which may affect the legality of a permit, or reveal procedural errors or oversights which can be redressed before the permit decision is made. Authorities feel that this enables the creation of permits that are better tailored to local environmental conditions.

1.6 Case studies

Four regional environment centres and one environment permit authority were chosen for the case study work. Within each, two or three ongoing permit cases were chosen for study, based on the criteria of participatory action and permit activity. In all cases a representative for the permit applicant, the permit authority and at least one participant were interviewed. The case studies give us the benefit of a more heterogenous view of the permit process, as all categories of active parties were interviewed and various types of documents were available, including some media commentary on certain cases.

At this stage it is not possible to firmly generalise from the data collected, but some initial trends are emerging. A common finding relates to the roles of the different parties involved, and some indication that the framing of the permit issue and the permit process itself varies between parties. In brief, both permit applicants and participating stakeholders tend to assume a victimised role. The permit applicants describe themselves as businesses delivering essential services and bringing various benefits to the local (and sometimes national) economy, struggling to maintain a footing due to the many restrictions imposed by environmental laws and demanding neighbours. The environmental permit is seen as yet another hurdle to overcome, bringing added expenses and delays. Neighbours and other stakeholders often have a dual role as both client and obstacle to business, and participation is considered almost across the board as either unnecessary or unnecessarily broad, and the impact of participatory input is considered to be great.

Neighbours and other stakeholders often describe themselves as the wronged parties, whose opinions are not taken into account despite the participatory process. Decisions are seen to be either pre-determined or developed between the applicant and the authority with scant regard to third party input. It should be noted that this link between applicant and authority was not seen in each case. Many cases considered - although new in terms of activity requiring a permit - had some history in the area, and most interviewed participants had strong opinions about past rights and wrongs and connected them directly to the permit process in question.

The permit authorities invariably described themselves as representing the law, and the environment, and by the nature of their duties as an unbiased component of the permit deliberation. The law was given as the key determinant of a permit application's success, and the space for flexibility was small where a proposed activity was legal and reasonable in terms of BAT for instance. As with the previous interview round, the role of the permit application in delivering substantive information was reinforced, with the role of third parties' input being more limited to minor modifications in permit conditions to those requested by the applicant, but always providing a local angle and cause for increased care in permit deliberation.

In terms of communication channels, many applicants noted that direct contact from neighbours and other participants would have beneficial effects in terms of both their own willingness to adapt proposed activities and local understanding of the permit-bound activity. This communication channel was seen as lacking, often due to past conflict perpetrated in each new local issue. Paradoxically, interviewed participants tended to wish for this channel of communication, yet felt it could not exist because of these conflicts and the tight relationship between applicant and authority. Simultaneously, the role of the environmental authority as mediator was acknowledged in many cases, and the participatory process was seen as the only possible channel for voicing concerns regarding planned polluting activities.

In one particular case, differences in attitude and view were very apparent between parties. The permit application concerned the development of a waste disposal and treatment site which has been the site of conflict and controversy for many years. The site is run by a business, rather than the municipality, and neighbours include permanent inhabitants, business operations which use the local environment such as stables, and holiday inhabitants with second homes in the area.

This particular permit application was processed over a period of two and half years, a relatively long time. During that time two sets of public announcements regarding the application were made and one public meeting was organised in order to inform neighbours and other stakeholders about the application. The permit applicant was asked to provide additional information for the application on several occasions, and over 20 comments from stakeholders were received during the hearing. Three expert statements were also provided. As a result, the permit authorities were in possession of a large variety of data and information regarding the case as well as having long-term experience of the site and the situation surrounding it:

The decision-maker

The permit authority was fairly strict in the view that the running of the waste management was legal, and necessary for the region and therefore could not take stakeholders' demands to relocate the activity into account. The decision-maker was well aware of the tension surrounding the permit application, but felt that the issues brought up by stakeholders during the hearing were not relevant or not possible to address. The key information to be considered in the permit deliberation came from expert bodies and the applicants themselves, also experts in their field, as the participants were seen to be demanding the impossible and refusing to accept the necessity for waste treatment in the area. In principle participation could be a good thing, and the authority could benefit from relevant local knowledge but in this case the participatory input was coloured by conflict.

Overall, the permit authority regarded the permit deliberation process as a difficult one, seeing the need to grant the permit and enable the waste management activity to continue despite public opposition. The neighbours and stakeholders clearly opposing the activity were seen as parties to be placated, rather than partners to be negotiated with.

The permit applicant

The permit applicants felt maligned, and unfairly judged by neighbours and other stakeholders. In their opinion, their activity was of benefit to the region and necessary, and relocation or shutting down was not an option.

Their view was that communication with participants – although something they claimed to seek - was impossible other than through a third party, namely the permit authority. Their stance was largely business-like seeking financial gain, and partly conciliatory, recognising that a poor public profile could be damaging for their operation. Some attempts had been made to seek public involvement in the permit case but generally local dynamics had been tense. New inhabitants were seen as the greatest source of ill will from the public, demanding the impossible.

The stakeholders

All stakeholders interviewed, and all participatory input into the process was of a critical nature. Many participants had separately submitted similar comments and concerns, and all of them included demands for the waste treatment and disposal site to be closed and the permit application rejected.

All interviewees felt that the authority and the applicant were working together, largely leaving neighbours and other stakeholders out of the process. The close physical proximity of the applicant to the decision-maker was seen as suspicious, as they are located in the same building. All had discussed the permit application together, and were more confident in information gained from each other than either the permit authority or the permit applicant.

The main active participant was confident in having the technical and legal expertise to be able to contribute in a realistic and concrete fashion to the permit deliberation, but was concerned that all participatory input would be disregarded as had apparently happened in the past. A key influence on the type of comment submitted to the permit authority was previous knowledge and assumptions regarding the same permit applicant and prior permit deliberation situations; under current legislation as well as prior to the latest permit process reforms.

The outcome

The activities the permit application applied to were new, but on an existing site. Participants channelled – explicitly – their long-standing grudges with both permit authority and the permit applicant into the process. On certain points, the existing activity on site had not fully fulfilled previous permit conditions, although these were sought to be rectified under the new permit. The permit granted made reference to points brought up by participants, but conditions given were not as tight as demanded.

Reference was made to noise and smell limitations on several occasions, given the technical and financial capacities of the applicant. The applicants' direct responses to participant comments were largely accepted, although some of these were very imprecise.

In general, the decision to grant the permit was a given, as this was noted by the decision-maker in interview, and requested by expert stakeholders in their statements. This was based on both legal grounds as well as the necessity for such an activity to continue and expand in this region. Relocation or permit application rejection was not an option.

1.7 Discussion

The empirical evidence suggests that the main influence on the permit process is indeed the legal framework within which it exists. The process is regulated in some detail and there is little room to deviate, although the actual influence granted to participation does differ between decision-makers on both a procedural and substantive level.

Authorities meet minimum criteria but tend to do little beyond those either in terms of actively seeking participatory input, and although stressing the importance of participation do attribute a lesser importance to the knowledge contributed by lay participants than to that provided by more expert parties. Participants' involvement is appreciated and occasionally sought more actively than required by law, mainly for purposes of process facilitation and acceptability. Here the potentially negative effects of participatory input are highlighted, in terms of possible delays to the system itself and conflicts between permit applicant and stakeholders, if the participatory process is not implemented well.

In terms of permit conditions, there is a discrepancy in understanding between parties of what the main source of influence in the permit process is. Respondents in the case study interviews tended to reinforce their positions in the categories of: authority representing the public/environmental interest; market-driven business actor; victimised neighbour. Such crude categorisations demand further examination, but the results do suggest that despite the legal developments aimed at improving transparency, accountability and participation there are still firm frames through which actors perceive the decision-making process. Perceptions of alliances and exchanges of information do not reflect the actual situation, but are strong factors in explaining behaviour.

Overall, the role of participation and participatory input changes through the stages of the system, where at the outset new knowledge and understanding is sought, and to some extent delivered into the system. The formal opportunities to contribute to the process are limited to the hearing stage following the announcement of the application and any spontaneous informal contacts made with either decision-maker or permit applicant, whereafter the only opportunities are complaining and initiating judicial review. At the early stages of the process, any kind of comment may be made from opinions to environmental measurements, and indeed the decision-makers claim to want such input.

The rights allowed to stakeholders through the legal developments in the environmental permit process are a step towards greater governance in environmental decision-making. Stakeholders have been given a stronger position in decision-making and greater access to participatory processes at different stages of the process without the prior limitation of early participation giving entitlement to initiating judicial review. However, decision-making power remains with the permit authority, although the view of the different active parties in the process do not always correspond on this issue.

Initial case study evidence suggests that many permit applicants allocate a more pivotal role in decision-making to other stakeholders than themselves, and correspondingly the interviewed participants view the decision-making power as shared between permit applicant and authority. Authorities do take the law, and the existing technical expertise as their point of departure, but appear to be attempting to include different forms of knowledge into the 'mix'. This does differ on a case to case basis however, and can be strongly tied to the local social and professional dynamics. Some permit authorities acknowledge that participatory input heightens the care taken in permit deliberation, and thus can uncover new material and considerations that affect the decision-making.

Therefore, participatory input can bring about awareness of an area where the permit decision is not quite as straightforward as an application may suggest, i.e. bring out the awareness of flexibility. The direction of that flexibility is still often tied to the technical and legal regulations and guidelines provided by the law and expert bodies, yet a local angle noted by a neighbour may also be pivotal. In the specific case described however, the decision-makers could not see any flexibility that would enable the public participants' opinions to be taken into consideration, quite the opposite in fact as their input appeared to strengthen pre-existing opinions about the impossible nature of participants' demands.

Overall, the possibility space for participatory input is limited by the law, as this is the point of departure for all environmental authorities. Authority responses do suggest some space for influence in the substantive permit conditions specific to the local area, and also in the processing of permits. Although highlighted concerns and issues may not have a direct impact on permit conditions, in increasing the thoroughness of process this kind of input can enable authorities to produce better permits for both environment and inhabitants. Differences in attitude towards participation also give support for a personal, or institutional angle to the possibility space, as the authorities' own flexibility provides greater or lesser space for the participatory input to act. The overlap in possibility space between parties can be small, as in the case considered more closely above, and contrasts or options appear fixed by preconceptions and prior experiences. Where space for compromise is limited, then the possibility space for participatory influence is also limited. This, in turn, would suggest that participation as a symptom for governance is not always manifest in the environmental permit process.

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Approaching multilevel agri-environmental governance: the Finnish case from 1995 on.

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1 Introduction

The relationship between agriculture and the environment as a complex problem is nowadays framed into politics: the general dilemma seems to be the balancing between continuous agri-industrial rationalisation and the ambitious goals of sustainability of farming (Marsden 2003). During the past ten years Finnish agri-environmental policy has also undergone significant changes. Structural changes of agriculture, emphasis on the joint production of food and public goods, food crises, as well as strengthening consumer awareness have all contributed to the policy change. Indeed, agri-environmental issues are not any more considered marginal phenomena but serious challenges for agricultural and environmental policy-making. Numerous processes affect current agri-environmental governance and, thus, challenge traditional approaches to environmental policy.

The serious greening of EU agricultural policy discourse began in the early 1990s and the agri-environmental policies pursued so far may be reduced to two types of thinking (Buller & Morris 2004). The impact model is the more traditional since it understands agricultural practices as harmful to the environment and aims to mitigate environmental problems by regulative measures. The public goods model, again, assumes a more complicated relationship between agriculture and the environment and also a degree of shared dependency. However, agricultural policy is often used as the classic illustration of the closed style of policy-making based on the stable policy community, instead of more open and flexible issue networks. Such a policy style of course results in problems for environmental policy integration, which, again, is a necessary element of the successful environmental governance. The core of the agri-environmental policy problem is the positioning of the agri-environmental issue within agricultural and environmental ministries (e.g. Curry & Winter 2000). They have traditionally framed policy problems very differently, and agricultural ministries have been unwilling to give up their policy goals for environmental ones. Such policy problems can be understood in terms of sectoral integration of policies or in terms of competing discourses, for instance.

Environmental policy integration refers to the objective to incorporate environmental objectives into all stages of policymaking in non-environmental policy sectors (Lafferty & Hovden 2003). In line with the greening of EU agricultural policy, attempts for inclusion of environmental elements into agricultural and rural policies have emerged. In practice, however, the integration of policies has been difficult (Buller 2002). The rather strict sectorisation and detachment of environmental and agricultural policy goals has been preserved, and, for instance, the EU's agri-environmental measures are only a very minor part of the total structure of the Common Agricultural Policy (CAP), the consequences of which are, however, fundamental for the rural areas. These problems are of course related to the current and future essence of the European agri-environmental governance. Further, it can be argued that policy integration needs to take place at all spatial levels in order to be effective – from that of policy formulation at the European level and policy implementation at the national and sub-national level, down to actions of farmers.

Discourse, again, represents both the policy ideas that speak to the soundness and appropriateness of policy programmes and the interactive processes of policy formulation and communication that serve to generate and disseminate those policy ideas (Schmidt & Radaelli 2004; Garzon 2005). A discourse can also be used for various purposes and reasons and it is sensitive to timing and context. Agriculture is often used as an illustrative example: in framing of agricultural problems the same discourse seems to have one function at the international level and the reverse at the national level etc. (*ibid*.). It follows that institutional setting makes differences in the ideas projected in the discourse. As comes to rural governance, Winter (2006) has noted that the research on regionalism and multilevel governance tends to recognise the priority given to central state direction. Thus, examining the spatial reconfiguration of national institutions alongside new sub-national arrangements should be identified as an important part of analysis. Yet much more attention has been given to regional development agencies than to the strengthening of regional government offices.

This paper deals with the connections between policy formation and implementation. It examines the evolution of the Finnish agri-environmental policy after the changes introduced by the EU membership from 1995 on. In the EU there exists a particular model of supranational agri-environmental policy, which mainly acquired its current form in the EU agricultural policy reform in 1992. In principle, Finland began to follow this supranational agri-environmental regulation. However, the national responses to the supranational regulation should not be understood as existing in a vacuum. Instead, environmental policy solutions are highly political and produced by a continuing process of interactions between different spatial levels. Therefore, we discuss multilevel governance and explicate also implementation practices at the regional and local levels. Policy formation and implementation are examined in the context of policy learning. We also pay attention to the notion of multifunctionality in the development of agri-environmental policy and clarify how agri-environmental policy actors interpret and use the ideas of multifunctional agriculture. Empirically this study[1] is based on documentary material and on semi-structured interviews with the Finnish government officers in environmental and agricultural administrations and with the representatives of various interest groups.

[1] This paper is based on the project "Development of the Finnish Agri-Environmental Policy as a Learning Process" in which sseveral empirical data sets (interviews, surveys, documents) at different spatial levels have been collected over the years 2003-2006. See also e.g. Aakkula et al. 2006; Jokinen 2005; Kaljonen 2006; 2007; Kröger 2005; Kröger & Sabatier 2007.

2 Multilevel Governance And Learning

In the EU policy structure, the position of the agri-environmental issue is inevitably linked to traditions and current modifications of the Common Agricultural Policy. But is it actually justified to make strong generalisations on the mode of European agri-environmental policy? In other words, should we assume that there is a certain EU level model of agri-environmental regulation, the main characters of which also hold true at the national level? And if there exists such a model, are we to suppose a (at least relatively) direct transmission of the principles of the general regulation model to the lower levels? Or, alternatively, are there some (or even many) intermediating mechanisms between the various levels, which might ultimately lead to rather contingent agri-environmental regulation principles and practices in a member state's policy framework (e.g. Wilson et al., 1999; Winter 2000; Jokinen 2002)? Such mechanisms might refer, for instance, to national traditions in agricultural and environmental thinking or to national differences in the relative strength of the key agri-environmental policy actors.

The perspective of *multilevel governance* has provided a framework for understanding complex processes of policy change (e.g. Stoker 1998; Schout & Jordan 2005). It suggests that institutional/constitutional perspectives are limited and misleading, since there are many centres and diverse links between many agencies of government at local, regional, national and supranational levels. Eckerberg and Joas (2004) note that the traditional way to see policy making in general as a top-down system can been considered out-dated. The position of local and regional level actors has been strengthened and this is also connected with networks. Sub-national units, local governments, civic organisations and networks introduce their own policies, or at least try to coordinate common efforts to influence policy-making processes A simultaneous movement of political power is occurring up to trans-national levels of government and down to local communities ("vertical multilevel governance"; *ibid*.). On the one hand, local governments are gaining in power, including more political influence within the nation-state. On the other, also other units than national governments can and will influence the policy processes at the local level, through sub-governmental, trans-national networks and international organisations. This gives, for instance, the EU a new channel to affect local level politics.

When the perspective of multilevel governance is applied in research of European politics it is typically asked: How does the European community affect the policies of an individual member state? How do the policies of member states build up the European community? How do the policies develop in an individual nation state? (e.g. Börzel & Risse 2000; Warleigh 2006). In principle, EU agri-environmental policy is a part of the strongly harmonising EU agricultural policy and it consists of issue-specific (though basically quite loose) measures. The emphasis on EU harmonisation, however, easily results in a tendency to understand policy-making as a purely rational top-down process, where there is no room for policy re-formulations by the national policy networks. The linear policy interpretation is even more difficult due to the ambiguity of policy discourses; as mentioned above, policy discourses on agriculture (and the environment)

serve here as an illustrative example. Thus, we agree with Billaud et al. (1997) who have concluded that EU agri-environmental policy manifests itself through re-definitions of the social role and legitimacy of agriculture in various European countries – instead of being a purely European approach and of creating a new social reality at the transnational level.

In addition to the perspective of multilevel governance, policy changes can be understood in terms of policy learning. There are different approaches to the policy learning but they share the basic view that learning takes place in complex arrangements of state and societal actors, in various types of domestic and transnational policy network and policy community (Bennett & Howlett 1992). Policymakers work within a framework of ideas and standards that specify not only the goals and instruments of the policy but also the nature of the issue in question (Hall 1993). They must strengthen their understanding of the problem beyond the current conceptualization to be able to formulate new policy objectives and instruments that can contradict old policy beliefs, especially when the policy change is radical or sudden. In fact, this conflict between old and new policies often facilitates learning (e.g. Thomas 1999; Sanderson 2002). Policy change obviously occurs partly from policy learning and partly in response to changes external to the policy issue-area (Sabatier 1998). Joining the EU was a remarkable external change for the Finnish agri-environmental policy: a part of the agricultural power was passed to EU institutions which, again, resulted in novel administrative procedures and practices at the national policy-making (Kröger 2005).

3 Agri-Environmental Policy Formation at The National Level

Generally speaking, the agrarian discourse dominated for two decades the definition of Finnish agri-environmental problems since the issue had arisen in the early 1970s (Jokinen 2000; Kröger 2005). The core of this discourse was that agri-environmental problems and their solutions had to be adjusted to a broad context, which was the concern for the social and economic position of farmers and the vitality of rural areas. In the late 1980s, however, along with the uncontested science-based identification of agriculture-related water pollution, the conceptualisation of the agricultural pollution issue changed rather radically: it turned from a non-problem to a challenge for different actors, including agricultural policy-makers. The change in the framing of this problem was of course conditioned by the more widespread change in the environmental debate as different sectors of society rapidly became filled with the optimistic notion of sustainable development, with agriculture being no exception. Due to the active re-orientation, the agricultural policy-makers adopted the discourse on sustainability and set out objectives for sustainable development in agriculture.

Finland joined the EU in 1995 and since then the national agri-environmental issues have been defined within the CAP. During the very first years of membership, new agri-environmental measures were also introduced and particularly the Finnish Agri-environmental Programme 1995-1999 was a direct response to the EU Regulation. The programme introduced new kinds of economic policy instruments and its implementation relied on the co-operation between agricultural and environmental sectors. The Finnish model consists of *general* (GPS) and *special protection schemes* (SPS). The GPS sets out the basic level for environmentally friendly farming practices; the SPS offers more targeted contracts for environmental protection. Basically, the GPS was built to compensate the decline in farm income caused by the EU membership, serving the welfare state's idea of equality between different production sectors and regions (Jokinen 2002). Largely due to the importance to farm income, some 90 % of Finnish farms are contracted to GPS; the implementation of SPS has been more challenging (MAF 2004).

The programme is a significant financial source of agricultural policy: nowadays the environmental support accounts about a quarter of all the support paid to Finnish farmers. The strong agricultural policy function of the agri-environmental support is thus evident. It follows that several networks of policy actors are interested in Finnish agri-environmental policy. Presently there are three policy coalitions to be identified in this field.

3.1 The present coalitions of the Finnish agri-environmental policy

Agri-environmental regulation has thrown together differing definitions of the farm pollution problem as well as organisational rationalities and interests. As in many other Western countries, agricultural administration and the farmers' union have traditionally been able to formulate agricultural policy in Finland. There have not been significant public, political or parliamentary disputes over the agricultural policy principles. Equal with the ideal type of a policy community, the *agricultural coalition* can be characterised by a limited number of participants, the dominance of economic interests, frequent interaction between members, a high degree of consistency in membership and by broad consensus on policy beliefs and preferences.

With regard to agri-environmental policy, the agricultural coalition thinks that policy formation should be carried out by the Ministry of Agriculture and Forestry (MAF) and implementation should be decentralised to the regional level under the authority of the ministry. When the first Agri-environmental Programme for 1995-1999 was prepared, this coalition preferred ideas that the environmental problems could be solved with technological solutions and that the best way to protect the environment is to leave the issue in the hands of farmers. Eventually, aided by the right information, advice and support farmers will start using good farming practices.

The recognition of environmental problems of agriculture in the mid-1980s led to the gradual formation of the *environmental coalition*. It has consisted mainly of representatives from the environmental administration and environmental organisations (especially the Finnish Association of Nature Conservation). Also some researchers connected to environmental issues have strengthened the environmental discourse in the agri-environmental field. Overall, equal with the ideal type of a policy-issue network, the environmental coalition can be characterised by the dominance of ecological interests, irregular interaction between members, open access and by shared policy beliefs and preferences.

The environmental coalition has stressed that agricultural systems are away from natural ecosystems and that agriculture is the most significant water polluter. The environmental coalition has been oriented towards environmental protection and its original goal was to protect the environment from the damage caused by modern agriculture (e.g. Jokinen 2000). The coalition widely agrees that agri-environmental policy should comply with the polluter pays principle as other environmental policies do. It has also demanded for more regulative environmental policy instruments designed and implemented in collaboration between environmental and agricultural sectors.

In addition to the former agricultural and environmental coalitions, a third coalition has been gradually established. The establishment of a new *agri-environmental coalition* seems to indicate that learning across policy issue-areas has occurred. The agri-environmental unit from the agricultural ministry and the people responsible for agricultural issues in the environmental ministry are the core of this new coalition. The former regard themselves as more environmentally-oriented than others in the MAF while the latter respectively consider themselves more agricultural production oriented than others in the Ministry of the Environment (MoE).

The agri-environmental coalition's core policy idea is that economically-profitable production is of central importance, but at the same time environmental issues must be taken care of. They think that voluntary measures and economic instruments are suitable

for the agricultural sector but regulation is also needed to complete the set of policy measures. The coalition prefers cross-sectoral collaboration in agri-environmental policy since it is thought that the agri-environmental system is very complex; there is no way for either sector to manage it alone.

This policy formation process (with ten years policy experience and accumulation of information on the issues) has led to the restructuring of the Finnish agri-environmental policy field. Instead of two distinct coalitions, the field is now dominated by the new agri-environmental coalition. However, the agricultural coalition is still influential and holds the formal decision-making authority in the issues. This is because the responsibility for the large agri-environmental programme has been given to the agricultural administration and most of the resources were also allocated to it. Some of the formal decision-making power has moved from the agricultural coalition to the agri-environmental coalition, but the substantial effect of the moves is open yet.

3.2 The coalitions interpret core policy concepts in diverse ways

As noted above, institutional setting makes difference in the ideas projected in the discourse. An interesting example is the notion of *multifunctionality*, which refers to the simultaneous and interrelated provision of different functions. The concept of multifunctional farming is commonly linked to agricultural trade negotiations and to the EU's defence of an exceptionalist "European model of agriculture" within the WTO circles. Thus, the concept has been introduced by the EU, but the political discourse of multifunctionality is also more interestingly linked with multilevel governance. According to the core policy assumption of multifunctionality rural development consists of a wide variety of (more or less) new activities and services such as nature conservation and environmental management, agri-tourism and the development of short food supply chains. A common denominator of these activities is the re-configuration of the way rural resources are used within the farm and between agriculture and other rural activities (e.g. Knickel & Renting 2000). The strengthening of rural economy is associated with the introduction of new, non-agricultural enterprises (e.g. Ploeg et al. 2000). This may open up a new field for environmental-political and socio-economic innovations in the rural area not only on a local basis but also in the all-European interest.

Actually, the basic idea behind agricultural multifunctionality is not new and the ideas of multifunctional agriculture have been, at least to some extent, a part of agricultural policy already for a long time (Pretty 2002). However, the term has been used in various ways in the agricultural policy debate, depending on the political agenda and on the context in which it has arisen. Indeed, multifunctionality is of particular interest due to its various dimensions: it is a political and normative concept thus fulfilling specific (both defensive and dynamic) functions (Garzon 2005). The economic side of multifunctional agriculture maintains the traditional view that agricultural policy should increase economic efficiency and competitiveness. Its social dimension assumes that agricultural employment remains a strong factor in the social cohesion of rural areas, even if maintained on economically non-viable farms. The environmental argument encompasses both incentives with an increase in agri-environmental funding and obligations through regulations.

Garzon (*ibid.)* also notes that as a legitimising discourse the idea of multifunctionality is addressed both to consumers, citizens, and farmers. To consumers, the multifunctionality

principle continues to bring the search for low prices but also quality insurance due to regulations and incentives to farmers. As to citizens, it aims to explain the continuation of the level of budgetary costs (however, allowing also the redistribution in favour of public goods). And finally, of course, the farmers are paid for the private provision of public goods. In order to clarify the normative essence of the multifunctionality concept, we examine how the members of the three Finnish coalitions (introduced above) in the agri-environmental policy have interpreted and used the idea of multifunctional agriculture.

The Finnish Agri-environmental Programme is a policy instrument which certainly represents the idea of multifunctional agriculture. It is also fitting into the policy objectives of the *agricultural coalition*: besides intended to ensure that agriculture is practised in an environmentally sustainable way, it compensates the farmers for the costs and loss of income arising from these environmental practices. Further, the environmental support also compensates income losses due to the lower producer prices within the CAP.

Not surprisingly, the agricultural coalition regards the concept of multifunctional agriculture as a useful rhetorical tool for legitimising the support. It emphasises that the main function of agriculture is to produce food and the promotion of multifunctional agriculture should not curtail farmers' rights to produce what they want and how they want. Thus, the integration of environmental policy should be done from the point of view of the economic interests of farmers and their businesses and it is seen that economically profitable agriculture is also a prerequisite for the viability of rural areas. Therefore, the agricultural coalition emphasises that the best way to promote rural viability is to give support directly to the farmers and to the businesses closely connected to agricultural production (such as input-industry and food processing industries). Thus, the coalition is inclined to use the concept of multifunctional agriculture as a strategic policy tool in attempting to justify the support to production.

The *environmental coalition* labels the concept of multifunctional agriculture primarily as an apparatus that is used to justify the existence of agricultural support. From their perspective, the concept represents a rhetorical project that hardly encompasses real environmental concerns. It is argued that the promotion of multifunctionality will hinder the application of regulative measures, which they consider as the most effective instruments to mitigate adverse environmental effects of agriculture. Much attention is not paid to the other dimensions of multifunctional agriculture: they either are consider being outside the competence of environmental actors or regarded as irrelevant from the environmental point of view. In sum, the coalition uses the concept of multifunctional agriculture only when they criticise that environmental objectives are used as justification for agricultural subsidies.

Essentially, the Finnish Agri-environmental Programme represents the policy thinking of the *agri-environmental coalition*: they strongly and genuinely support the idea that besides producing food and fibre, agriculture has a fundamental function to provide environmental benefits, sustain rural landscapes and biodiversity and contribute to the viability of rural areas. However, it is not seen that the concept of multifunctionality has much to contribute to agricultural or agri-environmental policy; instead of a novel idea, it is rather considered a useful instrument for renaming a desirable way of thinking, which emphasises the important role of social benefits derived from agriculture. In brief, the agri-environmental coalition is prone to use the concept of multifunctional agriculture as a strategic policy tool in justifying its policy objectives. It seemingly also acts for consensus in the policy field. Yet, it is hard to see that multifunctionality would have been used as a conceptual tool for creating any new space for integrative policy framing.

Overall, the concept of multifunctionality is certainly more complicated than the main reference to the WTO agenda has implied (e.g. Losch 2004). It is interesting that all the three Finnish coalitions identified above agree somehow with the basic idea of multifunctional agriculture. However, each one uses the concept for its own purposes.

4 Implementation Of Agri-Environmental Policy At The Regional And Local Levels

4.1 Novel administrative co-operation at the regional level

The new kind of agri-environmental coalition is also detectable at the regional level. The intensive co-operation between agricultural and environmental administrations at the regional level is a new feature of Finnish agri-environmental governance which is arising from the implementation of the EU policy (c.f. Jokinen 2000; Juntti and Potter 2002; Kaljonen 2007b). The main responsibility for the steering of EU agri-environmental regulation in Finland has been given to the Ministry of Agriculture and Forestry. The practical implementation, administration and controlling of the main instrument, the agri-environmental programme is the task of the regional districts (Employment and Economic Development Centres/Rural Department) and to some degree of the municipalities. The regional environmental centres participate in implementation by issuing statements on the applications for special protection schemes. When making decisions on them agricultural actors cannot disagree with the statements by environmental authorities without good reasoning. Co-operation between these two administrations has become an everyday matter at the regional level as they request assistance and written statements from each other on different areas of expertise (both formal administrative procedures and informal information gathering).

The administrative traditions between the sectors have been and still are rather different. The agricultural administration has relied on a centralised hierarchical tradition, while environmental administration has also adopted more decentralised, co-operative and cross-sectoral forms of governance (Sairinen 2000). Despite this they have actively developed new collaborative modes of action in order to facilitate the implementation and decision making. Further, responsibilities for preparing delivering education, carrying out monitoring and control duties, for instance, are shared. In addition to the mutual co-operation, both administrative sectors have representatives in regional committees, steering groups and various common projects.

The implementation in practice has taught agricultural and environmental officials that agri-environmental management requires actions, competencies and knowledge of both sectors. One cannot do without the other and this requires compromises from the both sides. Working together and getting to know each others competencies and personalities has created a trustworthy relationship between the two sectors. Close cooperation between actors indicates that learning across the coalitions has occurred and the agricultural and environmental coalitions have moved closer to each other.

4.1.1 Buffer between policy and practice

The implementation of agri-environmental schemes has showed the importance of local level actors. According to a survey carried out in the Western Finland in 2000, farmers' most important information sources in environmental issues were the Farmers' Union newspaper Maaseudun Tulevaisuus, courses arranged by the Rural Advisory Centre and the municipal rural official (Kaljonen 2002; see also Niemi-Iilahti et al. 1997; Soini & Tuuri 2000).

According to our analysis, the local rural officials and advisors act as buffers between policy and practice, but also between different cultures and scales of action. Farmers are dependent on the information the officials possess, while at the same time their relationship seems to be flexible enough to accommodate farmers' own accounts of subjectivity and soften the ambivalence taking part in the environmental conservation might have provoked. They have been capable of addressing the social problems felt in the Finnish countryside and support the farmers' cultural identity. At best they have managed to associate the agri-environmental management to agricultural production in such a manner that farmers have been able to incorporate the production of public goods to the developing of their farm activities. Many local officials have however felt the bureaucracy consisted by the subsidy system so devastating, that they have not had resources for anything else. The role of municipal rural official and advisors in the implementation of agri-environmental policy is characterized with many institutional uncertainties and variety between the different localities. The way in which the local official has interpreted the scheme conditions and the scientific justifications behind the proposed farming practices can directly be seen in the number of SPS contracts made in that particular municipality.

Advisors and local officials have allied themselves together with farmers in confronting the normalised accounts of environmental management (Kaljonen 2006; 2007b). They argue that policy should give greater recognition to the importance of local ecological and social conditions and in so doing support the use of farmers' local knowledge. The policy should support the living countryside and the diversity in the rural livelihood. They have however, found themselves in a double alliance (see also Rose & Miller 1992). On the one hand, they have allied themselves with the political authorities, focusing upon their problems and problematising issues, translating concerns about environmental conduct or economic performance. On the other hand they seek to form alliances with farmers themselves, translating their daily worries, decisions on investment, economic burdens and practical agricultural work.

The political challenge posed by the living countryside arguments and the critic towards the agri-environmental coalition has not really reached the national level policy formation – or at least led to any significant changes in the content of the programme. Despite, the several attempts to ease the bureaucracy of the schemes, the outcome has been the opposite. The resistance has been bound to stay local.

4.2 New approaches in regional implementation

Local experiences from Finland show, that the implementation of agri-environmental schemes has required new innovative approaches from regional officials in order to get farmers interested in the possibilities offered by the schemes. The conflict the implementation of Natura 2000 network (i.e. the EU nature conservation programme) had caused in rural areas has also been one driving force pushing the regional environmental

administration to develop more participatory planning approaches (Hiedanpää 2002; Oksanen 2003).

The regional riparian zone and biodiversity management plans offer an interesting example of the new collaborative approaches. The aim of these plans has been to increase the number of SPS contracts, allocate them to ecologically critical areas and build relationship of trust with farmers. The first riparian zone plans, which aimed at reducing the nutrient loads from cultivated fields, were made in the late 1990's in Southwest Finland. After the first good results, the practice has spread around the whole Finland and to new areas such as biodiversity management and wetlands. The ministries, who fund the planning, have also published guidelines in order to promote the good practices (Salmela 1999; Heikkilä 2002; Karhunen 2007).

The concept of *jalkautuva yleissuunnittelu* (the name the environmental officials have given to the method) describes the practice well. In Finnish the term includes a notion of planners coming out of their offices out into the fields, while, at the same time, safeguarding the general interests of the region. In English the approach could be called *grounded general planning*. The Regional Environmental Centres have mainly been in charge of the planning. In practice the planning consists of field and map work as well as participatory meetings. In the regional biodiversity management planning in Vehmaa, for example, the intense field work and farm visits formed a central part of the planning (Kaljonen 2007a). In Vehmaa they also tried to involve different parties to planning in various ways. The planning had a wide advisory board, where all the concerned parties were represented. They also organised two general meetings for the farmers, where they could ask and comment about the plan and bring their own ideas about the potential sites. The riparian zone planning basically follows the same procedure (Kaljonen 2003).

As environmental officials have a marginal position in the farming community, they are compelled to create good arguments to justify their actions, and develop tools which enable co-operation between different actors. The regional biodiversity management planning has proven to be a powerful tool for this, the results of which can be directly seen in the numbers of SPS contracts made in the planning areas (Härjämäki & Kaljonen 2007). According to our analysis, the planning has offered conditions for *local learning*. It has managed to take into account the locally varying environmental conditions as well as use farmers' experience based local knowledge which is central to their relationship with nature (see also Kaljonen 2006). It has managed to do even more: it has enabled a flexible movement between the different scales. It has allowed thorough exchange of detailed ideas of how one particular site could be managed and funded, together with a broader perspective on the rural environment.

Despite this potential for rescaling and empowerment, the planning practice is very much restricted by the interpretation of agri-environmental schemes by the agri-environmental coalition. The challenge posed by the living countryside discourse is not taken into account fully.

5 Conclusions

Agri-environmental governance is often seen as a basic example of the traditional mode of policy-making which is as a linear top-down process from the supranational level only. However, we have focused on the national, regional and local perspectives and suggest that, in any case, the supranational agri-environmental governance is necessarily conditioned by the national and local particularities in traditions in agricultural and environmental thinking and in the relative strength of the key agri-environmental policy actors. This implies policy re-formulations by the national and local policy networks. Obviously, the main problem for the EU and national policy-making is to find a balance between the mandatory and universal respect for EU-wide environmental legislation and national or local voluntary policy mechanisms that are capable of responding to local concerns and local agricultural conditions (Buller 2002).

At the national level the traditional pro-agriculture and pro-environment coalitions have become challenged by a new agri-environmental policy coalition. While the implementation of the EU agri-environmental policy has required the establishment of new decision making structures, administrative procedures and monitoring systems, the agricultural and environmental actors have been compelled to co-operate. However, it would appear that at the national level policy learning has not focused on fundamental policy principles or institutional structures but rather on the details of single policy measures. This was supported by the examination of the use of the notion of multifunctionality: the recent adaptation of the concept of multifunctional agriculture has not had much influence on the prevailing policy ideas of the agricultural coalition. Kaljonen and Rikkonen (2004) have concluded that in Finland the uncertain character of the EU agricultural policy has even strengthened the shared consensus, from local to national level, on the importance of domestic production. In this respect, the notion of multifunctional agriculture can be used as a rhetorical means for safeguarding the continuity of Finnish agriculture and recognising agriculture's societal value. Whether it offers paths for true reorientation remains yet open. In any case, the concept of multifunctional agriculture calls for contextual interpretation.

At the regional and local levels the overall picture is more complicated than at the national level. Even if agricultural and environmental administrations have traditionally framed policy problems very differently, the agri-environmental programme has clearly transformed policy practices at the regional and local levels and the cooperation between agricultural and environmental coalitions has partly become an administrative routine. On the one hand, actors implementing the programme are tied to legal requirements and administrative procedures. Most of the tasks at the regional level are based on regulative thinking and come from a higher level. Therefore, changes in operational practices do happen, but the institutional constraints and lack of resources prevent actors from making any major changes to existing administrative procedures or structures. Common practices have been established, but the coalition structure has remained unchanged. On the other, at the regional and local levels the policy problems are framed very differently and

emerging types of agri-environmental thinking emphasise also locality and heterogeneous ruralities. Policy implementation aims at universality, control and predictability. However, if agri-environmental policies overlook the social context in which environmental management takes place, new regulations may fail to achieve their objectives, or at worst even lead to negative side effects.

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Scientific crafting of the climate change regime

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Workshop 5. Environmental Governance and Policy Implementation

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Abstract

Like political institutions and processes, the scientific community is in transition, characterised by diffusion, towards increasing complexity, decentralisation, competition and heterogeneity in and between institutions, actors and stakeholders involved in knowledge production. This has been conceptualised as “mode 2” and “triple helix”. A displacement from monodisciplinarity towards transdisciplinarity, i.e. a context of knowledge production that transgresses boundaries between disciplines as well as between the academic, public and private sector. This redistributes the actors’ prospects of controlling knowledge production and dissemination. Research aims and procedures are partly transformed through this new configuration of actors negotiating their interests and viewpoints. The societal dependence on scientific knowledge is at the same time increasing, especially in environmental regimes. Thus, scientific influence on politics increases, but the transition described above also increases the political influence on science.

These changing relations will in this paper be substantiated with the climate change regime. The aim is to explore how science participates in and construct the climate change regime and how characteristics of the regime affect policy formation and implementation. Theoretically the study will draw on discourse theory and actor network theory as well as cognitive and institutional oriented perspectives of knowledge production and policy formation. Empirically, results from a quantitative study of the Intergovernmental Panel on Climate Change (IPCC) will be used in combination with text analysis. However, the paper is primarily of a theoretical nature.

This approach can contribute to the understanding of why certain knowledge and actors dominate the discourse of climate change and why others are marginalised or excluded. For instance, how the common view of science as an objective and disinterested activity upheld by the IPCC can effectively coexist with extensive scientific involvement in the climate change regime. This reinforces the political power of science within the regime as well as strengthening the whole climate regime. Also, the discourse marginalises social sciences rendering lack of analysis of behavior, values and politics. The strong dominance of natural scientific and economic knowledge production reinforces policy implementation strategies based on economics means of control and technical solutions.

1 Introduction

Climate change is a complex problem, which transgresses nations and societal sectors as well as natural systems, with potentially serious and far-reaching effects on both nature and society (Watson et al., 2001). For sensible societal responses, this complexity poses challenges. Because of the knowledge related complexity and uncertainties involved, the political processes are strongly dependent on science. Scientists must draw on extensive knowledge from different scientific disciplines within both the natural and social sciences to understand the problem of climate change. Politicians must engage in national and international negotiations with a multitude of actors to take effective measures. Since contemporary societies and sciences are highly specialised, this involves intricate collaborations between disparate interests and perspectives.

For science this involves problems of knowledge integration, to understand the details and parts as well as the complexity of the whole and the interrelatedness of causes, processes and consequences involved. Climate change mitigation is strongly associated with energy policy and therefore with strong interests and power, since energy is a central societal requisite. For international politics, lack of strong institutions with coercive power and the potentially high costs of complying with necessary mitigation policies together with the uneven distribution of causes and consequences of climate change make cooperation between nations troublesome. Further, for an effective regime, communication and collaboration between science and politics is needed, rendering increase of scienticised politics and politicised science.

The aim of this paper is to explore how science participates in and constructs the climate change regime and how scientific induced characteristics of the regime affect policy formation and implementation. Regime is a broad concept that includes both formal and informal norms, rules, institutions and procedures that are common for the actors involved in any given subject area. The Intergovernmental Panel on Climate Change (IPCC) is chosen as the main object of study since IPCC is one of the most well-known and influential institutions in the climate change regime and the major scientifically oriented actor, with a key role between the science and politics of climate change.

The formal role of the IPCC is to assess comprehensive and objective policy-relevant scientific knowledge to serve but not guide the politics of climate change (IPCC, 1998, paragraph 2). This traditional view of science as objective knowledge producer separated from values, power and interests is stated explicitly and clearly in many of IPCC:s publications. However, such a view is empirically refuted in recent social studies of science (Hess, 1997, Jasanoff, 2004, Yearley, 2005). The view that IPCC articulates is certainly an honest belief, but the demarcation of science from policy is likely also a rhetoric strategy that contributes to IPCC:s success in attaining credibility from both scientific and political communities.

In contrast to this traditional view, science can be seen as interwoven with society and actively participating in forming discourses about the way we describe and understand

climate change, value it as an environmental problem, and approaches taken to how it can be solved. This can be expressed as a process of co-production of knowledge, in which science and policy can only be partly separated (Jasanoff, 2004). This is especially true for an institution like the IPCC, which handle complex questions within an institutional design that includes both scientific and political processes. IPCC facilitate communication between science and politics, but reshape also policy and science and their boundaries through the translations and negotiations that take place between dominant scientific and political communities.

2 Theoretical perspectives

The theoretical framework that will be applied in this paper is based on perspectives from the social scientific research field of Science and Technology Studies (STS). STS is an inter-disciplinary field, which emphasises analysis of the social dimension of science and the role of science in society, drawing on perspectives from philosophy, sociology and history among others (Hess, 1997). There is a substantial body of research and theoretical development in the field, with approaches such as the co-production of science and social order (e.g. Jasanoff, 2004), science as a network of translations between heterogeneous actors (e.g. Callon, 1986), science as discourse (e.g. Foucault, 1970). Findings include that demarcations between science and other areas are fluid and changes on account of social context and interests (e.g. Jasanoff 1987, 1990, Gieryn, 1996), that values permeate science (e.g. Burkhardt, 1999) and can reinforce scientific controversies (e.g. Engelhardt and Caplan, 1987).

The theories and perspectives are used in an eclectic interdisciplinary approach in this paper. The aim is partly to alternate between the perspectives, using their strength to explain how science affect policy formation and implementation and partly to reformulate and integrate them. However, the aim is not to produce well-integrated theoretical perspectives or results, but rather to explore potentials of doing so, i.e. the disparate approach is both deliberate, with a planned selection process towards stronger focus and integration afterwards, and forced due to lack of time and epistemic obstacles. The perspectives used can be broadly categorised as cognitive, social, institutional or post-structuralist or any combination thereof.

The choice between agency (micro) and structure (macro) as the fundament for social processes are increasingly recognised as misleading in contemporary social science. However, this was never a major topic for discussion within ecological science, wherein relatedness between individuals and their surroundings was foundational, with dynamic and evolving systemic properties such as feedback mechanisms involved. In the same vein, to choose between cognitive, social, institutional and power related views on knowledge production and dissemination may be regarded as deficient. Instead the perspectives complementarities and interrelatedness in explaining knowledge production is recognised.

Further, this paper are sceptical towards modernism, in terms of cultural and scientific views and ideals, e.g. strong belief in universalism, rationalism and that our senses captures reality in its essence, but only cautiously embracing post-modern attitudes and aims, e.g. radical relativism and anti-essentialism and abandoning of aims such as causal explanations and inferences from the particular to the general. An analytical distinction between is and ought is uphold, but with the belief that such a distinction is weakly grounded in empirical reality. Similar positions are uphold by several of the perspectives used. For instance, actor network theory is critical towards modernism as well as post-modernism (Latour 1993), and epistemic community theory combines institutional, cognitive and interpretative approaches (Haas, 1992).

STS studies usually involve a social constructivist perspective, which is controversial in some scientific communities and therefore in need of clarification. The position taken in this article assumes that there is a real world that science can describe and explain (i.e. realism) but that science and knowledge at the same time are shaped by culture, social interests and values (i.e. social constructivism). This position can be referred to as constructive realism or moderate constructivism (Hess, 1997). Differently phrased, knowledge is co-constructed by nature, society and the scientific community.

The aim, besides the general aim of developing a theoretical framework that can be applied to the study, is to create a framework and domain of study that alter traditional divisions between nature/society and natural/social sciences in favour of an intersecting domain of nature/societal fabrics. It is argued that such a move is needed and will advance scientific understanding of environmental problems as well as bring cultural views and societal practises closer to sound sustainable trajectories. This aim serves also as a mean of creating a domain of study in accordance with the disciplinary interests of human ecology and other broadly interdisciplinary human oriented environmental disciplines, such as ecological economics and environmental history, i.e. to ecologise social science.

The traditional approach in sociology is based on the disciplinary assumption of an independent social sphere in which only social processes operate and neither psychological nor physical spheres have significant causal influences. This agrees with the distinction between nature and culture deeply embedded in modernity and science (Latour, 1993) and the disciplinary fragmentation of academia. This sociological paradigm is challenged among others by Catton and Dunlap (1978) in favour of a “new environmental paradigm” that includes physical variables in social analysis, as argued being essential for environmental sociology. Most disciplines reinforce this duality between society and nature through analysis that reduces reality to either physical or social dimensions, typical for social and natural sciences respectively. To counterbalance such reductions is foundational for human ecology as a discipline. Much STS research risk such social reductionistic explanations, since the social dimension are strongly emphasised, e.g. studies of stabilisation of knowledge in the natural sciences are often explained from and with only the social realm. See Bloor (1976), Collins and Yearley (1992), Latour and Callon (1992) and Collins H (2001) among others for attacks and defences of such social foundational positions within STS.

2.1 Actor network theory / discourse theory

Environmental problems have not been a frequent topic in STS literature (Yearley, 1995). However, since STS is a theoretically innovative social scientific approach with a strong interest in both natural and social realms and especially their relations, STS can be used for theoretical development of human ecology and other approaches interested in relations between society and nature. Especially approaches such as the co-construction of reality are interesting, since they are less dualistic and social reductionistic than most other approaches within STS. Actor network theory (ANT) is the most developed theoretical perspective within such a tradition. See Murdoch (1997, 2001) for discussions of prospect for ANT to transgress the nature/culture division in the context of environmental social science.

ANT is chosen as a perspective for this paper because it transgresses the division between nature/society, broadens the concept of actors and draws on physical, social and discursive levels of reality in an attempt to explain how knowledge are being constructed.

ANT is a material semiotic theory, distinct from discourse theory, but it can be argued that it is originating from a context of French post-structuralism (Foucault among others). Actor network theorists refer almost exclusively to work from sociology and STS, but sources of inspiration from natural scientific theory fields such as systems theory, complexity and evolution are also appearent. Due to time and space limitations, the ANT approach will be prioritised before other perspectives. Discourse theory will be meagrely described, since it is much more well-known than ANT.

ANT is created for studies in domains without clear divisions between humans and objects and the origin of action, typically natural scientific contexts of knowledge production such as laboratories. In a laboratory machines, experiments and biological/physical entities are interlocked with scientists, their interpretations and analytical procedures, network of colleges, funding agencies and scientific journals (Latour and Woolgar, 1986). According to Latour the division between culture and nature are deceptive (Latour, 1993). Human practice often consists in hybrid forms, i.e. they have a materiality as well as a culture. Further, ANT does not restrict agency to humans, but include all kinds of entities, e.g. material objects, computers and animals, as actants with causal powers in the network (Latour, 1987, 2005). Causal chains of events circulates inside as well as between physical, social and discursive levels of reality. This can be compared to Foucault, who holds similar viewpoints. According to Foucault, discourses are linguistic and shape the ways we talk about and understand the world that we live in, but discourses is also constituted by material and social practices that are outside of the discourse (Jörgensen and Philips, 2000). That is, material, social and discursive realms have dialectic relations. Performativity is important in discourse theory as well as in ANT, i.e. that a speech act or a scientific theory not just describe phenomena, but also constitute them by doing so.

The inclusion of nature in social analysis and the equal treatment of natural and social phenomena typical for ANT is also a consequence of how ANT interprets the methodological principle of symmetrical explanations from the strong program in STS (Latour, 2005). The strong program (Bloor, 1976) is foundational for the STS approach and claims that analysis of scientific knowledge should be causal, impartial, and reflexive and be based on symmetrical explanations, e.g. that successful and failed research programs should be analysed in the same manner, invoking the same types of causal variables and theoretical frameworks. ANT extends this principle to include nature as well, i.e. ANT attempts to treat natural and social phenomena symmetrically. The division between nature/society is seen as an outcome of co-constructed processes by actors in network. Actors that ANT does not categorise. In a similar vein, power is seen not as a quality that individuals or collectives possess, but as outcomes of network formations and the constructions that are its consequences. Thus, ANT is a theory of "power, action and belief" (Law, 1986).

Human belief and interests have tendencies of adaptive relationships, i.e. we often tend to believe what is in our interest to believe. This is observed by for instance Marxist theory. Variants of such interest/belief theories are central to ANT. Early STS have used the entrance of interest/belief to empirical studies of scientific knowledge controversies (Yearley, 2005). Interests can for instance be cognitive or social. However, what we believe affects also our interests and the causal mechanisms between knowledge and interest is vague and neither is stable. Further, interests must be empirically demonstrated and explained, not just taken for granted. In this respect discourse theory and ANT are more productive then most mainstream (postpositivistic) scientific perspectives since they take into account the various ways that knowledge, identities, meanings and interests are

interrelated, their historical origins and the larger processes that produce and transform them.

Actors use strategies according to their interests. In these interactions the actors negotiate with each other. Through these negotiations interests, meanings and identities are transformed. Thus, ANT is relational and anti-essentialistic (Jasanoff, 2004, Yearley, 2005). ANT lacks specific theories, i.e. ANT have no theory of why actors act, what is in their interests, how they act and what the outcomes of the actions are. ANT relies on a descriptive methodology (etmomethodology) with the slogan "follow the actors" and pays close attention to the process of the actors' network building, what strategies they use, the transformations that takes place and the nature of the constructions of nature and society that are the outcome (Latour, 1987).

Translation is the process of network formation. Note that ANT as a semiotic theory in a post-structuralist tradition has a certain preoccupation with language and concepts such as translation are chosen partly due to their ambiguity. Translation means to translate for instance a text, but this involves interpretation and translation means also to dislocate (move) and transform (change). Callon (1986) claims that there are four stages of translation; a) problematisation, i.e. strategies that actors use to construct and define other actors interests and identities, problems and solutions in accordance with ones interest, b) interessment, i.e. to make the actors interested in these constructions, c) enrollment, i.e. to incorporate the actors into the network, and d) mobilisation, i.e. strategies to make sure that the negotiating parties are supported by the collectives that they claim to represent.

Foucault's method of genealogy, i.e. to trace changes in a contingent history, resembles the ANT methodological approach of following actors in search of translations. Foucault's discursive formations reinforce hegemonic thought systems. However, in ANT the result is a constrained network that is much more temporary and local. Compared to foucauldian discourse theory, ANT is more actor oriented and focus on processes more limited in space and time compared to the overwhelming discourses of Foucault. There is no doubt more differences, e.g. the stronger focus on language in discourse theory. However, these will be neglected in favour of similarities and possibilities to use both perspectives, e.g. it is likely that actor strategies, structures and discursive levels simultaneously contribute to regime formation and policy implementation.

ANT bears some resemblance with ecology, e.g. both is relational and use network metaphors (ecological webs) that includes agents as well as material (energy, matter, behaviour) and the actors in the network evolve in relation to each other (co-evolution). Murdoch (2001) and Sismondo (2004) argue that ANT resembles ecological thinking. However, ecology is basically an essentialist, material theory. Behaviour ecology (more broadly ethology) for instance explains social phenomena from physical realms, i.e. in a physical reductionistic way rather than with a dynamic two-way causality (sociobiology, and its transformation into evolutionary psychology, are good examples of this). Thus, ecology is not a sufficient framework to transgress the nature/culture duality without extensive reformulation and broadening.

2.2 Scientific knowledge production and organisation – cognitive and institutional views

According to Galison and Stump (1996), science is characterised by disunity. There is not one Science, but many sciences, with different research interests, methods, theoretical frameworks and criteria for scientific quality. These differences are structured by

disciplines, which create local coherence and global boundaries. From these disparate starting points and procedures of knowledge production, not one, but several views about reality are produced. Knowledge synthesis requires translation and reconfiguration to assemble these fragments to a coherent view of reality. The complex of problems involved in knowledge synthesis grows with the degree of divergence between the bodies of knowledge.

Since disciplinarity is an important principle of knowledge production and organisation, disciplines tend to build departments to reinforce the discipline. Thus, disciplines are associated with institutional as well as knowledge related dimensions. These interact in the formation of disciplines, with institutional dimensions such as departments and journals being the most significant (Klein, 1990). The result of disciplinarity is a compartmentalising of academia that support, restrain and channel knowledge production. Knowledge drifts between disciplines and reshapes the knowledge structure, while the more rigid institutional borders between disciplines stay intact. Institutional and knowledge structures affect patterns of cooperation between disciplines.

All research implies knowledge related decisions on which theories, methods and empirical material that are to be used in a study, a process of inclusion and exclusion, i.e. “epistemic closure” (Bruun, 2000). In a particular research project, epistemic closures are a necessity, but this necessity cannot be generalised to whole fields of inquiry (Bruun, 2000). However, there is no doubt that epistemic closures at the level of knowledge fields and disciplines are common and that this maintains the differences between them.

Interdisciplinarity can be defined as research that cross boundaries between and to some degree integrates methods, theoretical perspectives or empirical findings from different disciplines (Bruun, 2000). A disciplinary knowledge production in contrast, follows the institutionalised approach that distinguish each discipline, i.e. mainly address typical questions for the discipline and answer them with theories and methods from the discipline, with limited dependence on other disciplines. Scientific disciplines can be seen as specific types of discourses (Chandler, 2003) which discipline knowledge through procedures of exclusion. These strictly regulate who are allowed to be a knowledge producer, allowed methods of knowledge production and what criteria the product must agree with to be credited as scientific knowledge. Discourse theory with its disposition towards a historical cultural analysis and emphasis on a liaison between power and truth differentiates from the more cognitive and institutional theories above. However, disciplines differ in not only knowledge related and institutional dimensions but have also different societal functions and are to some degree associated with different social interests and values (Oreskes, 2004, Sarewitz, 2004). Knowledge production can therefore be expressed as a process of co-production, in which science and society cannot be fully separated (Jasanoff, 2004). Framed differently, disciplines are associated with more general perspectives on the nature of knowledge, for instance positivism, and is associated with values and views about science and society and about the relation of science and policy. These values and views are to different degrees upheld by individuals and associated with their educational background (Morcöl, 2001) as well as associated with traditional social science variables such as social background and gender.

Knowledge production affects public opinions about climate change (Bauhr, 2005), the ways that we think about and frame climate change as well as the structure of policy institutions (Cohen et al, 1998) and policy programs. The magnitude of these effects is significant, but science is still just one of many different institutions and types of actors that take part in the processes that influence climate policy. Changes of the knowledge

distribution between disciplines in climate change related research will affect this broader discourse of the climate problem that science is a part of.

2.3 Knowledge society

The traditional view of science regards science and society as separate spheres. Science is characterised as rational, impartial, objective and unaffected by society. However, the view acknowledges that society is affected by science. This is usually valued as positive, i.e. that science contribute to rational planning, economic and technological development and human flourishing. Societal influences on science on the other hand are negatively valued, especially from the view of the scientists themselves. Society, in which self-interests, irrationality and delusions are common, threatens the impartiality, rationality and objectivity of science. At the heart of this perspective is a view that policy should be based on objective and rigid scientific knowledge (Oreskes, 2004). However, policy should not be made by science, since science is facts and policy is values, according to the viewpoint. Thus, science hands over the facts to the social sphere that makes all the value laden decisions about what should do done. Scientific knowledge, that can be and ought to be free from values and interests, outside of and unaffected by society and politics. This viewpoint is sometimes expressed as “science speaking truth to power”. This highly asymmetrical view of science and society is logically coherent, but not supported by empirical evidence. Many of the characteristics of society, well-known to social science, are also found in the scientific community. Moreover, the claimed characteristics that distuinguish science are also found in society. While society is critically examined by journalists, social scientists and laypeople, science is less so. All actors, scientists, media, politicians and laypeople upheld and reinforce similar views of the relation between science and society. (Sismondo, 2004. Yearley, 2005)

It is an obvious fact that the epistemic authority of science is high, i.e. scientists have power to make others actors and institutions believe in the knowledge claims addressed from the scientific community (Sismondo, 2004. Yearley, 2005). From the traditional perspective, explanations of this high epistemic authority involves claims of correspondence between epistemic authority and objective knowledge and pragmatic arguments about the usefulness of science for societal aims and similar rational arguments in line with the perspective above. A constructivist explanation in contrast acknowledges also that science have a self-interest in epistemic authority that can be used for various ends and that science therefore use strategies to create epistemic authority. The concept from STS of boundary work is related to strategies of creating scientific autonomy and epistemic authority. Boundary work are the work to create and change boundaries, e.g. boundaries between disciplines and between science and society, involving arguments that include certain things and excludes others (Gieryn, 1996, Sismondo, 2004), e.g. that science are much more rational and that this demarcate science from society. Boundary work can be defensive, e.g. a discipline defending the monopoly of a certain knowledge domain, or offensive, e.g. a discipline enlarging its knowledge domain. Boundary work can also be about exclusion and inclusion of persons, methods and theories, that alter the content of what is inside and outside of the boundary. Thus, boundaries are not stable or objective, but produced, negotiated and changed within societal processes. Epistemic authority can be created with for instance rhetoric strategies or through alliances or associations with other sources of authority. The epistemic authority clearly differs between disciplines, not only due to epistemic reasons. For instance, disciplines associated with industrial interests (technical and natural science), economic interests (economic sciences) or political power (political science) renders high

status. The low status field home economics for instance have recently used strategies of redefining and relabelling itself as human ecology. Human ecologists reply with defensive boundary work. Studies of rhetoric strategies and boundary work help to explain how claims are accepted as knowledge and how disciplines construct authority.

Natural science is central in environmental regimes (Yearley, 1995). Political processes depend on natural sciences to identify and value environmental problem, to understand the mechanism involved and to propose adequate solutions to the problem. Scientists not only function as knowledge producers inside the scientitic community, but also act in roles as as experts in political contexts, giving policy advise. In the expert role of policy advisor, the expert domain of the scientist is radically enlarged compared to the limited domain a scientists can claim expertise over inside the scientific community and the expert draws on a much larger repertoire of strategies and knowledge.

Science is a central institution in contemporary knowledge societies, with science permeating most aspects of everyday life. Not only the results of science permeate society, but science is also expanding out of the academic institutions and into other sectors of society, e.g. collaborating with market actors are common and encouraged, and the massification of higher education substantially raise public capacities to assess and evaluate science and critical attitudes towards science are raised more often. This has been conceptualised as “mode 2” (Gibbons et al, 1994) and “triple helix”. A displacement from monodisciplinarity towards transdisciplinarity, i.e. a context of knowledge production that transgresses boundaries between disciplines as well as between the academic, public and private sector. This redistributes the actors’ prospects of controlling knowledge production and dissemination. Research aims and procedures are partly transformed through this new configuration of actors negotiating their interests and viewpoints. This is especially true in field as biotechnology, medicine and technological research, with high economic stakes and potential profits.

The co-productionist perspective in STS emphasise that knowledge production is dependent on social order and produce social order and that production of social order is also production of knowledge, because knowledge is an integral part of all societies (Jasanoff, 2004). Science is an institution inside society, with a history, function, methods, economy, and power relations. Since these aspects are related, the epistemic authority of science is also a vehicle to increase control of normative dimensions, economic and political power. Because of these changes towards increased complexity and propagation of science in society, it may be argued that the idea of a policy/science boundary is outdated or never existed (Jacobs, 2007), i.e. that the scientific domain cannot be distinguished from other parts of society. This paper argues that such a distinction is defensible since the boundaries are becoming more complex rather than dissolved and new hybrid domains are common within science as well as policy spheres.

Epistemic communities are informal networks of experts with high epistemic authority, defined by Haas (1992) as “transnational networks of knowledge-based communities that are both politically empowered through their claims to exercise authoritative knowledge and motivated by shared causal and principled belief” and by shared normative standards and policy aims. This distinguish them from other groups such as interest groups which have shared principled beliefs but unshared causal belief, bureaucracy which have unshared principled and causal belief and scientific disciplines which have shared causal belief but unshared principled belief (Haas, 1992). Epistemic uncertainty is a main driving force to empower epistemic communities. Epistemic communities are relatively independent from political elites. Epistemic communities and their beliefs and aims are therefore a political force that may go against state politics and state interests. The

networks of epistemic communities influence politics from different institutional bases and levels, e.g. networks between universities and scientists working as civil servants in state departments. Like this paper, epistemic community theory strives towards a position that combines cognitive and institutional theories with interpretative perspectives. Cognitive approaches to policy have explanatory value at agenda setting stages, but are weaker to explain more stabilised policy regimes (Rowlands, 2001). In the latter case, institutional and power based approaches may be more fruitful. However Yearley (2005) claim that epistemic communities are successful both in proposing, negotiating and implementing policies.

3 The climate change regime

3.1 Early climate history

It is now time to follow the actors, the networks that the actors are originating from and the groups that they represents, the beliefs, interests and strategies of the actors and the outcome of the networks that they co-produce. We will start with a rough historical outline, to trace some of the roots of the climate change regime that emerge in the 80´s.

Weather and climate have been and are important in all traditional societies, from material/practical aspects, e.g. adaptive farming strategies, to cultural/symbolic aspects, e.g. religious rituals. Thus, climate as produced by nature itself have always been a central prerequisite for humans. Further, climate is an integrated aspect of all societies, i.e. an actant in heterogeneous actor networks that transform over time and co-produce societal practices and images. Traditional knowledge of climate merge personal and social experience, written and verbal communication, generalisations based on experience and religious viewpoints, i.e. the knowledge of climate and weather is qualitative, contextual, local and integrated with society.

Climate has been associated with many different discourses, among them is religious, human health, national and race discourses. In European enlightment thought for instance, several philosophers speculated in how climate determined human and societal characteristics in different regions (Fleming, 1998). Besides local traditional knowledge, accounts of journeys and colonising processes have been important sources of climate knowledge as well as written documents that mention climate conditions and weather events from the past (Fleming, 1998). To write documents are an effective way to extend influence over time, i.e. inscriptions are an important strategy to materialise aspects of the network and stabilise the network. Thus, actors and actor networks that invest in inscriptions are usually more long-lived, stable and persistent to change (Latour, 1987). Rituals are a non-written example of a phenomenon that also stabilise networks through stereotyped behaviour, strong norms, rule following procedures and fixed patterns of meaning. Mobility in space is another effective strategy, i.e. to influence other actors in space for instance through the use of emigration and colonialisation patterns as carrier of the actors problematisation that affect new actors in new environments.

In the 17th century measuring instruments are starting to become enrolled in climate related actor networks that still are rather local (Fleming, 1998). These local networks – of instruments, inventors and instrument constructors, scientists, financiers, data, inscriptions, experiments, applications – have similar viewpoints, aims and strategies to problematise and interest other actors. The networks get enrolled in each other, transforming the local networks of measuring stations, scientists' etc. to larger networks with similar content. The enrollment does not make the network more heterogeneous in this stage, rather the opposite, that pressure for standardisation of instruments and

procedures reduce the heterogeneity. Measures are collected and analysed with statistical procedures by the scientists, the core actor in the network. These networks expand to national and international levels in the 19th century (Fleming, 1998). As a consequence of the transforming actor network, the climate discourse are becoming more systematic, quantified and standardised, transformed into a natural scientific discourse in which the climate is no more and no less than a physical system, with physical properties and processes. This transformation is driven by the cognitive interests of the natural sciences. As a consequence, climate becomes less tied to traditional knowledge, culture and religion. A professional international network of climate scientists are slowly evolving, i.e. a nucleus for an epistemic community.

Meteorology and climatology are becoming crystallised as disciplinary fields of investigation that drive and support the process due to cognitive and financial reasons. This disciplinarisation deepens the separation between climate and society as well as the separation between climate and other fields of science. In the late 19th century the foundations for natural science driven, international climate science are established as well as some weather related societal functions, e.g. storm warning systems (Fleming, 1998). Speculative statements and statements grounded on subjective historical records are criticised by the rising natural sciences of climate that demand large amounts of exact weather facts. This process of epistemic closure, i.e. knowledge related decisions and standards of what is to count as valid knowledge and valid scientific methods, are produced by the decisions of the researchers, but are also consequences of the nature of the measuring instruments and other artefacts enrolled and the expectations of the financiers. For instance, data collections based on thermometers renders more exact but also much narrower data than a traditional naturalist, taking notes and interpreting systematic changes in nature related to temperature. A technical and quantititative tradition that studies the climate in its physical dimension that excludes not only societal contexts, but also biological contexts is developing. As will be seen later, these characteristics are still true of the climate change discourse of today, as captured by the IPCC for instance. Thus, the core of the discourse was established 100 years before the climate change regime. Individual scientists with high epistemic authority are central actors in this process, e.g. Humboldt, pioneering the use of new instruments, new research fields, theories and approaches. However, this could not be done without the support of the collectives that they belong to and by enrollment of other actors and incorporations of outcomes from earlier networks. Translation is the process of network formation. Without networks there are no translations, i.e. no movements that create, connect and alter things, people, artefacts and ideas.

3.2 Global warming/cooling

A few times in the 19th century early greenhouse effect theories were launched, e.g. by Fourier in 1824 (Fleming, 1998). The role of carbon dioxide as a greenhouse gas was first mentioned by Svante Arrhenius in 1896. Arrhenius understood that carbon dioxide was a greenhouse gas due to its chemical and physical properties and that humanity can cause climate change by release of carbon dioxide from coal burning, a major source of carbon dioxide discharge (Fleming, 1998, Agrawala, 1999a). However, Arrhenius was not worried about global warming. On the contrary, a warmer climate was a consequence that he valued positively, due to a belief that it would render increase in food production (Fleming, 1998). That Arrhenius mentioned carbon dioxide as a greenhouse gas in 1896 have become a central ingredient in a standardised storyline of climate history, that researchers, especially social scientists, refers to as an ritualised entry into the discourse.

However, several of the details of this storyline are false (Fleming, 1998). Thus, a standardised history with questionable historical accuracy is reproduced over and over again in the contemporary scientific debate. The storyline may have a function of creating epistemic authority, i.e. that the researcher are familiar with important details and therefore should be included in the discussion and listened to. It may also be seen as an "obligatory passage point" (Callon, 1986), i.e. a point trough which all actors have to pass to enter the network, created during problematisation. However, actors usually try to make themselves obligatory passage points as a strategy to become indispensable for the network. The most probable explanation is perhaps that the storyline is a way to bridge history and contemporary concerns, tracing the contemporary fixation with carbon dioxide back to a meaningful source and framing the past according to our concerns and ways of thinking, that in turn is produced by strong actors and interests and mainstream discourses. Anyhow, the context as well as the content of climate, climate change and greenhouse theories of the past differ radically from today.

Climate research enlarged heavily in the post WW2 era, partly due to military interests, supporting with satellites images and financial support (Hart, 1993). Due to successes in weather forecasting in the 50´s, funding would increase further. The expansion of climate research can also be seen by the frequency of published scientific articles on climate change, which have constantly increased, with a rapid exponential growth in the last 50 years, doubling every 11 years (Stanhill, 2001).

The first serious discussions about global warming as a potential problem appeared in the 1950´s. It can be argued that this debate is co-produced by the scientists, their instruments and procedures and climate, since there was a trend of warming in the 1910-1950 that climate science was able to measure, statistically analyse and comprehend. Without this short warming trend, climate warming would probably not arise as a concern in this time period. However, to understand the concerns of the climate scientists' societal contexts must also be invoked, e.g. the concerns about nuclear power and global nuclear warfare played a role in the worries about climate in the time period ((Hart, 1993). Thus, many actors in the heterogeneous network are needed to explain the outcome. A central question is why the actors did not become more worried and launched strategies of problematisations that framed the global warming in a way that other actors became interessed and enrolled in an expanding actor network that produced policy outcomes? One possible explanation is the weak environmental discourse of the 50´s. It is likely that a stronger environmental consciousness among laypeople and scientists as well as an institutionalisation of environmentalism in governments are requirement for such speculations about a complex and uncertain problem to interested and enroll actors in a network with clear policy aims. The outcome was a continued debate and research in a few research communities. The environmental framing of climate started in the 60´s. Moreover, military interests were important in climate research in the 50´s.

Global warming was far from established as a hegemonic discourse. In the period that followed a debate about global cooling started. This discussion was in line with a new short climate trend, a cooling trend from the 50´s to 70´s (Hart, 1993). As argued here this trend co-produced the new debate and created anxiety about the possibility of a long trend towards a new ice age. Whether this is a policy relevant concern from a rational perspective is questionable. These cycles with warm and cold period are well known and well documented, but on radically larger timescales and slower processes than societal ones. Controversies involving different perspective in terms of time scales are to be seen also in the contemporary debate, e.g. among different subfields within Earth sciences such as geologists, meteorologists and climatologists that vary greatly in the timeframes they are trained to think from. Epistemic framing and disciplinary contexts like these

affect the way that scientists value the climate problem, probably more so than policy framing and societal framings such as the pace of societal changes and power relations affecting reasonable societal options. These disciplinary framings are of central importance even when scientific experts are debating in policy contexts.

That the cooling trend was due to emissions of aerosols was one explanation raised by the scientists. Thus, growth in societal consumption not only raises carbon dioxide levels but also levels of aerosols. Neither scientific knowledge claims nor social actors could settle the controversy over whether the greenhouse effect was stronger than the aerosol effect. This aspect of the climate change debate is still not settled completely, although that a closure is appearing. This closure is based on IPCC:s estimations and certainty intervals of various greenhouse gases and aerosols, i.e. a epistemic related closure, but also due to standardisation, e.g. translating the effect of different greenhouse gases to equivalent measures on the same time periods, altitudes, etc and most likely also due to more social and political processes that close the debate, i.e. make the actors less interested in the question and more interested to move on to other aspects of the climate problem. This is a process of black boxing. Successful constructions stabilise and the details that were once a controversy are left behind for a simpler model, wherin only the output to other areas of concern are emphasised (Latour, 1987). The whole regime may be seen as such a system, wherein actors blackbox previous actors main epistemic interests. For instance, complex computer models are blackboxed and only the outcome interest research communities that studies impact and adaptation scenarios.

Neither this 70´s debate resulted in an actor network that entered policy arenas. This may be due to the same reasons as mentioned above about the 50´s debate. Moreover, belief in that society could control the climate and counteract warming as well as cooling was high in the 60´s among elite groups (Hart, 1993). Thus, a technological vision of control over nature contributed to deconstruction of both warming and cooling concerns. This can be compared to the contemporary belief in technology as effective means to neutralise needs of societal change, e.g. altering the level of consumption and changes of the ways societies are planned. With technological development there is no need to worry about the climate problem it is argued from strong actors that represent science as well as industry and politics.

Besides climate science, core actors and debates in the climate change regime can be traced back to energy research and energy politics from the 70´s. Thus, by the 70´s, climate, climate scientists and energy related actors from both scientific and political communities are all important actors enrolled in the actor network that incorporates more and more actors and more heterogeneous ones than previous. In addition, business interests and political interests are starting to become important actors. However, the core of the network consists of a small group of climate experts.

Actors from the energy sector were no doubt active in the 70´s debate. In a context of equal strength of the cooling and warming hypothesis, a strategy that would be in this actors interest is to reinforce the global cooling hypothesis, since this will transform increased burning of fossil fuels to a solution instead of a problem. An argument that is used sometimes, but primarily by marginalised actors. Actors that launch strategies similar to the beliefs of Arrhenius about the effect of increased temperature, i.e. that plant productivity will increase have not been successful in more recent debates.

In summary, the actor network is evolving over time and the beliefs and aims of the actors are negotiated and transformed. Science is central for problem identification as well as value laden evaluations. The scientists are able to interess different actors and translate the interests of these actors into the interests of the climate scientists. Societal

trends are importand for scientists' strategies to interest actors as well as for their evaluations. The actors in the actor network also belong to other networks and therefore are the climate related outcome affected by for instance actor network interested in energy production. Climate is an actant that can influence the climate scientists to change the societal discourse from global warming, to global cooling and back to global warming again. As we will see later, the climate played a central role also at the very moments when the climate change regime was launched in the 1980´s. There are yet not strong enough interests from the actors to create a climate regime. The outcomes of the network are influenced by various actors and events, but not determined by a single one of them. Thus, natural science arguments based on available knowledge and the degree of objectivity and uncertainty can not explain the shifts between beliefs in global cooling and global warming. Neither can societal trends. To account for the transformations characteristics and processes of the whole social/physical climate system must be invoked as well as contexts outside of it.

3.3 Climate research

Two major research areas of climate science have been general circulation models and global carbon cycle research (Demeritt, 2001) The Global carbon cycle research was concerned with quantification of the flow of carbon between atmosphere, oceans, biosphere and geosphere (Hart). The General circulation models programs interest was to simulate and predict the behaviour of the atmosphere with computer models (Hart, 1993). Besides Earth scientists, biologists are accordingly enrolled early in the network. These scientific discourses were not well integrated. The interests of the two groups diverge. The Global carbon cycle research for instance is more interested in empirical research, compared to the simulation interests of the General circulation model research. The former are more interested in integrating empirical findings from several disciplines and physical/biological systems into a larger system. The latter only interested in the climate system in isolation. These two research programs are still today visible as the backbones of climate change related research, e.g. the focus on the IPCC assessment reports in on carbon dioxide and model outputs and the whole structure are build around these research fields. However, biologists play a surprisingly peripher role in the evolving climate change regime compared to Earth scientists and especially in comparison to climate modellers. Since these two research communities have different interests and research aims, the alliances that they have created differ, e.g. in respect to which disciplines they are interacting most with, the instruments they use and the actors that they need to interest to be able to carry through their enterprises.

The disciplinary interests are becoming stronger compartmentalised and reinforced by funding agencies and the career structures of academia that renders faster career and stronger positions for actor with disciplinary specialisation as strategies. The research aims such as climate modelling and carbon cycle research are partly transgressing these disciplinary borders, but the knowledge production is primarily carried out in disciplinary contexts. These studies different spheres and aspects of reality create their own theories and collect different data and produce different kinds of results. The research is weak in interdisciplinarity, i.e. the different spheres are not integrated, nor related to each other to any significant degree. The climate modellers for instance dismissed oceanography data that now are considered important) since they were only interested in the climate without any other contexts and interactions (Hart, 1993). This disciplinary structure is characteristic of climate research today also. Thus, it is hard to overcome the disciplinary momentum. However, today large efforts are also invested in coupling different models

and results to each other. This started in the 60´s, because researchers wanted to investigate if rising carbon dioxide levels would alter the climate, as a consequence the discourses of global carbon cycle research and general circulation models had to be more integrated. This strategy of need to research potential green-house effect problems was launched without significant growth in scientific estimation of the likelihood of such consequences. The strategy renders increases in research funds for basic research of the climate system (Hart, 1993). Thus, the climate scientists are problematise the interests of other actors to be able to enroll them as financiers of the climate scientist interests to carry out more research in line with their disciplinary interests.

New machines are enrolled in the second half of the 2000th century; especially important are computers and satellites (Fleming, 1998). The enrollment of computer enables computer models, a discourse that diverges from empirical and historical studies of climate and open up virtual domains of simulated climate. Computer simulations may be viewed as rather dubious by a critical observer, but the models are a strong core activity in climate research. To understand the scientific crafting of the climate change regime, computer models are one of the most central actants. This can be compared with the population/resource environmental discourse of the 70´s, based on neomalthusian logic. Computer models played a central part in the "limits to growth" from the "Club of Rome". These models were weakly grounded in empirical data and the outcome largely up to the programmer to decide, i.e. the models are underdetermined by empirical evidence. Still, computer generated quantitative models have high epistemic status despite such shortcomings. A critical attitude to such models require knowledge in mathematics that most does not possess. The nature of such controversies makes them technical and pushes most actors out in the periphery. The use of such models are an effective strategy for science to impact policy that climate modellers have used successfully to establish themselves as the core in climate change related research as well as successful policy entrepreneurs.

This strategy of using computer generated models to impact policy is co-opted also by non-scientific actors, for instance by the politician Al Gore that are using these models effectively to impact other actors with the aim to enroll them in the climate actor network to mitigate climate change. Gore use not just models and epistemic authority, but draws on many sources, including moral and emotional ones, switching back and forth between different strategies and sources for problematisation in a timely manner. In this respect Al Gore differ just in emphasis and skills from scientific actors such as the former president of the IPCC, Bert Bolin or the climate sceptic Richard Lindzen, but not in the strategy as such. The latter two are more focused on epistemic factors and the former on moral issues, but all three draw on strategies that invoke both epistemic, social, moral and political levels, many times in implicit ways, and tries to make dimensions such as epistemic, identity, moral and political reinforce each other to create the problematisation that will alter other actors in line with their own aims. Other visual based epistemic arguments are for instance melting glaciers and calving ice on seashores that serves to make the abstract problem of climate change concrete and serious. Some polar bears may also be introduced to reinforce emotional and moral dimensions.

3.4 Climate regime formation

In the mid 80´s climate change emerged strongly on the political agenda as an environmental problem (Agrawala, 1999a, b). This started with the first World Climate Conference which was followed by the Villach workshops. The Villach workshops were

arranged by WMO, UNEP and ICSU. At Villach 1985 the scientists in the group warned about human caused climate change and called for policy action (Agrawala 1998). Actors such as media, laypeople and politicians were interested in these statements. The societal climate for climate change was apparently much different than in earlier decades. The momentum of the network has grown over time and is tied to other networks and concerns, e.g. evolving environmental concerns and numerous environmental regimes. Especially the recently created ozone regime was an important experience that actors brought with them into the climate regime.

From these meetings, the advisory group on greenhouse gases (AGGG) was formed in 1986, consisting of only seven members, with a mandate to discuss if a convention for climate change was needed. However, AGGG had financially weak and lacked strong institutional support and was deliberately detached from policy spheres and not able to enroll enough actors to become a core actor in the climate regime. Despite the fact that the seven members had very high epistemic authority as well as political authority they were not able to problematise, interess and enroll enough actors although that this was clearly an aim for core members in the group. Thus, epistemic authority alone could not overcome circumstances like a poor institutional design in this case. Instead, a parallel process, the established of the IPCC had started, partly by actors that were a part of the AGGG that perceived the problems and had foreseen the likely future of the AGGG. IPCC was formally established in 1988 by the United Nations Environmental Program (UNEP) and the World Meteorological Organisation (WMO), not directly from AGGG, but from parallel processes in WMO, FN and US agencies. The success of the IPCC drove AGGG and some other weaker science based hybrid organisation out of business. (Agrawala, 1999a, b)

The IPCC design was radically different from the AGGG. The financial conditions were stronger and IPCC was designed as a broad intergovernmental body open for both political and scientific communities. Because of this, many government bureaucrats was enrolled in the network, in contrast to the small scientific elite that constituted AGGG. IPCC was very successful in enrolling large amounts of leading scientists to the assessment. At the same time, IPCC was able to be grounded in government bureaucracy. Thus, IPCC was able to enroll scientists as well as core actors from governments, broadening the number and types of actors enrolled to support the network. IPCC was from the start manifested as the core of the climate change regime, as both a community of leading scientists from many different fields as well as a policy/science nexus where the scientists could meet with core political actors. IPCC have many characteristics of an epistemic community. Parts of this epistemic community, actors from US bureaus and scientific institutions was able to launch an agenda that the political elite in USA was strongly opposed to. This exemplifies the relative autonomy of epistemic elites in relation to political elites. Deepened comparative analysis of epistemic communities relations to political elites in countries like USA, where these two elites are in conflict, and Sweden, where the two elites are in coalition, would be interesting.

ICSU was not a co-founder of IPCC, since ICSU had different aims and was not enough interested by the other actors. ICSU was interested primarily in scientific research, not policy. Climate change was powerfully launched in the media the same year among others by a leading scientist of NASA (Hansen), stating that the exceptionally warm summer was 99% certain an effect of climate change (Layzen, 2002). Hansen presented data and temperature graphs to US congress (Jasanoff and Wynne, 1998), i.e. he used his epistemic authority strengthened with epistemic techniques in line with his expertise to impact on policy making bodies. The white house urged the scientist to be quiet, but he counteracted with arguments about the importance of scientific independence from

political communities and the seriousness of the problem. Again climate was an important actant for the success, since the summer of 1988 was exceptionally hot, which co-produced belief of global warming.

Single actors are important in this time period, for instance Bert Bolin, a Swedish meteorologist and Mustafa Tolba, head of UNEP. Both act with skilled strategies and agendas. Thus, this period is characterised by strong individual leadership, weak institutionalisation and uncertainty in outcomes. However, as discussed above this uncertainty was eroded fast since the regimes institutional structures and ways of thinking was stabilised very fast. The driving scientists had high epistemic authority, i.e. they were leading researchers within their fields and they had policy aims besides their epistemic interests. Bolin for instance, was well grounded in natural science with a strong background in carbon cycle research. He had also moral concerns about the effects of climate change and was an talented diplomat able to balance between scientific credibility and policy relevance in the enrollment of many actors in the network. Bolin institutional scientific background was as a successor of the distinguished researcher Rossby that carried out research in the first half of the 20th century. Thus, historical pathways are important, as always. Bolin was to become the first president of the IPCC.

It is interesting that epistemic elites, highly politically empowered, like Bolin does not view themselves as political actors. At least that is what they say when asked about how they view themselves, their role, aims and power. Since this seem to be the rationale for most of the epistemically authoritative actors in the regime as well as the official and explicit viewpoint of the IPCC, a deepened analysis of this would be interesting. To what degree is this a strategy of boundary work and to what degree it is an honest belief? Analysis of word use and definitions are also important, i.e. what does it mean to the actors to be objective, political and scientific? For instance a statement such as this by Christian Azar about the last part of the IPCC:s fourth assessment report ”Grundhållningen är att rapporten ska vara strikt vetenskaplig och det kommer den att bli” (Göteborgs Posten, 070504), stated in the context as a member of the Swedish political delegation in Bangkok. Azar is a researcher in engineering science and also one of the most influencial scientific policy entrepeneurs in the climate regime in Sweden. That an report that evaluate policy instruments in a close context of and in dialogue with political instances can be ”strictly scientific” is an interesting statement.

Counterstrategies with the aim to deconstruct and destabilise the network, for instance to label Bolin and other concerned climate scientist as typical “alarmists” of the environmental movement or that they are manipulating data are sometimes to be seem, e.g. from right wing political communities and climate sceptic scientists. Such attempts to problematise the epistemic authority of their rivals would be serious if the strategy would succeed since most actors representing scientific communities draw heavily on their objectivity, impartiality and scientific attitude of careful evaluations. Both sides in such battles between actors with diverging interests hide their normative grounds and play primarily with arguments on a scientific field, although that the hidden dimensions often are central. The function is to reinforce epistemic authority individually but also to strengthened the climate regime. More important for policy analysis is the impact that this has on how the regime is structured, the way it is functioning and the approaches taken in thought and action. More on that later.

The regime has since then further been strengthened with the United Nations Framework Convention on Climate Change (UNFCCC) entering into force in 1994 and the Kyoto protocol from 1997 and several other rules and regulations and the regime have expanded to include a myriad of actors. See Yamin and Depledge (2004) for a comprehensive

overview of the entire climate change regime. In this maturing regime there are much stronger constraints that limit the number of possible viewpoints, scientific arguments and political trajectories. The actors and perspectives important in the formation of the regime are leaving lasting imprints, their ideas and aims have been materialised in institutional structure and discourses that frame the ways that we think and act.

3.5 Globalisation and discourse production

Climate change as an environmental problem is co-produced with globalisation (Yearley, 1996). Climate change are framed as a global problem, despite the fact that both the causes and consequences are unevenly distributed. Scientific knowledge production produces and reinforces this global framing. One way that science is doing this is through scientific universalist, that hings and processes are the same and operate in the same way everywhere, independent of space, time and contexts. A viewpoint that there are no viewpoints. Such universalism is very central and taken for granted in natural sciences. For instance, the sound view that properties of greenhouse gases are universal and that every molecule of carbon dioxide will have the same effect on the climate system. Moreover, the scientific community is international, i.e. the more social and organisational sides of science have en inclination towards globalism. These taken for granted universalism is invading other fields, e.g. personal and cultural identities and ways of thinking, eroding the vast heterogeneity in worldviews prior to the modernisation process. Thus, the scientific universalism is not only an epistemic force within science, but presupposes and is co-produced by social processes that in turn co-produce new global identities, moral, political and cognitive viewpoints and concerns.

The natural scientific discourse has no such explicit contextualisation, although that political and moral viewpoints and agendas are often integral parts and important driving forces in scientific debates and controversies in the climate regime. These are hidden in a language of science, rationality and objectivity. For instance, scientists' framing of a global common that probelatise actors identidies and contribute to the enrollment of humankind in a common endeavour, is influenced by the scientists diciplinary training as natural scientists studying universal phenomena. Epistemic forces have political effects. Thus, the epistemic authority of natural science reinforces globalisation. Jasanoff and Wynne (1998) claims that climate science particularly affects translation from particular knowledge to universal knowledge and from local political to global political framings. This global framing have also been reinforced by the computer models used and available empirical data, since local and regional models have been weak and research have focused on global models, i.e. a process of epistemic closure that reinforce globalisation.

Since the actors differ in interests, not all actors have an interest in a globalised framing, it is likely that they use different strategies aiming at stabilising or deconstructing globalism. Success depends on the strength of the discourse of globalisation. Actors may reproduce hegemonic viewpoints that are not in their interest or try to oppose the discourse without success. There have been negotiations between actors representing the "north" and "south" about whether there is a global common and some actors have been suspicions about a new kind of colonialisation created by these new identities, agreements and laws. Thus, there is room for alternation of the discourse and attempts to do so have been successful to some degree. Still, it is clear that the universal viewpoint of the natural sciences for instance are a stronger discourse than local cultural discourses in framing how laypeople think about and value climate change.

The discourse of climate change consists of or is intertwined with several other discourses. Discourses, such as sustainable development are central, although weakly integrated with the climate change discourse. Economic and political discourses are important, e.g. western ideals such as economic liberalism and liberal democracy. Several disciplinary discourses are central, as accounded for. The climate change discourse has favoured viewpoints from harder sciences and an economic and technocratic approach to policy. Each discourse is formed by many components and conflicting perspectives, for instance it can be argued that the discourse of sustainable development was a transformation that disarmed critical perspectives in the environmental movement that argued that a sustainable society must be without increases in resource use, i.e. threats to the liberal economic discourse was effectively neutralised without dismissing the environment as a topic for concern. Since there is a strong discursive tabu to question the interpretation that progress is the same as economic growth and that this is the main goal of society, this is no surprice at all. Environmental problems and especially climate change are starting to become a hegemonic discourses that all actors must confess to (in word that is, not necessarily in deeds) if they want to be supported by their representatives.

3.6 IPCC characteristics

IPCC have so far produced three assessment reports, in 1990, 1995 and 2001. A fourth assessment report is under way. The assessment task of the IPCC is divided into 3 different working groups (WG), with working group 1 (WG1) assessing the physical basis of the climate system. WG2 assess impacts, vulnerability and adaptation of social and natural systems due to climate changes. WG3 are dealing with the politically impregnated question of mitigation strategies.

Cohen et al (1998) stressed that the discourse of climate change is natural science driven with a “physical reductionistic” approach. This is supported by the fact that in 1994, only 1.7 % of the federal funding for climate change research in the US went to research on the human dimension of climate change (Jasanoff et al 1998). Neoclassical economics dominates the human dimension of climate change (Cohen et al, 1998). Cohen et al (1998) also stressed that the discourse follows a “technical and instrumental rationality” associated with a “moral-liberal and rational-technocratic” political discourse and that climate change is framed as a “global environmental crisis” that excludes “social, cultural, moral and political dimensions”. Several other qualitative analyses of the climate change discourse argue along similar lines (e.g. Boehmer-Christiansen, 1997, Demeritt, 2001, Pielke and Sarewitz, 2005, Rayner et al, 1998). Over time, the climate change discourse is broadening, incorporating more perspectives, for instance sustainable development and equity (Najam et al., 2003). However, the changes are smaller displacements within the same fundamental framework.

These characteristics holds also for the third assessment report (TAR) from 2001 and the forthcoming fourth assessment report (AR4) (Bjurström, forthcoming). Scientific communities within the earth sciences hold a very strong position in IPCC. In terms of institutions, i.e. WMO as one of two founder organisations of the IPCC and the IPCC bureaus location within the WMO headquarter. In terms of scientific knowledge, over half of the references in TAR are from earth science journals and the major part of the most important working group, WG1 are dedicated to earth science perspectives. Environmental sciences are next to Earth sciences the most important knowledge field. The social science subset is dominated by economic sciences. Other traditional social

sciences such as political science, psychology and sociology are of minor importance or absent in TAR. This emphasis may be seen as the combination of three discourses, the primarily scientific, disciplinary discourse of earth sciences and the more fuzzy scientific/societal discourses of environmental problems and economic liberalism.

TAR is characterised by (1) that natural sciences are strongly dominant and social sciences marginalised. (2) That the climate problem is addressed from a framing of environmental oriented earth science with policy implementation strategies based on economic means of control. (3) That interdisciplinary approaches are weakly represented and that the overall approach is disciplinary based. This disciplinary approach leads to and is reinforced by the structure of TAR, which (4) separates knowledge fields from each other, especially natural and social sciences. (Bjurström, forthcoming)

The division between natural and social sciences agrees with the division between culture and nature deeply embedded in modern western societies. The emphasis in TAR can be explained by the historical development of climate related research and the disciplinary interests of the fields. That is, the oldest fields are the ones dominating the assessment, both in structural and quantitative terms. These fields are able to craft climate change related research in accordance with their disciplinary interests and make themselves obligatory passage points for discussions about the climate change problem. This give them power to control knowledge production as well as the epistemic components in climate politics.

IPCC is focused on reducing scientific uncertainty about physical climate processes. Whether this is important for policy and not is an empirical question dependent on how political and societal institutions are using scientific knowledge and interacting with science. However, this focus is clearly in the interests of the dominant fields, since it renders focus on basic research about physical properties of the climate system. Thus, the reduction of uncertainty is driven by epistemic interests of climate science and they are able to problematise and interest policy of uncertainty, i.e. the scientists creates roles and interests for policy and enroll them in their disciplinary discourse.

Further, the IPCC does not want to clarify the several different meanings of uncertainty used in the reports. For instance, the estimate that a doubling of carbon dioxide in the atmosphere will give 1,5 – 4,5 degree warming is based on subjective estimations and negotiations between modellers and the IPCC, not statistically processed outcomes of computer simulations (Jasanoff and Wynne, 1988). At the same time, uncertainty is in many places in the report operationalised as statistical measures with a very strict language. Thus, the temperature range seems to have an important function for the regime. The function may be a regulatory device, adjusted as to satisfy the enrolled actors. This can be compared with the vagueness of the concept of sustainable development that also serves as a means to enroll actors with different viewpoints that can agree just because that their disagreement is hidden. In other words, some areas of obscurity should not be clarified if one wants to enroll actors for policy aims. Uncertainty seems to have a function of enrollment of actors, i.e. the vagueness of uncertainty serves as a mean to transform divergent meanings and perspectives upheld by different actors into a shared framework, but serves also as the classical argument that more research is needed, the disciplinary interest.

3.7 Scientific strategies and science/policy interaction – again

As discussed, IPCC as well as major actors articulate belief in the traditional view of science as separated from society. This belief is important in explaining the IPCC approach to scientific assessment for policy. The role of the scientific assessments is seen as an assemblage of objective knowledge from the research community. The emphasis on certain knowledge act as a selection filter that include primarily knowledge about physical aspects of the climate system and excludes explicit critical normative discussions and exclusion of knowledge from fields that possess less certain knowledge. This means that IPCC assessments is weak in analysis of political processes, human behaviour and the publics understanding of and values about climate change among other things. The consensus endeavour of the IPCC also excludes divergent perspectives and benefit majority views. However, when IPCC is describing the causes, consequences and solutions of the climate problem, IPCC is not only (re)producing knowledge of the physical climate, but also (re)producing constructions of nature, society and politics. IPCC is producing science and politics and at the same time IPCC is a product of politics and science. This is not reflected upon by the IPCC.

On the contrary, IPCC is hiding such insights. The common view of science as an objective and disinterested activity can be upheld by the IPCC and effectively coexist with extensive scientific involvement in the climate change regime due to such boundary work. IPCC construct itself as an institutional within the scientific community that assesses scientific knowledge in an impartial and objective way. This reinforces the political power of science within the regime as well as strengthening the whole climate regime. It is interesting to note that a science/political hybrid organisation as the IPCC are quite successful in constructing this image. If IPCC would incorporate more reflexive views and explicit normative approaches it would probably weaken its position in the climate change regime. It can be argued that the success of the IPCC is not fully intentional, but partly due to selection mechanisms that favoured the design. However, IPCC is aware of its success and reasons for this and will not likely change a winning concept.

It can be argued that the traditional view of science has too high expectations of what science can deliver. This is a risk for continued high status of science, because laypeople trust in science may weaken when their power to assess science increase and scientists cannot deliver what it rhetorically claims. Strategies of undermining scientific claims are common, especially in policy realms with high stakes such as climate change. With a more nuanced view of science, science can neither be objective nor reduced to politics or other social activities and strategies that draw on claims of objectivity will be weakened.

According to Boehmer-Christiansen (1997) scientists was able to enroll environmentalists and alternative energy actors in the network and they together made the creating of the climate regime possible. However, IPCC was trapped early in aims of uncertainty reductions and attempts of objectivity. Despite the fact that climate change, as an environmental problem is a highly political question, strongly associated with energy policy (Boehmer-Christiansen, 1997) the climate change problem are often framed, both in public and scientific debates, as mainly a natural scientific question, hovering around questions related to knowledge of physical atmospheric processes and the degree of uncertainty of that knowledge. Also in IPCC the gravitation towards attempts to reduce scientific uncertainty, centred on global physical atmospheric processes is apparent. This indicates the success of core scientific actors from disciplines such as meteorology and

climatology to problematise other actors' interests in according with their own interests. The belief in more research to lower uncertainty, to make rational policy possible. But why is this a rational strategy? Have the non-scientific actors assessed this question? For stronger grounds to determine what is policy relevant knowledge, research about political (about societal) realities in needed and the ways that they use scientific knowledge. Since political configurations are variable so are the answers to the question. Although it is reasonably to question that the present research emphasis is the most rational and optimal to solve, adapt to and mitigate the climate problem, a more firm and detailed answer cannot be given without closer empirical analysis of policy spheres.

Strategies of climate scientist include diplomatic strategies that balance the use of epistemic authority with political insights to gain credibility in as many communities as possible, to be able to enroll them in the network. Strategies of climate sceptics include questioning objectivity, emphasising uncertainty and highlighting the costs of counteraction.

Since actors from media and politics share the traditional view of knowledge as separated from society, they tend to reinforce the worldview of the natural sciences without critical examination or examination subordinated to the natural scientific worldview. However, since media reproduce not only the majority view, but also emphasise minority view from the scientific community, media is also reinforcing the conflicts in viewpoints that exist in the scientific community. Since the stakes are high conflicting views are reinforced. A normative battle constructing and deconstructing nature, society and climate are fought in a scientific language. Disciplinary viewpoints are fighting over priority to define what is important and how the system works. The divide between science and policy so clear in the minds of the actors are hard to find in empirical reality wherein most things seem to be floating and intertwined.

3.8 Policy formation and implementation

Policy implications of knowledge production and regime formation have only been briefly touched upon. The underlying approach to policy question in this paper should however be visible, that policy implementation is dependent on processes previous to implementation and that implementation must be studied in light of this historical development. It is here argued that policy implementation is dependent on policy formation for instance. A top down approach to policy implementation that starts with a policy and analyse the implementation process as an exercise of coercive power that actors comply with captures some aspects of policy implementation, but is to narrow a view to capture all relevant aspects.

Policy implementation is here seen as a heterogeneous process of both bottom up and top down processes in actor networks with heterogeneous actors involved. Regime formation, policy formation and policy implementation are intertwined processes that can not be fully separated. Policy implementation is affected through earlier constructions of the ways that we think and value. Knowledge production have framed the scope of policy options and implementation strategies and proposed solution approaches. Our interests and goals have been altered in the process. The regime formation creates institutional constraints and the institutions are intertwined with different epistemic and political traditions. The actors co-construct institutional structures, meanings, beliefs, identities and interests. Particular actors, beliefs, values, identities and approaches to policy have been stabilised in the network and other have been excluded. For instance the framing of climate change as a universal problem and a common endeavour transform the local

actors towards “common” actors. Science is also affecting policy directly by active participation in policy formation and implementation in the same institutions as political actors, i.e. scientists are not just affecting policy from a distance from inside the scientific communities’ home institutions.

The influence on the actors behaviour regarding policy implementation aims act on different levels. I must comply (coercive). It is in my interest to comply (rational). I think it is in my interest to comply (manipulation). It is in my identity to comply (meaning). It is in line with my values to comply (socialisation). It is in line with my values to comply (fit between actors and policy for other reasons). I think along the same line as the arguments about complying (cognitive). Further, the framing might not be about complying, since the actor may view itself as active, e.g. by way of the actors representative in the actor network construction of the policy, i.e. the actor pursue according to the plan rather than comply.

Science has substantial power to influence the ways that society thinks and acts. However, to what degree science are important for policy implementation studies depends in the end on how strongly scientists can problematise other actors interests and beliefs. To quantify this is beyond the scope of this paper. This study lacks such empirical material and analysis and is also weak in theoretisation on non-scientific actors. These aspects are mentioned since they as crucial areas lacking in this study. Within STS some answers is to be found within the subfield of public understanding of science. How the public and politicians are affected by the scientists knowledge production and how they are interpreting and using the knowledge. How strong the influence of cognition is on emotions and behaviour dispositions. The political configurations are important. Media is important as an central intermediator between scientists and the public. To put it shortly, the fitness between the climate regime and circumstance outside of it are central to the degree of friction in policy implementation.

Besides, are science interested in facilitating the construction of sound policies and effective policy implementation? Yes, but the interest is limited and not a main concern or driving force for science. For instance, there is a tension between what scientists write about their aims in proposals to funding agencies and what they write about their aims in scientific papers, i.e. a tension between the interests of the actors, interests that are negotiated in the proposals as well as in the journals.

Which actors are involved in policy implementation? Whose knowledge is included and whose is excluded? Why do particular perspectives on environmental change become so entrenched in policy? In the climate change regime, the strong dominance of natural scientific and economic knowledge production correspond to policy implementation strategies based on economics means of control and technical solutions. The scientific focus on universal physical aspects of the climate system and on green-house gases correspond to a focus in policy on reduction of green-house gases. It is therefore concluded that epistemic characteristics are important in framing policy and policy implementation strategies.

4 Conclusions

The analysis suffer from insufficient use of the theoretical perspectives in the results, lack of detailed and controlled empirical analysis, crude and sweeping analysis, statements and language, too high reliance on second hand sources as empirical material and an over-ambitious attempt to cover very broad theoretical and empirical areas. As indicated in the abstract, analysis of regime formation are emphasised from a point of departure that regime formation affect policy formation and implementation. However, the analysis falls short on theoretical developments and empirical demonstrations of "how characteristics of the regime affect policy formation and implementation". To reconcile this, further development of the theoretical perspectives is needed as well as analysis of empirical material of implementation processes. Still, some tentative conclusion can be made and the research aim to explore potentials for future research projects has been accomplished.

An STS approach can contribute to the understanding of regime formation, environmental governance and policy implementation, topics usually addressed by political science and international relations. An STS approach to such topics is especially fruitful in environmental regimes, due to the central importance of scientific knowledge production in environmental regimes. STS complements other social scientific approaches by its focus on science and its treatment of science as a societal institution among others, to be critically and empirically analysed. The role of science in societal and political processes is insufficiently recognised outside of STS. To incorporate and alter STS perspectives for policy analysis within other disciplinary discourses is potentially fruitful. Especially since policy analysis is not a major topic or strength within STS, with its inclination towards philosophy and theory of science rather than politics and policy. STS speak of policy in a general way, addressed as scientific influence on policy and policy formation and usually not focused on policy implementation. STS weak relation to political science is a sign of this.

History is important for understanding of why some perspectives and actors dominant policy and why others are excluded or marginalised. The historical momentum is clear and strong in the climate change regime. The core actors and perspectives have a history that in many cases dates back over 100 years in time. To follow these perspectives and actors and how they are transformed over time shed light upon why the regime is constructed the way that it is. Constructed perspectives and institutions channel the development of the regime in certain directions. The constraints that are built in the regime are hard to overcome in later developments. The IPCC:s assessment reports for instance embody many of these historical trajectories. Later developments, for instance the fourth assessment report, build new layers around the core with attempts to integrate sustainable development and strengthen interdisciplinarity among others, but the core are left intact.

The ways that the regime is crafted is important for environmental governance and policy implementation. Characteristics that are build in the regime upstream (formation) will later have downstream effects (implementation). Analysis of regime characteristics such

as institutional structures, normative cultures and epistemic traditions can be used to explain why certain perspectives and actors are entrenched in policy. For instance the strong emphasis on natural scientific and economic knowledge production reinforces policy implementation strategies based on economics means of control and technical solutions. Such policy implementation strategies are co-produced by interests of certain scientific discourses as well as by societal discourses. Alternations of disciplines included in the climate regime and their relative power relations renders alterations in scientific understanding of the problems as well as alterations in solution strategies.

The common view of science as an objective and disinterested activity can be upheld by the IPCC and effectively coexist with extensive scientific involvement in the climate change regime due to boundary work. Through such boundary work IPCC can construct itself as an institutional within the scientific community that assesses scientific knowledge in an impartial and objective way. This reinforces the political power of science within the regime as well as strengthening the whole climate regime.

Characteristics and outcomes of the climate change regime depends on many differet things. Characteristics of the environmental problem in itself (the natural science of the phenomena) are important. Scientific knowledge production is crusial. Weather events play a central role in the crafting of the climate regime. However, other actors, such as laypeople and politicians, are not passive receptors of these influence, but actors with their own interests.

Social and political contexts are important, i.e. the traditional objects of study in social science. The actors and the strategies that they use are central for the outcome, i.e. not just what is given is important and how institutions and norms etc. constrain and channel the outcomes. There is degrees of indeterminacy that the actors can use to alter the outcomes.

Climate change can be seen as a co-production of science, society and nature in the most literal sense. We are changing the climate and the climate are changing us, with feed-back mechanisms going both ways. This is true, on a direct, concrete, physical - behavioural interaction. It is also true on a cognitive and cultural level. Science are producing images of the climate and influence the society on how to react to the climate problem and re-structure society for reasons of adaptation and mitigation. Power relations are being negotiated and altered in these processes.

One outcome of the network that the actors produce is a strong separation of nature and society. This outcome is a reproduction of already constructed divisions that are strongly institutionalised. Non-human (f)actors influence regime formation and policy implementation. They interact will human actors and are able to contribute to formation, reinforcement and alterations of the environmental regimes of climate change. Social science needs to pay closer attention to and incorporate non-human factors in theoretical frameworks and causal variables in empirical analysis. However, the there are several strong obstacle of doing so, since disciplinarity is a strong principle of knowledge production and organisation, the social and natural sciences are strongly separated and state bureaucracy and political instances are separated in similar ways. This institutional separation reinforces epistemic barriers. Thus, the obstacles are both practical and theoretical. climate problem is framed as a climate system and a society, not as an earth system wherein physical, biological and social processes all operate in a single system.

4.1 ANT

The analysis in this paper have not been true to the epistemology and the conceptual framework of ANT. Should it be so? An analysis that use the ANT perspective in a more conservative way would be better if evaluation of the strengt and weaknesses of ANT was the main purpose of the study. This study have presupposed that ANT can serves as an inspiration and supplement to more traditional approaches to scientific knowledge production, how society and nature are constructed and organised and how this ir related to policy questions, but that ANT is too weak in its own for a sufficient explanation and therefore must be complemented with other perspectives. To purify the ANT perspective in the study would be an amusing exercise that likely would result in both insighs, frustrations and the need to abandon some of the more peculiar parts of ANT.

There are several problems in the ANT approach and its assumptions. The plasticity of the theoretical views and the descriptive approach opens up for "just so stories", i.e. explanations that can not be verified or falsified, but that sounds quite good, or odd… There is problems with empirical delimits of ANT studies, since the actors have histories that go far back in time and the actors are part of many networks that translate over time, i.e. there can be a huge amount of strings of causal events and relations to follow to trace the actors network transformations. The lack of substantial theories of action, power and characteristics of the actors renders even more time with analysis, since ANT does not presuppose or use such theories from other fields. However, that action only takes place in networks and that there is resistance that must be conquered and that actors have interests as driving forces is some sort of theory of action.

The relational anti-essentialism and the symmetrical explanation of nature and society are problematic for several reasons. First and foremost, actors clearly differ in essential characteristics, especially in heterogeneous networks consisting of both humans, animals, artefacts and matter. The rhetorical question is therefore; can different things be treated the same way? However, it can be argued that these differences are the outcome of earlier actor networks. This agrees with evolutionary and ecological theory, i.e. differences between animals is due to relational historical processes that differentiate them. In the same vein, epistemic elites are often more faithful to and shaped by their craft than the organisation that they work for, i.e. they have been transformed in earlier network relations and the characteristics that they have acquired have strong inertia. Thus, the actors in the network formation under study must either be traced far back in time to previous networks or the knowledge that are the outcomes from studies in other disciplines, e.g. about behaviour traits of a species, must be used as input for ANT studies. The latter would make analysis less costly and strengthen the realism of the evolving system under study, but lose much of the critical explanatory power of the taken for granted of today.

Further, are different things treated the same way in ANT? ANT is clearly a social scientific framework extended to treat physical and biological entities the same way as social science treat social entities. Thus, it can be argued that ANT is a social reductionistic approach and does not transgress the social/natural division that it is constructed to transgress in adequate ways, but rather enroll nature into the social sciences, i.e. expands the domain of social science. Yearly acknowledge the problem of incorporating non-social entities that social science lacks knowledge about and argues that STS must restrict itself to social domains. In this paper it is argued that the solution instead is to transgress the constructed borders of the social sciences, deficient for analysis of environmental problems. Thus, instead of delimiting analysis according to existing competences and institutions, new ones need to be created.

It is unclear in ANT how and what roles non-human actants can have in actor networks. For instance, it is clear that weather phenomena effect processes in the climate regime, but very unclear how weather and climate should be incorporated as actants. There seems to be a large asymmetry here regarding behaviour and capacities. For instance, climate can not be affected directly by symbolic production as it can by production of carbon dioxide, but the carbon dioxide that humans produce alter climate that directly and indirectly affect society on physical as well as symbolic levels. A more traditional system perspective has advantages for studies of physical interactions between society and climate and escapes the drawback of talking in a language of negotiations, interests, translations, etc. However, this turns the problem upside down, into physical reductionism instead. It is here argued that an asymmetrical approach is needed that does not treat all components and processes in the same way and that draws on theoretical perspectives from more disciplines, i.e. a multidisciplinary and theoretically heterogeneous approach.

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Abstract

The general theoretical assumption is that the State is unable to solve the complex issues in nature policy alone and must include other actors and resources. This inclusion can take place through governance networks, which are more or less stable, self-regulated, relatively institutionalised frameworks for negotiated interactions of interdependent actors. Actors represent a broad range of interests and resources, and are assumed to pursue self-interest. Therefore governance networks must be metagoverned to ensure sufficient solutions for society as a whole.

Taking departure in three different theoretical strands about metagovernance of governance networks this paper investigates the process of establishing national parks in Denmark where formal networks were used extensively in problem formulation and vision building for solutions for future nature conservation.

The different theoretical strands are different in terms of the role of the metagovenor; the rationales for metagovernance as well as of metagovernance strategies. The national park process was investigated according to the following empirical questions: can the formal networks be characterised as governance networks? Was metagovernance employed and what was the rationale? Which metagovernance strategies were used? Was metagovernance conducted appropriately as perceived by the actors involved?

From the case study it can be concluded that the formal networks in the process were governance networks and were metagoverned most importantly through the institutional design. The National Forest and Nature Agency (NFNA) was the main metagovenor and had an important role in the process. There are differences of opinion among the informants regarding the appropriate level of metagovernance and the role the NFNA played depending on norms regarding the level of local self-regulation in nature management.

1 Introduction

It is generally acknowledged that governance networks have come to play an increasingly important role in modern policy making as well as in political theory. The reasons are that society has become increasingly difficult to govern due to e.g. functional segregation and increased complexity of the problems to be addressed, and therefore the State does not have the necessary resources to govern and must involve other actors. Furthermore the involvement of international forums has increased, not least regarding nature policies, and civil society demands more direct influence in the form of participation leading to coordination issues between levels. This has made it necessary to find alternative means of governing as opposed to, or complementary to State bureaucracy and market as governing venues. Governance networks constitute such an alternative (Kenis and Schneider 1991; Kersbergen and Waarden 2004; Rhodes 1996; 1997).

In literature governance networks are considered appropriate venues for governing when the problems at hand are complex or 'wicked' i.e. involving many actors and uncertainties regarding knowledge, and are contested as to what the problem is and hence what would be the best solutions (e.g. Klijn 2005). Wicked problems exist within a context of great uncertainty regarding the risks and possibilities involved for society and individuals (van Bueren et al 2003).

Governance networks have been dealt with by many authors, and been defined in several ways. Sørensen and Torfing (2007a, p. 9) defines governance networks as: 1) a relatively stable horizontal articulation of interdependent, but operationally autonomous actors; 2) who interact trough negotiations; 3) which takes place within a regulative, normative, cognitive and imaginary framework; 4) that is self-regulating within limits set by external agencies; and 5) which contributes to the production of public purpose. This definition encompasses most of literatures common characteristics of governance networks. Abandoning any desire of originality I adopt this definition.

The acclaimed benefits of governance networks are that they bring together resources and knowledge, making it more likely to solve complex societal problems; they bring together a plurality of participants which potentially enhance the legitimacy of the policy and help to overcome societal fragmentation. Furthermore inclusion of a wide array of stakeholders improves the chances of producing flexible and proactive solutions which potentially increases effectiveness of the policy. However; there are many things that can and do go wrong in the process and prevent deliverance of the benefits. Inherent conflicts may not be overcome; governance networks may become closed to relevant actors to the detriment of legitimacy; poor process management may lead to a favouring of the already powerful etc. (Sørensen and Torfing 2007e).

Assuming that network participants pursue self-interest rather than public interest, governance networks must be regulated, henceforth metagoverned, if they are to contribute to the governing of society; yet governance networks are at the same time characterised as being self-regulating (Sørensen and Torfing 2007d) Some degree of

autonomy is a prerequisite to wanting to participate and contribute in a governance process, a characteristic that will be lost with to much metagovernance. The challenge is to find the right balance between too much and too little, which will vary from case to case.

In 2001 the Danish Minister of Environment initiated a large scale project to investigate the possibilities of establishing national parks in Denmark. By 2007, the process has ended up in a draft Act on National Parks. The national park process involved a number of formal networks initiated in a top-down manner, where the National Forest and Nature Agency (NFNA) played an important role e.g. by being the secretariat both nationally and locally. From interviews it became clear that appropriate metagovernance was an issue of debate as illustrated by the following quotations:

Regarding the role of the NFNA in the process, opinions differed from:

> "It began well, but ended up as a big manipulation attempt" (*Interview 34*)
> to
>
> "The secretariat did a formidable job: loyal minutes, fair to everyone…" (*Interview 22*).

An interesting question is then: can the very different perceptions of the process as exemplified by the quotes above be understood better in the light of metagovernance theory?

Taking a theoretical departure in Sørensen and Torfing (2007e) and their structuring of network governance theory, the present paper investigates the extent and rationale behind the employed metagovernance in the case of establishing national parks in Denmark.

1.1 Methodology

The study is a case study and the process of establishing national parks was chosen as a case for being extreme for Danish nature policy in terms of network governance qualities (Yin 1994). By that is meant that networks were perceived as important, the process involved many actors, many sectors and several levels, there was no common understanding of the problem beforehand, the issue was complex, and there was unusual focus on participation and deliberation towards consensus.

The investigation is performed through an embedded case study design (Yin 1994) with two embedded cases: the pilot projects "Kgs. Nordsjælland" and "Vadehavet". Hence, there are three units of analysis: The overall national process and the subunits – the two local processes. Three strands of theory are used to illuminate and understand the specific case and the metagovernance that took place. Hence the study is an intrinsic case-study (Stake 2005).

Data was contrived through 30 semi-structured qualitative interviews and document analysis of the written material available from the process (project reports, meeting minutes and agendas, scientific reports, previous research). Respondents were selected by means of the lists of participants and through snowball sampling asking each of the informants if they knew of someone who would be relevant to talk to. With one exception all interviews were recorded.

Interviews were particularly valuable for this paper as many metagovernance efforts as well as perceptions of them remain informal and hence can only be investigated through

the personal account. Furthermore interviews offer the opportunity to get insight into norms the informants have regarding governance qualities of the network (Zølner et al 2007).

In all interviews the starting question was: "can you describe the process from your own involvement and until now?" The purpose starting with an open question was to avoid imposing a terminology and to get an idea of what were important issues to the informant in the process. This first story of the informant was used as a starting point for the remaining interview, where he/she was asked to elaborate on certain issues both in descriptive and evaluative terms. The interview guide was structured around some themes (horizontal and vertical coordination, participation, expert involvement, strengths and weaknesses, lessons learned) which the informant was asked to relate to. All interviews are influenced by the interviewer-interviewee relationship and their setting and are believed to be a co-construction of meaning, i.e. they do not result in objective truth.

Analysis was done with the software MaxQDA2007 and the fully transcribed interviews were coded in two rounds; first inductively to identify emergent themes and issues such as e.g. the role of the secretariat, time pressure in the process, then in the second step deductively to according to concepts from theory relating to the identified themes and issues, e.g. metagovernance, process management etc.

1.2 Metagovernance - different approaches

Metagovernance is a matter of steering governance networks in a way that does not reduce the self-regulation capacity radically. This can be done in more or less direct ways according to what the purpose and context is. In the following, three theoretical strands of metagovernance are presented. A distinction that is adopted from Sørensen and Torfing (2007d). The boundaries between the strands are not distinct and there are certainly similarities and overlap. The individual authors mentioned as belonging to one strand may not fit exclusively into that one strand. The questions asked to the three strands are: why are governance networks formed? What are the rationales behind metagovernance? Which strategies of metagovernance does each theoretical strand employ? Who is the metagovenor and what is the role of the metagovenor? The same questions are posed to the empirical data.

1.2.1 Interdependency theory

For interdependency theorists, State, market and governance networks are all equally imperfect forms of governing society and are all subject to failure. Actors are mainly ruled by strategic and rational motives and have conflicting interests leading to internal power struggles in the network, however; their interdependency necessitates negotiation and furthers compromise and social learning (Kickert et al 1997; Klijn 2005; Klijn and Edelenbos 2007). The main motive for entering into network cooperation is resource interdependency, hence the categorization. Authors are e.g. Rhodes, Kickert, Klijn and Koppenjan and a descriptive approach to metagovernance is predominant (Sørensen and Torfing 2007d)

Why governance networks?

Governance networks are a reaction to an increasing fragmentation of governing institutions resulting from New Public Management reforms with extensive privatisation and outsourcing. The lacking coordination following from fragmentation are being

attempted alleviated by the formation of various networks bottom-up due to recognised resource interdependencies and hence mutual advantages (Sørensen and Torfing 2005). Furthermore are governance networks often initiated top-down by public authorities as venues for public policy making because both State and market have proven to be imperfect forms of governing and governance networks are an alternative, although also imperfect (Sørensen and Torfing 2007a).

Governance network success or failure can be evaluated against the capacity of the networks to solve problems jointly through negotiated exchange of resources and find solutions that are acceptable to all stakeholders and do not lead to harm and hence veto from actors outside the network. A central issue in successful network governance is the development of trust which is a prerequisite for actors to be willing to put their resources in play (Sørensen and Torfing 2005; 2007d).

Rationales for metagovernance

Metagovernance is first needed to identify whether or not governance networks are an appropriate venue of governing in the specific circumstances and design the proper kind of network for the task at hand. Furthermore metagovernance is a necessity in order to enhance the probability of successful governance networks given the conflicting interests of the participants. Without skilled metagovernance governance networks run an increased risk of excluding relevant actors, of deadlock due to conflict or be inefficient because participants are unwilling to risk investing resources in the network (Sørensen and Torfing 2005).

Metagovernance will often fail because governance networks are complex and the inherent conflicts of interest can be difficult to overcome; furthermore they are difficult to combine with hierarchy and market because the latter two weaken horizontal cooperation. Metagovernance is in all its aspects a delicate balancing act (Sørensen and Torfing 2007d).

Strategies of metagovernance

Successful metagovernance must ensure inclusion of all relevant stakeholders by working against social and cognitive closedness of the network (Schaap 2007), yet keeping in mind that too large networks will be detrimental to trust development and the capacity to act. Metagovernance must facilitate actors to pool resources, which can be hampered by uncertainty regarding the other actors' intentions. The metagovenor must help actors to realise their interdependency and agree on a common conception of the nature of the problem, possible solutions and decision-making premises (Sørensen and Torfing 2007c). On of the important tasks is to find a good balance between conflict and cooperation; too much conflict leads to deadlock, but too much consensus hinders innovation and creative solutions (Kickert et al 1997; Koppenjan 2007; Sørensen and Torfing 2005).

There are several metagovernance strategies described in interdependency theory. On one hand there is institutional design, on the other hand there are strategies of process design and management which may include participation in the network. The first are hands-off strategies to change the characteristics of the network, in the latter the metagovenor is in direct contact with the network participants. (Sørensen and Torfing 2007d). The strategies are interlinked and complementary.

Institutional design is usually aimed at changing the formal and informal rules of the network e.g. regulation of access and interaction rules. Klijn (2005) identifies three types of institutional design strategies: 1) strategies aimed at changing the composition of the network, 2) strategies aimed at network outcomes i.e. aimed at the choices of the actors

e.g. changing pay-off structures and evaluation criteria, and 3) strategies aimed at network interaction rules and procedures (Klijn 2005). Institutional design is instrumental in the sense that the overall goal of the governance process already is determined by the metagovenor, and the purpose is hence to influence the participants to work in a predefined direction (Sørensen and Torfing 2005).

Klijn and Edelenbos (2007) uses the term process design which closely related to institutional design. Some key principles of process design are: *openness* to all relevant actors early in the process to minimise the risk of blockage; *safety*, establish rules that allows participants to feel secure that they can protect their core values and interests e.g. veto power and rules of exit; *progress* which relates to rules regarding timetables, dates for important decisions etc. The last key principle mentioned is *content* which relates to the creation of a variety of ideas that may inspire and induce participants to offer their resources to the network (Klijn and Edelenbos 2007, 201-202)

Process management aims to guide and steer the interactions of the participants and includes e.g. *activating* actors and resources and creating a situation in which they are interested in investing their resources. Activation also means to identify the indispensable actors, and sometimes deactivate those not being constructive etc. Activating the right players with the right resources is the crucial task in order to gain network efficiency (Agranoff and McGuire 2001; Klijn 2005). Moreover process management includes *coordinating goal achieving mechanisms* i.e. identifying the goals of the actors and creating variety in solutions sometimes by competitive teams of experts. A further task in process management is to *facilitate interaction* which includes mediation, creating incentives for cooperation, appointing a process manager, and also relates to trust building and joint knowledge production etc. (Klijn 2005).

Agranoff and McGuire (2001) mention three main tasks for a metagovenor which are very much in line with the strategies of Klijn (2005). The first is *activation* (see above). The second, *Framing*, means establishing and influencing the rules of the network as well as prevailing norms and values. *Mobilising* is about inspiring and inducing commitment and motivating. *Synthesising*, which is closely related to interaction facilitation from above, means to create an environment suited for a favourable and productive interaction among the participants of the network and includes facilitating, promoting information exchange to reduce uncertainty etc. (Agranoff and McGuire 2001)

When the metagovenor participates in the network he/she may seek influence on the content as well as facilitate the negotiation process, however; it is important for the metagovenor to play by the rules of the network and *not* use formal authority arising from his/her position, but solely demand influence according to the resources put into the network on equal footing with other network participants (Sørensen and Torfing 2007d).

Role of the metagovenor

First metagovernors should carefully consider the task at hand and the possibilities of solving it best by means of hierarchical rule, market mechanisms or governance networks in order to reduce the likelihood of governing failure. Once a governance network is established, the metagovenor is there to make network governance possible and hence the focus is on problem solving capacity, effectiveness and efficiency.

The metagovenor can in principle be anyone with the resources to perform metagovernance; in reality it will often be State actors. In that regard the ideal public official has/should change(d) from the rule following bureaucrat to a pragmatic, creative, and engaged process facilitator (Sørensen and Torfing 2007d). A possible advantage of having a State actor, in particular a public official, as metagovenor, may be to increase

the publicity and transparency of the process by bringing in the norms of documentation of a public administration (Esmark 2007).

1.2.2 Governability theory

Network governance is believed to improve the governability of an increasingly complex and diversified society and to be superior to market and State. Governability theory relies to some extent on game theory and sees the interactions in governance networks as coordination through negotiation games. Actors are rationally motivated rather than culturally shaped. Authors are e.g. Kooiman, Mayntz and Scharpf who predominantly have a prescriptive approach to metagovernance (Sørensen and Torfing 2007a).

Why governance networks?

Governance networks are formed as a functional response to lacking efficiency of governing by means of State hierarchy and/or market due to increased functional differentiation, fragmentation of society into self-referring subsystems, and societal complexity. Networks enhance horizontal coordination and hence governability of society. The superiority of governance networks resides in their potential ability to combine the strengths of State and market – i.e. coordination towards a collective goal and the involvement of a plurality of autonomous actors (Sørensen and Torfing 2005).

Governance networks are formed by constructing situations where actors participate because of anticipated gains from collaboration; like in interdependency theory, the glue that holds them together is interdependency. The problem is that the interdependency to solve specific problems is often not recognised. The purpose is to coordinate individual behaviour into collective behaviour. Governance networks are complex and consisting of self-regulating strategic actors. Interaction in networks takes place as negotiated coordination. Governance networks are highly instable and constantly at the brink of collapsing (O'Toole 2007; Sørensen and Torfing 2005; 2007a). The networks should produce positive as well as negative coordination, the first is a matter finding the overall best solution in terms of welfare and the latter is the minimum acceptable to all parties. A problem is often indifference of actors regarding matters that does not concern themselves directly (Scharpf 1994).

Governance networks are to contribute to an effective and legitimate adjustment of governing needs to the available capacities, and of governance capacities to the articulated needs of society which is becoming increasingly ungovernable for the central State. In other words governance networks are to produce relevant and flexible policy-making (Sørensen and Torfing 2007c).

Rationales for metagovernance

Governability theorists assume that unregulated networks are unstable due to individual strategies of the actors, potentially leading to deadlock or sub-optimal solutions due to uncertainty of getting value for the investments put into the networks. If governance networks are destabilised their governability potentials are not harvested leading to further deregulation of society (Sørensen and Torfing 2005).

Once networks are established mutual trust and the development of institutional rules are important to avoid problems of e.g. free riders and uneven distribution of risks and costs. Therefore governance networks must be metagoverned in order to ensure stability of flexible policy-making and create collective action i.e. metagovernance is a prerequisite to make network governance an effective form of governance.

Strategies of metagovernance

A main challenge for metagovenors is that in negotiations actors are only assumed to pursue self-interest. In order to reach optimal solutions reciprocity, mutual trust and open communication are required which is in opposition to bargaining tactics in the struggle of gaining distributive advantages. Bargaining tactics will often result in suboptimal solutions (negotiators dilemma). Furthermore a large number of negotiators and hence interests being pursued makes it more difficult to reach agreement by negotiation (Scharpf 1994).

Metagovernance is about illuminating the interdependencies; the greater interdependencies are the more willing participants are to seek shared goals and to take the risk of investing resources. The metagovenor is not to participate in the governance networks but metagovern by means of institutional structuration, incentive structures and by constructing the rules of the game through which the actors can interact and pursue their interests (Kooiman 2003; Sørensen and Torfing 2007d).

Many limitations of the negotiated coordination can be overcome when negotiation is embedded in hierarchical network structures. When negotiations are embedded in hierarchical structures the embeddedness helps to protect the interests of the actors not included in the particular negotiation set. In a hierarchical setting the results achieved in negotiation must be approved by someone higher in the hierarchy, and will not be if the result is politically unfeasible (Scharpf 1994).

Institutional structuration involves the creation of plus sum games that enhance cooperation by redistributing resources; when necessary emphasises the 'shadow of the hierarchy' implying that unwillingness to solve the problem at hand will reduce the right of self-regulation. Institutional design can furthermore involve incentive steering. (Scharpf 1994; Sørensen and Torfing 2007d).

Role of metagovenor

The position of the State, who is the metagovenor, is by no means threatened by emerging governance networks, but its role is changing. The strength of the State depends on its ability to metagovern in a way that strengthens the coordination capacity of the State as well as the self-regulating capacity of the networks. There is a mutually beneficial relation between the State and the governance networks as the networks fulfil some of the governing needs which would otherwise have been left to the State alone and the network participants benefit from the State initiated venue of efficient coordination (Sørensen and Torfing 2007d).

However; the State must reorganise to reap the benefits of governance networks in the changing society and achieve a legitimate and effective balance between State intervention and self-regulation, which must be the core principle for the distribution of decision-making power between various actors at various levels in the policy process (Kooiman 1993 cited from Sørensen and Torfing 2007d, p. 174).

1.2.3 Integration theory

Governance networks consist of relevant and affected actors who interact and are integrated in a community in which common norms and perceptions are developed. Cognitive and normative integration in the networks happen through the construction of common frames of reference, of network identities and solidarity. Over time the network develops its own 'logic of appropriateness' which governs individual action rather than

rational cost-benefit considerations. Individuals act based on their constitutive interpretations of their identities, the situation and what is considered appropriate in such a situation. Interpretations depend on the cultural heritage and socialisation which have formed individual identities. Interpretations are constitutive because they lead to actions which form and institutionalise norms and rules of what is appropriate action. Identities are social constructions and can be changed and reconstructed. Authors are e.g. March, Olsen and Scott (Sørensen and Torfing 2005; 2007a).

Why governance networks?

Governance networks are formed bottom-up after an evaluation of interdependencies based on established institutional logics of appropriateness. However; they can also be shaped due to isomorphic pressure from the surroundings claiming that network formation is an appropriate form of institutionalisation in given situations. There is an ongoing attempt to balance community and individual and unite political authority and individual autonomy. Governance networks can contribute to create this balance (Sørensen and Torfing 2005).

The political identities and capacities of the actors determine whether or not governance networks are able to contribute to the governing of society. Governance networks are successful if they solve relevant policy problems and exploit new opportunities (Sørensen and Torfing 2007c).

The unifying glue of a governance network will often be a common perception of a 'we' which is being threatened from outside and must act collectively to recreate the conditions for development of the community (Sørensen and Torfing 2005).

Rationales for metagovernance

The reasons for metagovernance are to produce a strong democratic, political community within and between networks; to enhance solidarity by shaping shared meaning, common visions which facilitate consensus; and to develop a strong sense of communality in the network. The view on democracy means that in a democratic society, citizens are linked together by public debate and open dialogue in deliberation towards collective identification making meaningful collective behaviour possible. Furthermore metagovernance should help to encapsulate and civilise conflicts Sørensen and Torfing 2007b; 2007d).

Strategies of metagovernance

In integration theory there can be metagovernance of identities and of capacities. Metagovernance of identities seeks to shape the actors' perception of themselves and their identities as political and social actors by creation of norms, rules and logics of appropriateness through production of specific forms of knowledge; storytelling about best practises; campaigning frames of meaning; and constructing symbols and rituals. Story telling might be to refer to network participants as e.g. responsible citizens, and administrators as responsive. The idea is to consolidate the image that governance networks are part of a political system which values ideals such as communality and mutual respect (Sørensen and Torfing 2007d).

Metagovernance of capacities seeks to give participants the necessary resources and is done by shaping political rights and by distributing institutional, financial, authoritative and social resources in order for participants in networks to make a difference to the governance of society. There should be conscious attempts to develop adaptiveness to the shifting societal environment in the network Differences in political competences between actors in a network must not be too large, which metagovernance must ensure.

Participants should be prevented from using their competencies to undermine the democratic process. Metagovernance involves the shaping of democratic ideals which defines how, when and where political capacities can be used (Sørensen and Torfing 2007d).

Role of metagovenor

The State has a unique position of exercising legitimate coercion and as such has the capacity to change the institutional framework in which governance networks are self-regulating. However; the understanding of the State as a unitary political organisation is inadequate to understand society of today. The metagovernor can also be 'society' as a whole. Despite this unclear idea of who the metagovenor is, the purpose is to increase the integrative democratic quality of policy-making (Sørensen and Torfing 2007d).

1.2.4 Similarities

The three strands are more supplementary than exclusive and all agree that self-regulating networks have become part of modern governance processes and are here to stay. Interdependency theory is the most empirically founded of the strands building on investigations of existing governance networks; governability theory aims to identify and further a viable way of future governing of the increasingly complex society and the changes State institutions must undergo; and integration theory observes networks in society and explains their formation in cultural terms. Even if the theories rest on different foundations they can give a very comprehensive understanding of the phenomenon of governance networks and their metagovernance when put together.

Regarding metagovernance all of the strands consider it to be positive, yet the rationale is different: interdependency and governability theory share the view that conflicting interests among participants make metagovernance desirable to stabilise the networks, yet they differ in focus: interdependency are concerned with the problem-solving capacity of the networks; whereas governability theorists with the contribution to public purpose and the reorganisation of society. Integration theory favours metagovernance insofar as it strengthens societal integration and a democratically strong citizenry.

All three strands consider the State to be the most likely metagovenor, but as for interdependency theory the State is likely represented by public administrators, in governability theory you get the feeling that the State is to be understood as the government, and in integration theory it is unclear. Two of the strands consider metagovernance to be performed outside of the networks while only interdependency theory considers the metagovernor as a participant in the network, and hence it is only in the interdependency strand that facilitation and hands-on conflict mediation is a strategy. Governability theory relies on institutional design and the employment of various incentives. Integration theory relies on more subtle means such as story telling and other indirect means of shaping individual action. See a table 1 for a summary.

The question is now: what was done in the process of establishing national parks in Denmark in terms of metagovernance of governance networks?

Table 1.1 *Three theoretical strands – an overview*

	Interdependency theory	**Governability theory**	**Integration theory**
Governance networks can…	Be an alternative to State and market governing and offers a possibility to find solutions to 'wicked' problems.	Increase governability of society by improved horizontal coordination. Increase trust among competitive but interdependent actors; enable joint action	Strengthen democracy Integrate social agency in an increasingly disintegrated society. Solve relevant policy problems and exploit new opportunities
Rationales for meta-governance	Governance networks are inherently conflictual and must be metagoverned to improve the probability of problem-solving Descriptive approach	Governance networks are inherently unstable and must be stabilised Protect social interest among self-interested participants Prescriptive approach	Production of a strong democratic community Prescriptive approach
Strategies of meta-governance	Institutional design Process management Participation in the network Hands on Probability of success: Low	Institutional structuration Rules of the game Shadow of the hierarchy Incentives Hands off Probability of success: High	Identity shaping -story telling -constructing norms, rules, meaning, symbols, rituals Capacity building Hands off Probability of success: High
The metagovenor	Metagovernor is likely a State actor who is to: Decide an appropriate form of societal problem solving: Hierarchic rule, market forces or network governance Support networks in overcoming conflict making problem solving possible Focus on: effective problem solving	Metagovernor is likely a State actor who is to: Create venues and reasons to coordinate Reorganise in order to balance the coordination possibilities of the State and the self-regulation of networks Focus on: improving governability of an increasingly ungovernable society	Not clear who the metagovernor is, but likely a State actor or 'society' who is to: Support the development of a strong democratically oriented demos Capacity building of citizens Focus on: democratisation

1.3 The case

By the end of the 1990s an OECD report criticised the state of environment and nature in Denmark and suggested that the options for establishing national parks should be investigated (OECD 1999).

As a response the Wilhjelm Committee was appointed by the government in 2000. The Committee consisted of members representing a number of NGOs, ministries, municipalities and research organisations. The Wilhjelm committee among other things recommended designating six areas to be nature parks, which according to the committee represented areas of national and international significance. The rationale behind the recommendation was that larger, coherent areas of protected nature offer better opportunities for a natural development, improve the dispersal of species, ensure

continuity in the development of the area and create better living conditions for a number of species (The Wilhjelm Committee 2001).

1.3.1 The process

Shortly after the publication of the Wilhjelm report, a new Government was formed, which was not inclined to follow the recommendations of the report as a whole. However; the newly appointed Minister of Environment did adopt the idea of nature parks and contacted the counties and municipalities of the proposed areas to see whether there was a local interest or not. In the beginning of 2003 the municipalities in question had responded positively to the idea apart from one, Funen, where there was no interest. The government set aside 20 million DKr to finance 2-3 pilot projects. In January 2003 the [1]Outdoor Council proposed 16 areas which could be potential candidates for a national park and in February they entered an agreement with the Ministry of Environment where the Outdoor Council provided 20 million D.Kr. making in possible to finance further pilot-projects (*Interview 9*; Agerskov and Schmidt 2003; Den Nationale Følgegruppe 2006; Skov- og Naturstyrelsen 2006a).

The Outdoor Council and the Minister of Environment agreed that the purpose of the pilot projects was to establish as thorough and coordinated a knowledge basis as possible for deciding whether or not there should be national parks in Denmark, and if so: what administrative structure the national parks should have, what the content of a national park should be etc. Moreover they agreed that it was of fundamental importance that the process took place in close dialogue and cooperation between the local population, local interest organisations, local authorities and relevant State authorities with the aim to integrate environmental, social and cultural, commercial and recreational interests in a joint solution (Den Nationale Følgegruppe 2006; Schmidt 2003a; 2003c; Skov- og Naturstyrelsen 2006a).

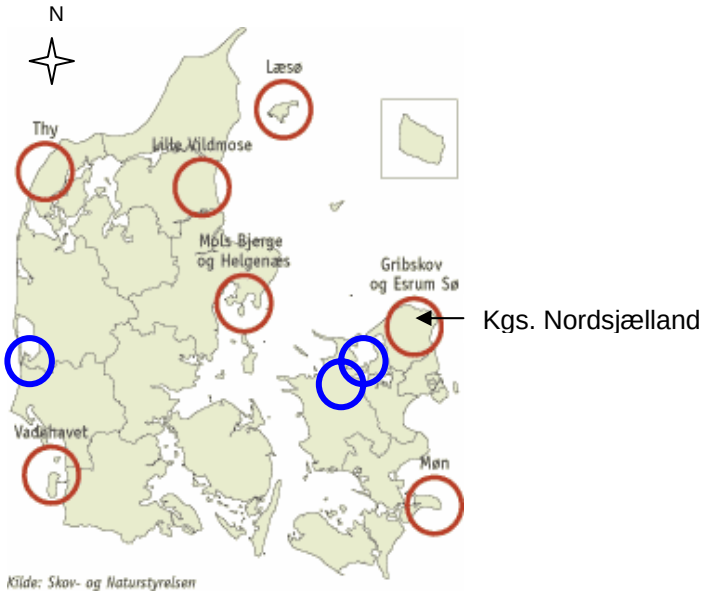
For each area in question a locally anchored steering committee (SC) should manage the process and have the necessary investigations undertaken. To coordinate efforts a national advisory group (NAG) was established on the demand of the Outdoor Council. The task of the group was to follow, discuss and support the pilot projects, to evaluate the reports from the SCs and to offer recommendations to the Minister of Environment regarding procedure and criteria for the selection and designation of national parks, and rules and regulations for the future management of the parks. The National Forest and Nature Agency (NFNA) should be the secretariat of the national advisory group (*Interview 9*; Skov- og Naturstyrelsen 2006a; 2006b).

In addition to the areas already proposed and which had responded positively, two further pilot-projects were initiated: Vadehavet and Læsø which mainly are marine areas. The Outdoor Council later decided to support three other areas of investigation; Skjern Å, Åmosen and Roskilde Fjord (Friluftsrådet 2005; 2007).

The location of the pilot projects can be seen from the map below. The blue circles mark the investigation projects. From west: Skjern Å, Åmosen and Roskilde Fjord

[1] The Outdoor Council is an umbrella organisation representing a number of organisations concerned with outdoor recreation activities. It administers money from the Danish State football (and numbers game) pools ('Tips- og lottomidler').

.Figure 1.1 *Location of pilot projects*

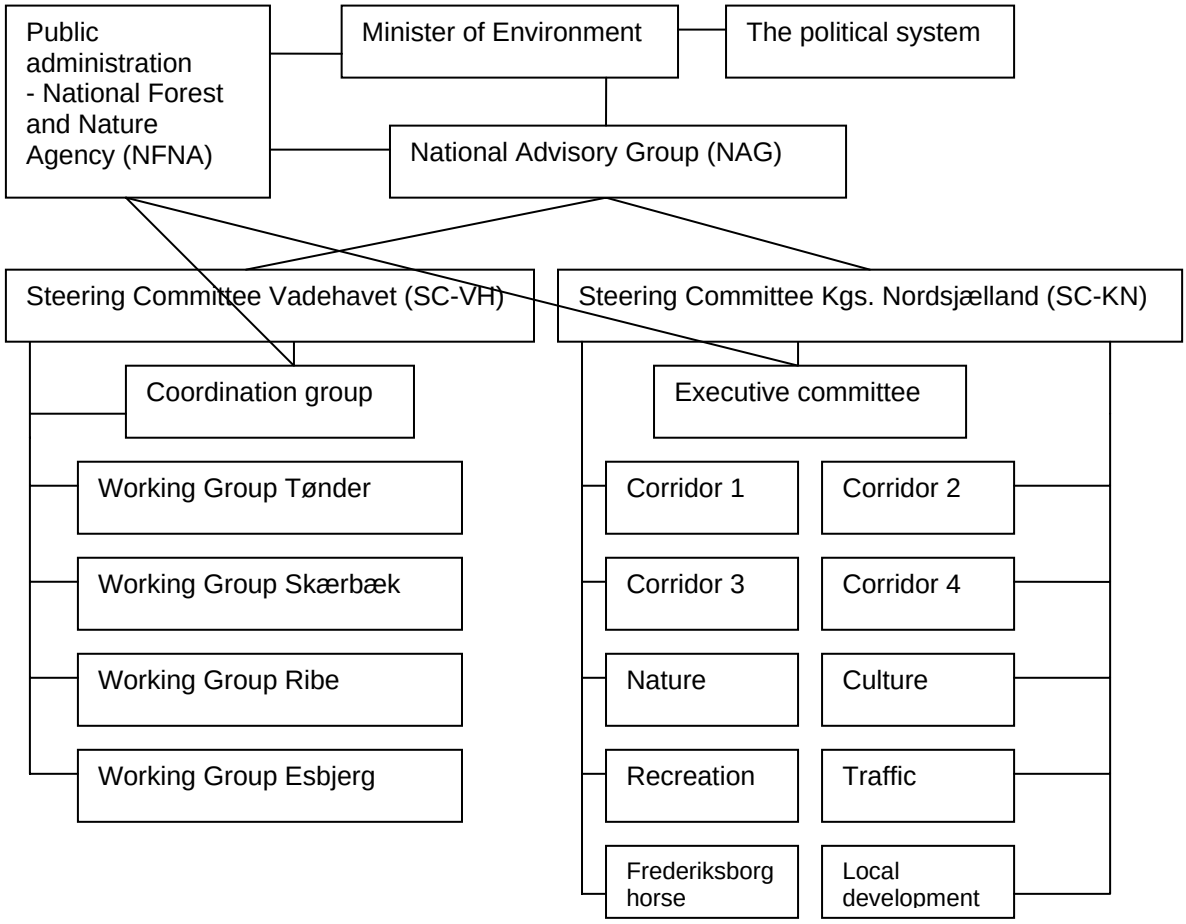


The convenors of the SCs were appointed by the Minister of Environment and the other members were locally appointed and represented the local interests. According to the initiation letter there should at least be representatives of trade, nature, cultural environment, recreation and tourism interests as well as representatives of local landowners and citizens. All of the pilot projects had different working groups (WGs) (Den Nationale Følgegruppe 2006; Schmidt 2003b; Skov- og Naturstyrelsen 2006a; 2006b; 2006c).

This investigation relates to two of the pilot projects: 'Vadehavet' (figure 1: red circle, south-west) and 'Kgs. Nordsjælland' (figure 1: red circle north-east). Vadehavet (VH) had four WGs attached each dealing with a geographically defined area. Within the WGs smaller groups dealt with different themes. To coordinate efforts there was a coordination group designated with the convenors of the steering group, the secretaries from the WGs and the overall project coordinator as well as public officials from the counties involved. Kgs. Nordsjælland (KN) had 10 WGs attached: four were dealing with nature corridors, one with nature values, one with cultural history, one with outdoor recreation, one with traffic, one with local development, and one with a local horse breed, the Frederiksborg horse. There was an executive committee consisting of the secretariat leaders and the convenor and vice-chair. In both pilot-projects each of the WGs had a secretary from the public administration, either from the county or the NFNA.

The NFNA had several roles. First and foremost it is an agency under the Ministry of Environment and must therefore refer to the Minister. Secondly the Agency was secretariat for the NAG and the SCs; thirdly the agency was represented in the NAG and in SC VH as stakeholder, and in the Executive Committee of pilot project KN and the coordination group of pilot project VH as administrators to the SCs. See figure 2 below.

Figure 1.2 *Organisation of the pilot projects 'Vadehavet' and 'Kgs. Nordsjælland*



Source: Den Nationale Følgegruppe 2006; Kgs.Nordsjælland Styregruppe 2005; Styregruppen for Pilotprojekt Vadehavet 2005.

1.4 Results

1.4.1 Governance networks in the case

At the national level the NAG was designated and commissioned to follow up on the work by the local SCs and make recommendations to the Minister of Environment and the political system. At the local level the SCs were responsible for the local processes and work. Both SCs investigated had a number of subgroups attached in the form of thematic or geographic WGs. These groups can be regarded as networks being organised in a hierarchy. See figure 1.2.

The official rationale behind the network formation was to involve the affected public in deciding if there should be national parks in Denmark or not (Skov- og Naturstyrelsen 2006a). To ensure local anchorage it was important that a process took place locally,

acknowledging that without local support a national park would not be an efficient form of nature conservation. Furthermore, as national parks were to involve cultural and social issues as well as nature conservation it was important to bring in resources and creativity from a wide variety of actors to balance the different issues. A third rationale was that if the political system decided to establish national parks which potentially could have a significant effect on the local population it would be more legitimate if this population had an opportunity to influence the content and have their opinions heard.

The different groups and committees consisted of a wide variety of people. Concerning the NAG and the SCs they consisted of NGO representatives and public officials representing relevant public interests. The WGs consisted of interested citizens and were meant as venues for public participation. The question is whether or not these networks are governance networks.

Governance networks are defined as: 1) a relatively stable horizontal articulation of interdependent, but operationally autonomous actors; 2) who interact trough negotiations; 3) which takes place within a regulative, normative, cognitive and imaginary framework; 4) that is self-regulating within limits set by external agencies; and 5) which contributes to the production of public purpose (Sørensen and Torfing 2007a p. 9).

All of the mentioned networks were relatively stable for the duration of the project phase as they were well funded and were supported with venues and secretariats. The actors were interdependent in the sense that if national parks were to become a reality in Denmark there could not be significant opposition from local actors, and if the parties wanted decisive influence on the design and content of a prospective national park they had to reach agreement. As for operational autonomy every actor was free to exit the process at any time and could not be coerced by any other actor to specific action nor put in resources involuntarily. Hence in relation to the other network actors the individuals had autonomy, however; the actors in the SCs and NAG were representing various organisations and institutions to which they were accountable which limited their individual autonomy.

In all networks, interaction took place as negotiation. The networks were designated formally top-down and the NAG and the SCs were limited in access to certain organisations. Hence there was a regulative framework outside the networks. Furthermore the hierarchical ordering of the networks constituted a regulative framework in terms of whom the individual networks were to relate and communicate to. Internally in the networks there was also regulative framing providing rules, roles and procedures: there was a convenor, there were procedures regarding minutes and the organisation of meetings etc. Normative framing refers to the norms, values and standards conveyed by the networks; cognitive framing refers to generated codes, specialised knowledge and concepts and finally does imaginary framing refer to the production of identities, ideologies and common hopes. Each of the participants certainly came to the network negotiations with their own identities as representatives or affected citizens, with their own specialised knowledge and with their own values and norms which one can only assume mattered for the process. During the work and through the interactions some of the individual frames were adapted towards each other; yet some were consolidated as opposing the values of other participants.

The networks were self-regulating in investigating and finding visions for a prospective national park, but certainly within limits set by external agencies in terms of funds, and timeframe. The stated purpose of the process as a whole was to get the best possible basis for future national parks in terms of knowledge and local anchorage. The purpose of national parks is to ensure natural values, cultural values and social values as public

goods; meaning that the networks certainly were intended to produce public purpose, and also did.

In conclusion; the mentioned networks are governance networks according to the employed definition. Moreover, it can be concluded, that metagovernance took place as the framework in which the network operated involves several metagovernance strategies.

1.5 Metagovernance strategies employed in the case

Institutional structure and design

The networks were all designated top-down. Yet it was not command and control as the counties and municipalities in the affected territories were asked prior to designation if they wanted to be a part of the process. One area, south Funen, declined the honour. All through the process it was possible to exit, and Læsø pilot project used this opportunity just prior to the deadline for handing in the results to the NAG. (*Interview 9*; Agerskov and Schmidt 2003; Den Nationale Følgegruppe 2006; Skov- og Naturstyrelsen 2006a).

The process was structured such that WGs reported to the SC, where their results were summarised; all the SCs reported to the NAG, the reports being evaluated and summarised here and handed in as a report of recommendation to the Minister of Environment. Based on the NAG-report the Minister prepared an act proposal for national parks which was debated in Parliament from late 2006 and onwards (Den Nationale Følgegruppe 2006; Kgs.Nordsjælland Styregruppe 2005; Miljøministeriet 2006; Skov- og Naturstyrelsen 2006b; Styregruppen for Pilotprojekt Vadehavet 2005). In other words networks were embedded in a multilevel hierarchical structure, where the final decision rests in the political system and the elected representatives. I.e. the shadow of the hierarchy was at all times present.

> "…from the central side they had a hold on the process and also controlled the green button in the end. We know this; that we are under – I will not call it pressure, but anyway. I mean we must succeed; we must adhere to certain demands. It is no use to be too outré from the side of Thy" (*Interview 16*, convenor of SC pilot project Thy)

The institutional structure may have led some to believe that there would be no possibility of influence and hence might prevent important actors from feeling induced to take part in the process especially at the local networks, the WGs. However; a large number of people willingly participated in the networks, and consequently must have believed they could get influence. Considering the emphasis on participation, local anchorage and the search for knowledge of a complex issue, and the money spent on the process; there was no reason to believe that the process was a charade without any real influence. But it was clear, in particular in the NAG, that influence would be greatest if the participants could reach agreement regarding the recommendations to the Minister of Environment.

> "The carrot was, that if they could reach agreement, no politician would dare to touch it" (*Interview 21*, NFNA employee).

> "The most important was that the NAG, and an **united** NAG said and recommended the Government and the Minister to create national parks" (*Interview 19*, Representative of the tourism trade).

It was this recognition among the parties that illuminated the mutual dependency and the need to negotiate. Furthermore interdependencies were illuminated by focussing on a

varied selection of themes that had to be addressed when shaping a national park; themes that no actor could address qualified on her/his own.

Practically it was the public authorities which administered the process and they coordinated their efforts through meetings were the employees exchanged experiences. To the public officials many tasks were new, especially the public participation efforts, which had not previously been dealt with to that extent (*Interview 21*). The public officials were paying attention to the fact, that they could not give commands or interfere too much, even if they might have liked to:

> "We arrange some meetings and technical papers for support because they [the pilot projects] ask for it. We can't come and say: 'do it like this', because it is supposed to be bottom-up, right. So you can't just send them something from above, but if they ask for help, we can go in and help them. … It might have been a better process if we centrally had been able to give better support, and I am not least considering participation here. Give the SCs some better tools to work with. Not say ' it must be like this' as regards content, but give them more tools. They were very much left alone. I think it could have been done better, because the knowledge was there - out in the consultant companies. But then it was like, - you see, we were not **allowed** to do something like that. All that was done was done because they asked for it. … But still, I will maintain that the bottom-up process was good… If the delegation of responsibility is to be credible then you can't interfere in everything. Then they must try themselves " (*Interview 21*, NFNA nationally)

In the NAG and the SCs there was restricted access. In the NAG the convenor and the vice-chair were personally appointed by the minister and the further participants were to represent certain interest organisations and institutions. In the SCs the convenors were appointed by the Minister and the initiation letter stated which interests should be represented, i.e. environmental interests, trade and landowner interest, cultural interests and recreational interests. Furthermore in the NAG an equal representation of male and female participants should be strived at. Two organisations were declined access to the NAG with the argumentation that the interests of the organisation were already represented. The access rule hence aimed to balance preconceived notions of interests and thereby ensure legitimacy of the network, rather than ensuring the necessary personal resources in terms of knowledge and will to participate constructively. In the SC there were negotiations locally between the organisations, the public authorities and the convenors determining which organisations should be present to fulfil the demand of interest representation of the Minister.

In the WGs access was open to anyone who had the time and interest to show up for the meetings. However; the convenors of the WGs were selected by the convenors of the SC in cooperation with the secretariats (*Interview 25*; *Interview 31*; *Interview 35*). As for the appointment of the convenors by the Minister of Environment, the NFNA had the task, being the administrative agency to the Minister, to suggest some possible candidates to the Minister. The Minister then selected among the candidates considering the persons and perhaps their political affiliations (*Interview 21*).

Considering rules of the game the public authorities had an excellent opportunity to affect them through their role as a secretariat, which meant that the NFNA, and locally also counties and municipalities, decided how minutes were made as well as made suggestions, catalogues of ideas and guidelines for reporting (Skov- og Naturstyrelsen 2006b). Furthermore the NFNA approved the budgets of the SC centrally. Every time a

SC wanted to spend money on a specific project they should formally be approved by the NFNA in cooperation with the Outdoor Council, which partly financed some of the project (*Interview 21*); this was one tool to regulate outcome.

The most significant attempt to regulate outcome, however; was the initiation letter to the SCs. They were similar for all seven pilot projects. The tasks of the SC were formulated as follows:

> "It is the task of the steering committee in dialogue with the local population to make a report, describing the visions for, content of and the delimitation of a possible national park… The report must describe different alternatives and possibilities for development etc. ….It is the responsibility of the steering committee that in order to create a vision and a plan for the area, investigations are undertaken addressing – at least – the following: the present and potential natural values including the possibilities to establish coherence between nature areas; the values concerning the cultural heritage; the present and potential possibilities of outdoor recreation and a socio-economic and business-economic analysis of the consequences of establishing a national park… It is recommended that investigations are undertaken in cooperation with the county and relevant research institutions. Private consultant companies can also contribute to such tasks. Investigations regarding the cultural heritage can be done in cooperation with the regional council of cultural environment …" (Schmidt 2003bb).

This letter address the issues to be dealt with and the concrete output to be produced: a report from the SC, a number of issue specific investigations to be undertaken and resulting reports, and even suggestions for institutions which should do the investigations.

In the Wilhjelm-report the main purpose with national parks was nature conservation. If nature conservation is the only issue on the agenda there are not that many incentives for other than environmentalists, recreationists and the potentially affected landowners. Furthermore will the incentive from the landowner perspective be negative, a fear of restrictions in their land use. Maybe that consideration was a reason to make the national park process be about much more than just nature conservation, assuming here that it was a wish from the Minister to have a broader representation of the population engaged in the process as well as be able to offer something positive to the landowners, or maybe it was purely a matter of recognising the interlinkages between the different issues that caused this more holistic approach to national parks. Either way the inclusion of issues such as rural development was an incentive for many to participate. Furthermore it was expected that a national park designation would be accompanied with the necessary financial means. In the pilot phase some funds were allocated to specific projects to give the participants the feeling that something happened and that it was not just talking, hence offering an incentive to stay engaged throughout the process.

Process design and management

Klijn and Edelenbos (2007) identify the key principles: openness, safety, progress and content. As for openness which means that all relevant stakeholders should be involved at an early stage (Klijn and Edelenbos 2007), the key principle seems to have been followed as no one missed any participants and the networks were established at an early stage in the decision process. Safety has been an issue. Initially the Minister of Environment ensured that no national park would be designated if there was local resistance. This was by most participants interpreted as a veto right to the landowners in particular. That was

what induced the agricultural organisations in VH and KN to support the pilot project initially. However, the new Minister's statement that a few landowners should not be able to stop the process if the population in general was in favour of a park diluted this interpretation to some extent. Later in the process as landowners in KN felt their values threatened they chose to withdraw from the SC and make their own proposal (*Interview 18*). Similarly in VH the agricultural representatives would not support the proposal for geographical demarcation of the majority of the SC, nor would he support the idea of a national park as it was envisioned by the NAG (*Interview 28*). Nationally the agricultural organisations supported the report of the NAG because it emphasised that any restrictions in land use would be fully compensated (*Interview 6*) (Styregruppen for Pilotprojekt Vadehavet 2005).

Progress was ensured through a clear agreement regarding the outcome – a report including a number of expert investigations, and a tight time schedule upheld by the convenors and secretariat. All participants, all though most of them wished more time, respected the time table and kept the deadlines. This was especially important as most of the participants should be able to discuss papers and suggestions with the organisations they represented. At the NAG it was agreed that all papers should be handed in three weeks before the meetings. This could not be upheld in the end of the process as the NAG held six meetings in two month and all the time new material came in that had to be discussed. Hence a three week preparation time was in the end impossible. Therefore it has been difficult for the small organisations without professional secretariats to find time to discuss all issues within the organisations before the representative had to be ready for the next meeting in the final phase (*Interview 9*). It was the responsibility of the convenors and project coordinators to resolve conflicts during the process in order to get a result. This they did not fully succeed in as neither of the two SCs reached complete agreement. Yet both SCs delivered their project proposals in time adhering to the full set of requirements. The previous paragraphs furthermore relate to the concept of framing (Agranoff and McGuire 2001) which is about establishing and influencing the prevailing rules of the network e.g. rules regarding deadlines.

Framing is also about influencing values, norms and perceptions of the network participants, e.g. by introducing new ideas to the network, hereby creating a shared purpose (Agranoff and McGuire 2001). This is related to Klijn and Edelenbos (2007) who point to the importance of beginning a process with a variety of appealing ideas or create them at an early stage in order to mobilize participants to employ their resources. At the onset there were no ideas for a solution as to what a national park should be, but in particular regarding pilot project VH it was the idea that a national park could be a tool in rural development of the area that induced or mobilised the interest of many of the participants. Much of the area is already protected through the Ramsar convention and the birds and habitats directives so the local informants all considered nature conservation to be sufficient (*Interview 31*; *Interview 32*; *Interview 34*; *Interview 28*; *Interview 33*; *Interview 36*; *Interview 27*; *Interview 30*; *Interview 35*; Styregruppen for Pilotprojekt Vadehavet 2005). Consequently the initial enthusiasm among the participants to create ideas evolved around rural development.

The holistic approach including cultural values and recreation furthermore mobilised people who did not normally involve themselves in nature policy as well as bringing in knowledge which was unfamiliar to some of the 'usual' participants. This contributed to give some participants a feeling of learning something new about their area which in turn stimulated their interest. However, as the process progressed from the local WGs upwards in the hierarchical system, some of the participants felt that their ides disappeared in the summarising process which gave them a feeling of not being taken seriously.

> "In the report of the SC we could still see our fingerprint, but after the NAG it was gone…. There were many specific suggestions, but they are gone now. It would have made a huge difference if the suggestions at least had been there as a foot note. It would have made many people happy." (*Interview 33*, active in WG Skærbæk, VH)

It *is* important to stimulate ideas at an early stage, but it is equally important to bring the ideas further, or if that for various reasons is not possible to have procedures in determining supportable ideas which are considered legitimate by the participants.

Of concrete efforts to mobilise, i.e. induce commitment of the volunteers participating in the process, the NFNA agency arranged seminars as secretariat for the NAG, and as mentioned specific physical projects were supported:

> "One task of the NAG was to support the pilot projects and therefore has it [the NAG] arranged some seminars while they worked [in the pilot projects]. They could finance some physical projects, which also was one of the tasks in the pilot projects to create and carry out – also to sort of show that something actually happened in the field. It as also meant as a carrot to the volunteers who participated, they were to see a possibility that the suggestions they made could be carried out immediately." (*Interview 21*, NFNA employee, nationally)

The previous paragraphs are closely related to the activation of the participants in the WGs. In the SCs and NAG activation was achieved by offering influence. The representatives of the environmental organisations were induced by the possibility of having large, coherent nature areas, as the Wilhjelm report had documented the need for. At the same time they were worried that the concept of national parks as defined by IUCN would be diluted, as they initially felt the agricultural organisations were given too much power (*Interview 11*; *Interview 20*; *Interview 5*). The agricultural organisations saw the participation as the best way to minimize damage rather than pursuing new opportunities (*Interview 6*). The tourism trade representative was activated by the increased branding possibilities a national park could offer (*Interview 19*), and the representatives of the recreational interests were first and foremost interested in ensuring access to the areas but were also interested in nature conservation (*Interview 14*). Furthermore the scope of the process was new to Danish nature policy, which in it self stimulated the curiosity of the organisations, to have representatives show up and at least observe for a while.

The metagovenors did not succeed in activating all participants to employ equal resources in the process. Reasons are obvious: all participants do not have the same resources to employ, and are not affected equally by the outcome of the process. A strong interest will create more willingness to make the necessary resource investments to protect them. No metagovernance efforts will be able to change that, which is not a problem unless those with strong interests do not have resources equal to their interest. The process did show examples of people who felt overruled by others who they felt had not done their homework e.g.:

> "There was not enough involvement. We [in the SC VH] were given stacks of reports and it took time to familiarise yourself with everything, and many did not do that. For many of them it doesn't matter much. It is easy when it doesn't cost them anything. They have nothing to loose. I have a greater responsibility, when the outcome can result in the economic ruin of

> my neighbour." (*Interview 28*, representative of an agricultural organisation)

Goal achieving mechanisms includes influencing the perceptions and goals of others and creating convergence in the perceptions of problems and solutions (Klijn and Edelenbos 2007). The public officials had good tools for this task through their secretary function although it also was part of the role of the convenors. The convenors represented the views of the specific network at the level higher in the hierarchy, and hence were very important regarding coordination between levels. Goal achievement coordination vertically was also undertaken by the public officials at different levels who exchanged experiences.

The selection of convenor was a central issue regarding goal achievement as he/she is the one steering the interactions and negotiations in the networks. In the NAG the criteria were that the convenor should be someone who was respected and had good negotiation skills. However, there were also political reasons: considering the role of Outdoor Council in the process as co-financers it seems likely that the selected convenors past as chair of the Outdoor Council was relevant. The vice-chair was selected to represent the link back to the Wilhjelm committee of which he had been chair, and which had earned him the necessary respect of his person (*Interview 21*).

In SC KN the convenor was someone with a strong mandate in his own local community, someone unafraid of taking the fights which were anticipated and still able to talk to most people (*Interview 10*). In SC VH not only the convenor but also the vice-chair was appointed by the Minister of Environment. It was the counties who had applied the minister of becoming a pilot project after having asked the mayors of the affected municipalities and some of the interest organisations, and therefore it was natural that the convenor should be someone from the county, and as two counties were involved it was decided that both should be represented. The convenor selected had proven himself a skilful negotiator on previous occasions (*Interview 27*), and he was described as someone not afraid of conflicts but more importantly not creating conflicts himself (*Interview 29*).

The convenors of the WGs in pilot project VH were selected by the convenor of the SC and the coordination group according to criteria such as a broad acceptance, it should be someone who were unafraid of addressing the conflicts and be able to tolerate the inevitable criticism (*Interview 31*; *Interview 32*). The convenors at all levels cooperated with the NFNA, and possibly were influenced by the public authorities through this cooperation.

As an example of the opportunities to metagovern goal achievement mechanisms the cooperation between the convenors of the NAG and the NFNA as secretariat can be mentioned:

> "It is our task in the secretariat to discuss with the convenors which documents to send to the meetings and which topics to begin with. These are considerations any skilled convenor has about how to run a process, and often you begin with the issues which you think are broadly supported and have them settled. … For example legislation. That was some of the first we dealt with because it was relatively uncontroversial…. As a secretariat we create an evaluation model, which we have approved by the convenors, then we make a suggestion to how to chose, and then it is up to the convenors to nod. They are then authorised by the NAG to deal with that in cooperation with the secretariat." (*Interview 21,* NFNA, national secretariat)

An important issue in goal achieving is to meet, discuss and come to understand the opinions and concerns of the adversaries. When the core values of the participants are very different this can be a difficult and sometimes impossible task for the metagovenor. This is closely related to the concept of synthesising by Agranoff and McGuire (2001) which is about creating an environment for productive interaction and prevent blockage by individual participants. Tools are e.g. to further the communication among participants, promoting information change, facilitating the process, affect rules and procedures of interaction. The building of trust among participants is very important in this respect. The following quotations illustrate the experiences and opinions of the participants of the national park process in this respect:

> "When you get all these people together in one room it takes much diplomacy – it doesn't take many hefty statements before it becomes very difficult. It does matter who are there. There has to be a relation of trust, and that takes time to build. There has to be someone there with the weight to say, enough is enough. If someone wants conflict, they are going to create it. But I think we were able to control it." (*Interview 30*, vice-chair of SC VH).

> "It is important in this kind of process to have the dialogue and respect, - you have to listen and see what it is **they** think of things, and let them show you something…. It is about respecting their point of view, and in some way - that it was allowed to disagree made us respect each other after we were done, and we could look each other in the eye and no one had left a meeting in anger." (*Interview 14*, about the collaboration in one of the WGs in KN).

> "We had a very fine discussion and came to respect one another more and more. It is important to note the points of view which are brought to the table and bring them along in the further process. You have to take everything further on. And then you suggest conclusions. You should never leave someone out." (*Interview 31*, convenor of SC VH).

> "Everyone in the NAG put in their souls in the effort to get somewhere with the work, and people were willing to compromise, were willing to discuss and debate, and also to move. There was no locking on to specific views as I had feared when we began. That is why I think the process was good. I even think it was extraordinarily good because people met each other half way, listen to each other, accepted the points of view of the others and also accepted that sometimes they couldn't get the things they wanted." (*Interview 9*, convenor of the NAG)

With few exceptions all the informants thought the process contributed to enhanced understanding among adversaries. Respectful interaction and trust were key elements. Furthermore time was mentioned as an important variable by several informants. It takes time to create trust and get to know each other. The process offered a venue for people to meet, fight, debate, discuss and bend. In that regard metagovernance was successful.

Metagovernance of identities and capacities

Integration theory refers to cultural issues in the understanding of network interaction, that people act according to a 'logic of appropriateness'. Data sustains that to be the case on several occasions. The quotations above indirectly point to an understanding of appropriate conduct to entail respect of differing opinions, compromising and listening. One informant directly refers to appropriate behaviour of decent people:

> "You know, to ignite at a meeting in a SC attended by 25-30 people and say: 'no, I will not accept this, we have already started. The mayor of Frederiksværk can not attend this committee now'. – You just don't do that. As a normal, fairly decent human being you say: 'Yes of course he can attend!'" (*Interview 18*, member of the SC KN regarding a sudden extension of the SC).

Metagovernance of identities can be attempted by story telling, influencing participant's frames of meaning e.g. by common knowledge production. Starting with the latter there were attempts to produce common knowledge as the demanded investigations were performed during the process and discussed in the SC and the NAG, yet participants do not ascribe the reports much importance in the process. More importantly common frames of meaning were aimed at through the interactions in the network, and the interpretations of the interactions through the minutes and following discussions and corrections of minutes. As mentioned above, participants did bend towards each other, however; some participants experienced that it was difficult to get their actions and statements interpreted correctly by the secretariat (*Interview 34*; *Interview 28*; *Interview 33*; *Interview 36*). One might say that these informants experienced the story-telling of the Minister and Ministry of Environment of the importance of local anchorage and influence to be in opposition to what they experienced personally. Regarding those participants the mentioned story-telling was contra productive and merely contributed to an identity understanding of a 'them' versus 'us' among those participants; 'them' being the NFNA, and 'us' the local population, which must oppose the interference of the NFNA.

In pilot project Vadehavet several informants gave cultural explanations for the disagreements between the local participants living in the possible national park territory and the national level regarding the extent of self-regulation of a prospective national park. They referred to history; the area had been under German rule from 1864 to 1920 and again during the occupation during the Second World War. Even if these events lie some years back it is a part of local identity and, according to informants, it was an explanatory factor to why people in the area were keener on self-regulation than the rest of the Danish population who had not suffered from the 1864 to 1920 occupation (*Interview 31*; *Interview 32*; *Interview 34*; *Interview 29*; *Interview 30*; *Interview 35*).

In integration theory, one strategy of metagovernance is capacity building in terms of rights and resources. Resources can be institutional, financial, authoritative and social. The discussion of the level of self-regulation in the prospective national parks relates to this. As the national park process was initiated with a Minister, who was very interested in making it a project of the affected people, it can be seen as a way to move financial and institutional resources to the local level as well as dividing management rights from the public authorities to also include and empower local citizens and organisations. National parks could have been shaped and designated by the Ministry of Environment without including anyone else, yet resources were used to give people an opportunity to involve themselves and be active in shaping visions for their local environment. However, due to the hierarchical institutional structure, capacity re-distribution was limited. Many of the local participants in VH pilot project had a wish for more decentralisation of authoritative rights than the national level was willing to give up.

This discussion of distribution of rights between the national and the local level was referred to as a classic conflict, yet since the process was dealing with national park many in the NAG thought it should be nationally controlled (*Interview 21*). The span of opinions encompassed the southern WGs in VH, who wanted local majority in the

prospective national park boards (*Interview 33*), members of SC VH who wanted local management influence by someone with a political mandate such as the municipalities (*Interview 30*) to the national level as well as a convenor of a northern WG group in VH, who defended the representative democracy and only demanded the right to be heard and to force the public authorities to give account for their actions (*Interview 35*).

1.5.1 Rationales for metagovernance and role of the metagovenor

One reason for having some central control with the process was that it involved national and international legislation and that it would be highly unprofessional if the networks decided on anything which was not in accordance with existing regulations (*Interview 21*). In other words it was not a wish from the central authorities to have the networks be so creative in their problem solving attempts as to make to many changes in status quo.

The adherence to international obligations in particular seemed to be an argument for metagovernance (*Interview 9*; *Interview 25*; *Interview 16*; *Interview 20*; *Interview 22*; *Interview 21*; *Interview 30*; *Interview 35*), and the assumption behind must be that locally anchored networks will be pursuing self-interest which is not in accordance with international obligations if they are given too much self-regulation capacity. An argument against this was that every citizen is equally obliged by the international agreements Denmark has acceded to and they can be adhered to equally well through locally based management (*Interview 30*).

A further argument was that since it is the State and the tax payers who finance the process and the future national parks the State should have decisive influence. Furthermore is nature conservation of national interest and affects more than just the local population (*Interview 9*; *Interview 22*).

Some informants claimed that the reason for establishing networks were to avoid making any unpopular decisions and to have all the foreseen conflicts dealt with at the local level making the actual establishment of national parks much easier for the Government, which through the initiation of governance networks, were able to govern at a distance (*Interview 5*; *Interview 17*).

The metagovenor was the public authorities in particular the NFNA in collaboration with the convenors of the different networks. There were widely different opinions regarding the role and influence of the NFNA; some considered the agency to be far too powerful while others considered it to be supportive, good metagovenors and very loyal to the networks, and accepted that in a representative democracy it is natural for the public authorities to be the implementers and the ones holding the pen. The important thing was that the politicians make the principles behind the actions of the public authorities (*Interview 20*; *Interview 14*).

> "The NFNA was good; they were patient and always positive. The secretariat of course has influence…. It was not as controlled as some claim" (*Interview 32*, member of SC VH).
>
> "I think he [Forest Superintendent in the NFNA] was loyal to the work done in the SC…. As a secretariat they did a fantastic job" (*Interview 27*, member of the SC VH)

Others felt that the NFNA never should have been made secretariat as the agency had a strong interest in the outcome of the process in terms of content and placement of authoritative capacities in the future national parks, and the secretariat function gave the

agency an undue power over the outcome and furthermore that the convenors did not have much influence compared to the public authorities (*Interview 34*; *Interview 33*; *Interview 36*). Some felt controlled and manipulated by the NFNA.

> "We did a lot of work, unpaid and in our spare time. We weren't against [national parks] from the beginning, but we became against during the process. It is the NFNA which all through the process held the pen and set the agenda. Under no circumstances do we want the NFNA as secretariat in a future national park… they have their own agenda, and those with power there, sure have power!.... Everything we were given was written by the NFNA, the convenor had all his answers from (name left out) [Forest Superintendent in the NFNA] who is very powerful" (*Interview 33*, member of WG in pilot project VH).

> "The agenda was made, everything was prepared, maps were drawn. There were people who did all that, it was where the money went. Of course that *is* their task. Then we had everything presented and had the meeting. That was how it happened…He [the convenor] is only convenor…it is (name left out) [Forest Superintendent in the NFNA] and the secretary and the secretariat they have out there – they are the ones steering the process." (*Interview 18*, member of the SC KN on the influence of the SC convenor).

All participants agreed that the secretariat have influence, the difference is whether it is considered undue influence and whether or not they were considered loyal to the network.

1.5.2 Fit to theoretical strands

The rationale was first and foremost about ensuring national interest as opposed to local self-interest, which partly relates to the rationale behind governability theory. It was not so much a matter of reconciling opposing interests to make networks efficient although efforts were made to that end, and there was emphasis on reaching agreement (interdependency theory). The case does not indicate any attempts of the state to fundamentally reorganise to which is the rationale behind governability theory, and what mainly distinguishes governability theory from interdependency theory. There was some focus on strengthening of democracy through public participation, yet it was clear from the hierarchical structure and the different arguments that the ruling norm of democracy was the representative democracy where the final decision is to be made by the elected politicians. Integration theorists adhere to a different notion of democracy which is integrative rather than aggregative. Furthermore were networks not formed bottom-up as is assumed by integration theory. Despite of this, the process at least gave possibilities and offered a venue for the participants to deliberate.

The strategies employed in the process are first and foremost affiliated with interdependency theory, but also bears traits from governability theory in terms of institutional structure in a hierarchy, which was significant to the outcome of the process. Integration strategies were not used deliberately by the metagovenors although the network participants did to some extent reach common frames of meaning and some sort of 'logic of appropriateness' is of importance regarding the social interactions and ought to be considered by metagovenors in general. Furthermore the national parks discussions caused a debate of redistribution of capacities. As the institutional structure of the process was hierarchical there was no real capacity redistribution during the process.

The metagovenor is first and foremost the public authorities – in particular the NFNA, but the convenors were also important. The metagovernors were part of the networks which in the theoretical strands is only the case for interdependency theory. Furthermore in line with interdependency theory public officials do experience that their role have changed from policy implementers to facilitators.

In conclusion the case shares traits with all strands to a limited degree and in particular with interdependency theory. This is not surprisingly as the interdependency strand is the most concrete of the three and has been formed by empirical studies. It is therefore only natural that a new empirical study most clearly can be juxtaposed with interdependency theory. The strand of theory which is second best in line with the case is governability theory, which is also the strand second most tangible in perspective. The main contribution of integration theory to this study concerns the importance of culture as a behavioural determinant, which the two previous strands neglect to some extent.

Table 1.2 *Overview of the fit to theory of the empirical study*

	Interdependency theory	**Governability theory**	**Integration theory**
Rationales for meta-governance	(X)	(X)	(X)
Strategies of meta-governance	**X**	X	
The metagovenor	X		

The division of theory into three strands helps to structure the analysis of the case and to ensure taking different perspectives and supports reflexivity in the interpretation of the case.

1.6 Discussion

1.6.1 Rationale for metagovernance

Although the term metagovernance was never used by either public authorities or other participants, there never seemed to be any question from the initiation of the national park process that there should be some sort of national or central control mechanisms in the process and hence some sort of metagovernance. The main reason for this is probably that most of the participants and in particular process designers adhere to the representative democracy, and the networks were not as much viewed as governance networks as venues of public participation, meaning that local stakeholders should be heard, but decisions should be left to the elected politicians to be legitimate.

If we assume that the political level and the elected politicians protect the interest of those who are not represented in the networks, then the hierarchical institutional structuration of the process was an advantage; a measure of security for the otherwise unrepresented. The underlying assumption of the argument of protecting public interest must be that a conflict between the public good and the network exists. This assumption is questionable when the networks are so broadly represented as in the case of the SCs. Furthermore existing legislation protect the interests of the unrepresented, and certainly if the fear is that local networks despite broad representation will end up with national parks with

insufficient nature protection to suit the general public. However; if networks are to exist alongside representative democracy the political level can hardly be left out of the process if the results of the networks are to be solidified in legislation and financed by tax payers in general.

1.6.2 Metagovernance strategies, successes and failures

The NFNA employees are unaccustomed to the role as project facilitators and metagovenors, and they are unlikely to be familiar with all the different strategies identified by metagovernance theory. Most likely they have never heard the term. Therefore metagovenors may not consciously have seen themselves as such or thought of their actions as being metagovernance. Nonetheless metagovernance was performed to a significant degree.

The institutional design was the most important of the strategies employed in the sense that all participants, for better or worse, have felt the shadow of the hierarchy and acted accordingly. Participants were conscious of the fact that agreement at a lower level would increase the likelihood of being obliged at the higher levels. Since most of the participants at the national level were in favour of national parks the structure was an advantage for the pro national park participants.

It is difficult to make assessments of success and failure as there is no way to know how the networks would have handled themselves without any metagovernance; a scenario that is very unlikely to have caused any network formations in the first place. It was the metagovenors who created interdependency among actors and offered the venue for participants to make their interest understood to each other. All participants think that having the discussions was fruitful and did increase mutual understanding and acceptance. At least in that respect metagovernance was successful. However, complete agreement was not formed in either of the two pilot projects under investigation; more time would have contributed to ameliorate the indifferences, but is unlikely to eliminate them.

The value of good process design and a skilled convenor can not be underestimated if the aim is consensus; something that is well known from most collaborative processes that involves participants with conflicting interests. Therefore process design was given considerable attention and the local level where external consultants were used help design the local processes with an emphasis on public participation. Despite of these efforts the metagovenors never managed to create sufficient trust among landowners to convince them that national parks would not worsen their conditions. If the agricultural organisations had been in possession of actual veto power, they would have used it unless the other participants had obliged their demands further. Due to the hierarchical design disagreements between landowners and the remaining actors do not make the designation of a national park in the area impossible, bud reduces the likelihood. The fact that there seems to be no strict veto to single organisations after all, is in favour of those whose values speak in favour of a national park, yet if national parks are designated it confirms those who had doubts from the beginning that the public authorities can not be trusted.

The issue highlights the differences in core values of the participants: those who think nature conservation is inadequate at present and that a national park can improve the situation; and those who live of land use and have their own economic survival at heart believing that agriculture and nature protection can go hand in hand as things are. The first category believed the supposed veto power given by the previous Minister was a disaster to the process (*Interview 20*; *Interview 22*); the latter category claimed this veto

power to be a requirement to enter the process (*Interview 28*; *Interview 18*), and as such it was a necessity to have the process at all. From the perspective of the many in favour of a national park and in particular those who want as strict a nature protection as possible an actual veto right to landowners would have been problematic; yet from the perspective of the landowners it would have been a strong tool to obtain trust. The main problem remains to be solved: How do we in any policy process weigh the differing strengths of interests when consensus can not be achieved? How do we value a weak interest of the many compared to a strong interest of the few? The national park process does not solve the issue, but addresses it by the unanimous claims among participants that any restrictions caused by national parks should be compensated. It is difficult to say what could have been done differently. Metagovernance can always be improved and refined. Public officials are new to the task and may not have given the task the conscious attention it deserves, even if many strategies were used.

A further key issue is what can be expected from public participation that functions alongside representative democracy? It is a problem if participatory processes undermine the representative systems by having too much power, yet it is equally a problem if participants have no power and hence no inducement to participate. Discrepancies between expectations and reality concerning the level of influence that could be attained, contributed to opinions to span from manipulation attempt to successful participation. From a metagovernance perspective the influence possibilities should be made absolutely clear to the participants before they enter the network; something that is well known from participation studies. Maybe this means that other activation tools than the promise of influence must be used, such as e.g. economic incentives.

Mobilisation and activation did manage to make a large number of people active in the process despite the limitations in influence induced by the institutional structure. It is clear that those already interested in the themes addressed are easier to engage, which the process clearly confirmed.

1.6.3 Was metagovernance appropriately performed?

Appropriateness is always a subjective valuation and naturally the appropriateness of metagovernance in this case depends on who is asked.

The dilution of the work of the local networks on its way up in the hierarchy made some participants at the local level felt cheated and manipulated by metagovenors. However, this investigation has not included enough participants to know if it is a general experience or a minority. Either way; that any participants feel like this is a failure of metagovernance.

It is clear that the NFNA had a significant influence on the process, and that there are widely different opinions regarding this influence. This variety of perceptions can partly be explained by the degree of agreement of the participant with the NFNA and the outcome of the process. When there are conflicting interests and consensus can not be attained, compromises are inevitable if the network is obliged to deliver something as it was the case in the national park process. In that case it extremely difficult to satisfy everyone. In that respect the hierarchical nature of the process in three levels makes complete transparency through the entire system very difficult, when all levels compromise. History *is* written by the victorious, and those who lost may have difficulties in recognising the tale; even if they were listened to, it may not be visible in the final result. Cynics can say that it is the nature of things; good metagovenors will do all in their power to ensure transparency and at the very least make sure that the argumentations

behind the compromises are evident. In this case the process has been unusually transparent, but apparently not transparent enough.

1.7 Conclusion

There never seemed to be any question from the initiation of the national park process that there should be national or central control mechanisms in the process and hence metagovernance. The main reason for this is probably that most of the participants and in particular process designers adhere to the representative democracy, and network participants are not legitimatised decision-makers through elections. The implied assumption that the interest of the local networks is in conflict with national interest is concerning the SCs questionable, keeping the broad representation of these networks in mind. But if networks are to exist alongside representative democracy the political level can hardly be left out of the process if the results of the networks are to be solidified in legislation and financed by tax payers in general.

Metagovernance was performed to a significant degree even if not considered as such by the metagovenors. The institutional design was the most important of the strategies employed in the sense that all participants felt the shadow of the hierarchy. The institutional structure turned out to be an advantage for the pro national park participants. Process management was given considerable attention; however with varying success as participants of both of the two pilot projects under investigation felt they had made considerable progress, yet in neither complete agreement was reached. A key issue is how to weigh the interests of participants when they are of different strength and consensus can not be obtained. Even if the governance networks contributed to a better understanding of the interest at stake, the national park process did not solve this issue satisfactorily. However; governance networks are the most likely venue to make this weighing.

The public authorities and in particular the National Forest and Nature Agency (NFNA) had an important role in the process and there are differences of opinion regarding the appropriateness of this; some informant perceived the NFNA to be too dominant and controlling, while others thought the Agency did an excellent and loyal job. Explanatory to this was that some felt their work had been ignored and had vanished up through the hierarchy, something that highlights the need for transparency and publicity regarding compromises made in the process. Discrepancies between expectations and reality concerning the level of influence that could be attained, contributed to opinions to span from manipulation attempt to successful participation. From a metagovernance perspective the influence possibilities should be made absolutely clear to the participants before they enter the network.

The case confirms that metagovernance is a delicate balancing act; there are many things to consider and even the best prepared metagovenor and the most carefully designed process does not guaranty success. I will not venture to say if there was too much or too little metagovernance. It is clear that without metagovernance there would not have been any governance networks discussing national parks, without money, venues and a plan for progress it is highly unlikely that the participants brought together from above would have formed a network from below and come to the results they did. If governments, or others, want ‘wicked’ issues which are not considered of pressing interest locally resolved through governance networks, metagovernance is unavoidable. But metagovernors and network participants should be aware what metagovernance is and can be to ensure the

best possible quality and least possible intervention. In that respect the NFNA still has something to learn.

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Interview 10. Date: 18-8-2006.Convenor, Kgs Nordsjælland Steering Committee, Mayor of Helsingør municipality.

Interview 11. Date: 29-8-2006.Lobbyist from Danish Society of Nature Conservation.

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Time perspectives in a new political context

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Abstract

"Just-in-time politics" refers to a form of politics in which ad hoc coalitions and relationships are built around issues instead of actors, like political parties, or traditional ideologies. Environmental questions, entering the political agenda in the 1970s, forced traditional actors to react on these new demands and issues. New actors emerged as well. Now the political systems face new challenges.

Today, the political system is tuned towards the electoral cycle while at the same time trying to respond to rapidly emerging media-driven "top stories". We are approaching a "push-button democracy" where the attitudes for the day are decisive. What about the long-term concerns of the citizens, those that perhaps span several coming generations? Environmental issues are the best examples of this dilemma. To what extent have such long ranged questions been organized into the political system? Is the political system out of step with citizen concerns?

This paper outlines a research idea that is about to be carried out within a research project called *Democracy: a citizen perspective*.[18] This is my first attempt to set the focus, to identify and discuss key issues.

[18] The project, running 2006-2010, is financed by Åbo Akademi University and Åbo Akademi Foundation, while separate sub-projects also get additional external funding. Research leader in charge is Professor Lauri Karvonen, http://www.dce.abo.fi/
Several publications are already out and electronic newsletters present the state of research. (http://www.dce.abo.fi/pdf/DCE_Newsletter_1_2007_final.pdf).
In this paper, the framework of the interdisciplinary project is presented in brief, and the research ideas are presented with special attention paid to the time perspectives in politics and how my part fits in.

1 Introduction

During recent decades, social change in Western societies has transformed many of the forms of organization and representation based on collective loyalties. Meanwhile, the opportunities inherent in the new channels of citizen influence offered by advances in communications technology have not yet been fully realized (Budge 1996, Norris 1999, Norris 2002).

The research carried out within D:CE, (i.e. Democracy: a Citizen Perspective. An Interdisciplinary Centre of Excellence, Åbo Akademi University, Finland) recognize the concern as to the viability of traditional forms of democratic organization. It contributes to international research by introducing a broad and genuinely interdisciplinary perspective on these questions. Traditionally, research has dealt with changes in social structure, institutions and organizations, the public sector, civil society, media, and communications technology separately. The present research brings together social and political scientists, researchers in public administration, media experts as well as social psychologists at Åbo Akademi University to provide a multidimensional approach to vital questions about citizen influence in modern democracy.

A citizen perspective, the theme in focus in the overall research as well as in my part, is in fact the fundamental idea codified in most Western constitutions:

The powers of the State are vested in the people… Democracy entails the right of the individual to participate in and influence the development of society and his or her living conditions (Finnish constitution Section 2).

Many factors and mechanisms condition the citizen's means to political power and social influence. These pertain to individual and collective identities, the characteristics of civil society, the process of opinion formation, political representation and leadership as well as to government institutions. The framework in figure 1 was presented in the research plan, and it is inspired by Bernard Manin's work (1997) on the evolution of representative democracy. (http://www.dce.abo.fi/pdf/DCE%20Research%20Plan.pdf)

Figure 1.1 *Three phases of democratic development. An analytical framework.*

	Early representative democracy	Party democracy	Audience Democracy
Identities and loyalties	-local -hierarchical	-national -class-based	-transnational -multiple -alternative
Civil society	-local -comprehensive	-national -functionally defined	-single-issue -ad hoc-based -commercializing
Opinion formation	-local opinion leaders -parliamentary debate	-party-based media -government vs. opposition	-opinion polls -media as arena -media as actor
Political representation	-individual trustees -local notables	-class-based parties -party platforms	-issue experts -media talent
Political leadership	-patriarchal	-ideological	-image-based
State and local government	-minimalist -elitist	-expansive -politically controlled	-challenged by market -blurred public authority

Democracy in advanced nations has, following Manin's arguments, entered the third phase of this development. According to this view, the political process increasingly displays features typical of Audience Democracy. If this is the case, individual citizens no longer have a predominant collectively defined identity but a set of different identities suggesting varying loyalties. The importance of social class as a determinant for party choice has declined during the last decades (Dalton 2002). Hence, voluntary organization and political representation increasingly centre on single issues dependent on media coverage rather than permanent class-based interests and platforms. The term "protest businesses" is used about this new phenomenon (Jordan & Maloney 1997). The fate of political leaders and campaigns is decided by their capacity to cultivate images that are feasible and suit conditions determined by media.

Participatory democracy today is in other words reaching for new forms when traditional voting behaviour is causing worries about some segments being too passively engage in societal matters. There are also claims that new issues will change the focus of political decision-making. New actors, loosely gathered in ad hoc coalitions around certain issues, challenge the traditional actors like political parties. Just to illustrate the new logic, let us have a look at an example on breaking through gathering support for an idea on internet.

Example: The Oneseat Campaign (www.oneseat.eu)

The campaign was launched to draw attention to the costly arrangements in keeping the European Parliament working in both Brussels/Belgium and Strasbourg/France. The campaign was an appeal to locate the European Parliament in Brussels, referring to article 47 on participatory democracy in the proposed constitution for the European Union. This article, also supported by the European Commission, stated that the citizens in the European Union should become more active and participate in the debate on European issues. "*Therefore, we are starting a citizens' initiative to collect a million signatures to put an end to this waste of taxpayers' money.*"(www.oneseat.eu)

The Oneseat Campaign was initiated in May 2006 by Cecilia Malmström, member of the European Parliament, Swedish Liberal Party. In September 2006 1 million European citizens had signed this campaign! Despite repeated questions on behalf of the signatories, there has been no reaction. Officially, the EU Commission is lacking legal

basis to act and the responsibility lies with the member states to perform any treaty change. Nevertheless, Malmström herself became Minister for EU Affairs in the Swedish Government after the elections 2006.

I will return to the discussion on new media and new participatory technology in this paper under section Instruments, but I would like to underline the research idea, to find out how politics on certain issues are conducted regarding new actors and instruments and the time perspective they bring with them. While some researchers find the new technologies a dystopia of the cyberspace-era, others find it refreshing. Audience democracy will be used as a model, paying attention to declining party loyalties and emerging new ones. There is more space for individual politicians and different issue experts while the political debate is framed by media. We enter something called "just-in-time politics" when ad hoc coalitions and relationships are built around issues instead of actors, like political parties, or traditional ideologies. My research question is then, what does this mean in terms of political predictability, in terms of political time perspectives?

1.1 Changing time perspectives?

Figure 1.1 above brings forward, although indirectly, the changing time perspectives in politics. In the first phase, in an early representative democracy, the needs among the public were quite obvious and present in time. The local connections were dominant, the loyalties being local and hierarchical, the civic society local, and so forth. The second phase, characterized as a party democracy, brought forward and stressed different, competing ideologically based scenarios. Ideologies, interpreted as guiding principles for political action, offered main goals for the society and pointed out the means to reach these goals (Larsson 1976 and new editions). Without doubt, the time perspective was pushed ahead. Society, ideologically framed as a national and/or class based entity, headed for a better future.

What is the case today? In the phase called Audience democracy the political cycle is short. Different actors are selling different truths. The voters are free to chose between alternatives, and do so. There is evidence that the type of election (local, national, EU election or presidential election) allocates different party support. Issues become more important than traditional political convictions. The term "just-in-time politics" refers to this phenomenon. Ad hoc coalitions appear when traditional actors, like political parties, or ideologies doesn't bring understanding to current questions. Single issues are debated, and the voter is then choosing from a political smorgasbord. This is where my part (a coming article) comes in, what can be said and found out empirically about the time perspective in this new context?

Some questions today are definitively challenging mankind, among them environmental issues. The time perspectives are extremely long. The research idea is to map current changes in political life, using quantitative methods on survey data on attitudes, and text analysis to see if debates are different over time. We are already familiar with the hypothesis of Inglehart on the paradigm shift in value orientations (Inglehart 1977, Inglehart 1990). But what are the implications for democratic procedures?

In order to investigate the changes in democratic means and the actual state of democracy, the research at D:CE is organized around four themes: *Political Participation, Public Institutions, Media,* and *Individual, Group and Society,* and the last one addresses this time issue. According to the research plan:

> … a time perspective will be paid special attention. Today, the political system is tuned towards the electoral cycle while at the same time trying to respond to rapidly emerging media-driven "top stories" ("push-button democracy"). What about the long-term concerns of the citizens, those that perhaps span several coming generations? To what extent have such questions been organized into the political system? Is the political system out of step with citizen concerns?

(http://www.dce.abo.fi/pdf/DCE%20Research%20Plan.pdf)

1.2 Environmental and labour issues exemplifying long range time perspectives

The concept of multiple identities in the Audience Democracy model is based on the assumption that a change has taken place from traditional loyalties to the family, local communities and social class towards a greater independence and individualization. Other researchers within D:CE are examining data from the European Value Study and relevant parts of the European Social Survey from 2002 and 2004 to get the empirical evidence on this question. Their central focus is then on the dynamic interplay between individual identities, various forms of group affiliation and political preferences including party identification. New media participation is studied and content analyses of Internet chats are combined with laboratory experiments using masked identities. This work will be done in close cooperation with the thematic group on Political Participation, and the output is of interest for my study.

At this stage, processes described in this paper are expected to result in multiple identities rather than in one given identity for the individual. This in turn is supposed to affect the decision making process and the way we address long ranged issues. I will study two different issues, environmental and labour issues.

Environmental issues provide an adequate example on the necessity of long range politics. At the same time we become aware of the importance of thoroughly debated arguments and broadly gained approvals for governmental efforts by a large public. Generally, actors are unanimous about the gravity of the environmental situation and the alarming global threats. But when it comes to action, there is no agreed solution or common way to handle the issues. The energy policy sector may serve as an example. Is, for example, nuclear power a threat or a blessing for humans and/or the environment? Experts stand divided on these huge and complex issues, not to mention the confused public following the debate. Hence, long-term concerns of the citizens, those that perhaps span several coming generations, are difficult to grasp and turn into political terms.

Although environmental issues are the best examples of long-term concerns, clashing into other short term goals of prosperity and welfare, the question is actually about society today and social change. The Brundtland committee on sustainable development and the report Our Common Future in 1987 was something of a turning point. The concept, with the message that all sectors of society are to be brought together focusing on sustainability, changed the view of basic political conditions. Efforts to integrate environmental concerns in everyday-politics became a necessity. The crucial thing, in order to succeed is not to loose sight of the economic realities or social conditions in a global context. This is an including approach. Still, there are challenges for developed and developing countries.

This brings into focus another relevant and related issue, labour issues. Demographic data is, and have been available for politicians to foresee the capacities and needs in their societies. How has this information been handled and acted upon?

1.3 The actors and the arena

As we all know, political actors are not neutral components of the political system. In the early days, ordinary people in industrial communities were dependent on the proprietor of the ironworks or the factories. Then, parties, interest groups, associations and organizations have emerged with a mission to carry on certain issues. Whether broad or narrow in scope, there are social expectations, value orientations or political convictions keeping groups together.

It is obvious that policies are affected by mobilization on values and interests in society. Nevertheless, policies are formulated within boundaries set by norms, rules and cognitive structures institutionalized in the public administrative system. (Reitan 1998a; 1998b, p. 209). The emergence of a new policy area, e.g. the environmental sector, has been studied in order to show the mechanisms at work regulating a new political space. The development of environmental protection in Finland was analyzed in a social context, based on three categories: idea, movement and administration, and moving on to practice, party and implementation (Hermanson 2006). Institutionalization refers to the period and the process through which the structures and rules for a specific policy area are established. These structures and rules are then rather stable. Nevertheless, they are perhaps causing delays in social change, not stopping the changes. In order to survival, institutions are developing. Right now there are efforts to make democracy work and to find new participatory means.

However, there are at the same time arguments that traditional loyalties are decreasing. Participation in elections is not a sufficient political activity anymore. The electoral cycle, often cut into 4-year periods, does not benefit from complicated, long range issues, since media coverage sets the agenda. It was already in the 1980's that the election campaigning features changed into more professional styles (Carlson 2000, p. 13). Political commercials and selective strategies for different voters' segments, and media professionals designing campaign materials, put mass media in the center of the election process. We entered a phase media researchers call "new-image politics" (Moring & Himmelstein 1996). Furthermore, actors heading for re-election are all the time under stress trying to respond to rapidly emerging media-driven "top stories". It used to be a joke, telling about the politician asking for the latest opinion polls before making up his own mind.

1.4 The instruments

Not only the arena and the actors' images have changed, the instruments at use are new. The role of new media technology has been mentioned, and the innovative ways to make it work in a democratic decision making process has been initiated. Information, almost unlimited amounts of information, is available on the web. Authorities, interest groups, organizations and individuals, all have their own home pages offering their point of view. Voluntary hearings of citizens' opinions are held on internet and opinion polls are easily accessed. Net-referendums are also under construction. We are perhaps approaching a "push-button democracy" where the attitudes for the day are decisive. What about the

long-term concerns of the citizens, those that perhaps span several coming generations? How frequently will this theme be addressed in the texts analysed?

1.5 Methods and material

The debate in two separate political areas will be examined, that is environmental and labour issues. The time period will be defined to 1980-2007 to grasp the current changes. The method will be qualitative and quantitative content analysis. Research units will the actors and coalitions present in the debate, who they are, how frequently they appear, how and why they act, and so forth.

In environmental issues, the energy policy sector will serve as an example: is nuclear power a threat or a blessing for humans and/or the environment? The views of experts, politicians and the citizens in the energy debate is analysed, and whether a long-term concern spanning several coming generations are mentioned or not will be paid special attention, as well as interpretations and political phrasing on economic realities, social and/or environmental conditions in a global context.

In labour issues we have a situation when a lot of employees will reach pensionable age and a scarcity of workers will follow. We talk about a ”pensionsboom” in Finland when 30 % of employees in municipalities will be retired in the period 2000-2010 (Reijo Vuorento, Finlands Kommuntidning 3/2001). The same phenomenon is called ”åldringschocken” in Sweden when 55 % of the personnel in 2005 will be over 45 years old (Magnus Wrede, KommunAktuellt 37/1996).

Journals for a contents analysis in Finland are Kuntatyönantaja in Finnish (http://www.kuntatyonantajat.fi/ 6 numbers/year) and Finlands kommuntidning in Swedish (http://www.kommunforbundet.fi/fikt/fikt.html 12 numbers/year).

In Sweden, the journal of the Swedish Association of Local Authorities, KommunAktuellt, will be analysed (http://www.kommunaktuellt.com 40 numbers/year) as well as Dagens Samhälle (http://www.dagenssamhalle.se/ 40 n/year).

1.6 Concluding remarks

Social institutions, that is norms, rules and regulations, are according to Jack Knight 1992, *”...a product of the efforts of some to constrain the actions of others with whom they interact”*. Competition among actors to gain support for their ideas is one feature of democracy. E. Schattschneider was in *The Semisovereign People* (1960 p. 71) even more outspoken as he declared that *”…organization is the mobilization of bias. Some issues are organized into politics while others are organized out.”*

As I have studied the emergence of a new policy area, the environmental sector, it is a bit surprising that at the end green ideas and new politics ideals turned out like “politics as usual”. We can conclude that

> ”... although the environmental issue does present society with new challenges, the institutional capacities of the political and administrative system, in combination with prevailing national policy style, may be enough developed to be able to meet the environment challenge, and in so doing basically absorb or coopt this new political concern into "traditional" politics.” (Lundqvist 1996, p. 14; see also Jänicke 1990)

Now the web has opened up new channels for information and participation, and there are many new possibilities offered by information technology. Will this result in alternative communities or will new forces once again be integrated? There are suggestions that the decision making process has become more open and available. On the other hand, the process is perhaps more issue driven. If media logic is gaining ground, what conclusions can be made about the political substance, and above all the time perspectives applied in the decisions?

> ”As we attempt to understand policy instruments, it is important not to lose sight of the institutional influences on their selection. Not only do the individuals who inhabit government institutions have ideas about the appropriate policy instruments, institutions themselves appear to embody certain approaches to policy problems. We do not mean to reify the institutions, but the collective memory of an organization will tend to produce the same results from deliberations over time. Not only does the collective memory of an organization tend to be associated with the repetitive use of certain instruments, but the very nature of institutions may limit their choices.” (Linder & Peters 1989, p. 41-42)

These were the findings from the institutionalisation phase. The following question is how citizen concerns are integrated in the political system if traditional institutions are loosing ground in society today. I pointed to many new political phenomena to be taken into account when discussing the time perspectives in politics. Finally, I have posed a question how the new agenda, with its strong media logic, and the new set of instruments, developing with communications technology, affect the time perspectives in political decision making. Next question is how to proceed.

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Attachment

Workshop 1:
Authority, Responsibility and Justice in Environmental Politics

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Many of today's most pressing environmental problems share one important characteristic: they are cross-boundary, i.e., they disregard political and geographical borders. Obviously, this is challenging for several reasons. One is that present legal and political institutions have no effective reach beyond the nation-state. The same is the case with most political authority. Furthermore, the border crossing character of many environmental problems is also ethically challenging. What is a fair distribution of the burdens required to mitigate and adapt to e.g., climate change, chemical pollution and over use of marine resources and/or to make society less vulnerable to its' consequences? And perhaps even more difficult: Who has the responsibility to take action - those causing the problems or those in risk to suffer from the devastating effects? The papers in this section are discussing environmental problems from such points of view as authority, responsibility and distributive justice.

Workshop 2:
Urban Sustainability

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Workshop 3:
Sustainable Mobility

- Societal Trends and Planning Challenges

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Sustainable development is a concept few would disagree with at a general level, but is contested when put into actual practice. How is sustainable urban development discussed, defended and even coopted by actors in urban development? What is the actual urban development compared with the ideal? How useful are models and ideals in environmental policy-making? Urban governance in the Nordic countries has been marked by deregulation, privatisation and market solution. At the same time ecosystem management and the need for cross-sectoral and cross-boundary institutions have been underlined. What are the challenges, constraints and opportunities following from these trends in urban regions? New technology and urbanisation (both in terms of land-use and life-style) represent transport changing drivers with possibly environmentally friendly consequences. A new societal and political preoccupation with climate, energy and health issues might promote a more sustainable mobility pattern. However, the 'sustainable mobility' conceptualisation demands integrative policy measures and analytical planning tools to grasp – and communicate - the relationships and reduce the sustainable mobility complexity - across its causes, changes and consequences. The papers discuss the challenges, constraints and opportunities following from trends in urban regions and various societal (economic, political, social and cultural) drivers as important "policy and planning" challenges for a more sustainable mobility.

Workshop 4:
Internationalisation of the Environment:

The local perspective

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“Think globally, act locally” is a slogan from the Brundtland-report twenty years ago. Since then several Nordic as well as other European cities and local communities have responded to this call for local action. Local Agenda 21 highlighted local responsibility for sustainable development through decentralisation and participation. Meanwhile,the internationalisation of environmental policies has resulted in international agreements and regimes influencing and constraining local policies and action on specific topics. International expectations and demands (EU-directives as one example) might constrain the autonomy of local governments in developing a local policy for sustainable development, but they can also represent opportunities for local action. The papers

discuss how local and regional governments face these challenges to local governance of combining the demands from above with the expectations from below.

Workshop 5: Environmental Governance and Policy Implementation

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Throughout the Nordic countries both the debate about, and the practice, of institutional arrangements and processes can be characterised by decentralisation, deregulation, privatisation and marked. Consequently the relationship between public authorities and private actors (business, NGOs etc) are being reshaped: Processes of *government* have been seen as transformed into *governance* which mean that a wider range of actors may be participating and simplistic hierarchical models are being abandoned. The papers address how these changes effect the implementation of environmental policy: Which actors are involved? Whose interests are served? Whose knowledge is included and whose is excluded? Why do particular perspectives on environmental change become so entrenched in policy?

Workshop 6 The Legitimacy and Effectiveness of Global Environmental

Governance

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Debates about sustainable development are increasingly dominated by questions of how to secure values such as participation, representation, accountability and legitimacy in global environmental governance. The participation of non-state actors, such as business and civil society, is regarded as critical for the effective implementation of sustainable development policies in the EU, UN and various multi-level governance arrangements. The transformation of political authority through the emergence of new forms of post-sovereign power (such as private governance and public-private partnerships), makes an assessment of the effectiveness and accountability of these networked governance structures important. How can democratic legitimacy, participation and accountability be secured without compromising effective environmental governance and well-functioning policies? The workshop includes papers on the creation of more effective and legitimate multi-governance arrangements in various policy domains.