

Master's Thesis
(30 ECTS)

**Resource governance in highly regulated policy arenas:
Analysis of the role of the government in managing the
Waddenzee area through the scope of the SES framework**



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Abbreviations

Abbreviation	Dutch	English
ANWB	Koninklijke Nederlandse Toeristenbond (former: Algemene Nederlandsche Wielrijders Bond)	Dutch tourist organization
APV	Algemene Plaatselijke Verordening	Law that only applies to a certain location
AR	Algemene Rekenkamer	Dutch Court of Audit
Beheerplan		Plan which describes for a certain area what specific goals with what specific means will be applied for the conservation, maintenance or development of natural values
Beheerraad -		Council for Maintenance - council for maintenance activities in the Waddenzee
Bestemmingsplan		Policy plan, made by the municipalities, that state what areas or buildings can be used for what activity
CCW	Coördinatie College Waddenzee	Coordinating Council for the Waddenzee
Commissies (Staatsen, Mazure, Meijer).		Commissions that investigated a certain topic of public interest.
EHS	Ecologische Hoofdstructuur	A holistic network of nature areas that are interlinked with each other with specific routes
EZ, Ministerie van	Economische Zaken	Ministry of Economic Affairs
Flora en Faunawet		Law for Animals and Plants. Protects wildlife animals and plants
Friesche Maatschappij Voor Landbouw -		Friesian Society for Agriculture
Huis van Thorbecke		Dutch terminology for the division of power between municipal, provincial and central governments
IFG	It Fryske Gea	Provincial nature maintenance and protection organisation
I&M, Ministerie van -	Infrastructuur en Milieu	Ministry of Infrastructure and the Environment
IMARES	Institute for Marine Resources & Ecosystem Studies	Independent resource institute
LNV, Ministerie van	Landbouw, Natuur en Visserij	(former) Ministry of Agriculture, Nature and Fishery. Now part of the Ministry of EZ
NAM	Nederlandse Aardolie Maatschappij	Dutch petroleum company

Natuurbeschermingswet vergunning		Permit for the NBW
Natuurmonumenten		Nature protection and preservation association
NBW	Natuurbeschermingswet	Nature Protection Law
Nota Waddenzee (Eerste, Tweede, Derde)		Policy Plan Waddenzee (First, Second, Third) Other term for PKB
PF	Provincie Fryslan	Provincial Government Friesland
PKB	Planologische Kernbeslissing	Policy plan of the Dutch government to govern the spatial planning of The Netherlands or part of the Netherlands. There are general PKB's, like the Nota Ruimte, and specific PKB's like the PKB Waddenzee. Since 2008, because of the new Wro, the PKN is replaced by the 'structuurvisie'
Plan Alders		Policy plan for a general governing body in the Waddenzee area
Plan Van Diggelen		Policy plan to drain the Waddenzee in 1849
PO-M	Productenorganisatie Mosselcultuur	Organisation where employers and employees cooperate in the clam fishing sector. The board is formed by all kinds of actors from within the fishing sector
PRW	Programma Rijke Waddenzee	Policy plan to strengthen the nature of the Waddenzee and make it more resilient. Also it aims to develop new opportunities for sustainable use of the area. The plan was made by governments, NGO's and firms.
RCW	Regionaal Coördinatiecollege Waddengebied	Regional Coordinating Council for the Waddenzee
Regiecollege		Successor of the RCW
R.O	Ruimtelijke Ordening	Spatial Planning
RVS	Raad van State	Council of State. Advisory council that consists of both members of the crown and of members that were appointed by the crown. It also serves as a conflict-resolution mechanism for conflicts between administrative organs.
RVW	Raad voor de Wadden	Council for the Wadden. Council that advises the government about development and implementation of policy for the Waddenzee area. Abolished in 2013
RWS	Rijkswaterstaat	Organisation part of I&M that implements policy and performs maintenance tasks
SBB	Staatsbosbeheer	Operating actor that manages forestry throughout the

		Netherlands. They have juridical autonomy but its budget must be approved by the Ministry of EZ.
SBZ	Speciale Beschermings Zone	Special Protective Area
SES-framework		Social-ecological framework, further explained in 2.3
Streekplan		Policy plan for the spatial planning of a certain region (province). Developed by the provincial government but within the borders of the PKB framework.
Structuurvisie		Policy plan of the spatial planning for a part of the country, or the entire country. Successor of the PKB
Nota Ruimtelijke Ordening (Eerste, Tweede)		Other word for PKB.
VB	Vogelbescherming	Bird Protection Organization. NGO that protects and conserves birds and their habitat
VROM, Ministry of -	Ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milieu	(Former) Ministry of Housing, Spatial Planning and the Environment.
Waddenfonds		A fund for investment in programs and projects in the Waddensee area that strengthen the nature, landscape, and regional economy of the Waddensee area in a sustainable way. Its funded mostly by revenues of gas extraction.
Waddenunit		Taskforce of the Ministry of EZ that has maintenance and monitoring tasks
Waddenvereniging		Nature protection and environmental organisation especially for the Waddensee area.
Waterschap		Governmental agency responsible for the quality and level of the ground and surface water in a certain area
Waterwet		Governs the maintenance of surface and groundwater.
Wro	Wet Ruimtelijke Ordening	Law for spatial planning. Successor of WRO, and replaced 'PKB', 'bestemmingsplan' and streekplan for 'structuurvisie'

Abstract

This study contributes to the debate of the role of the government in the governance of social-ecological systems. According to Elinor Ostrom, adaptive governance is necessary to cope with the complexity of human-nature interaction. This governance mode can be guided by eight design principles that she abstracted from several case studies. However, her theory does not provide a clear action perspective for governments. Especially for countries with a government that operates in a highly regulated policy arena, it is unclear how governments should act. Therefore, it is interesting to assess the performance of one of these countries with respect to the design principles. The Waddenzee area in the Netherlands is especially suited for such an analysis, since it is a clear example of both a social-ecological system and a highly regulated policy arena. This area entails a vast territory where several actors with different interests pursue multiple activities and is governed by multiple laws, regulations and governing actors. By using the SES-framework as a descriptive tool, the most salient elements of this social-ecological system are depicted and transformed into relevant variables. These variables structure the semi-structured interviews that are conducted with relevant stakeholders. This research data is analyzed with the design principles as assessment criteria. By means of this qualitative exploratory research design, an in depth account is provided of the exact workings of resource governance in this social-ecological system. It is shown that the Dutch government has an important role to play in stating the goals and the legal framework of specific locations in the Waddenzee area. Also, the governance of some of the resources that lead to political controversy, like gas extraction and clam fishing, benefit from heavy regulation. Moreover, in some instances heavy regulation even provides opportunities for innovative practices. However, the Dutch government should leave the maintenance activities, and direct contact with the resource users themselves, to the organisations that are most close to those particular users. The Dutch government can serve as the consolidator of covenants that are negotiated by user actors and NGO's. In sum, this study has provided clear action perspectives for the Dutch government in this particular case, and contributed to the SES literature with a case-study of a highly regulated policy arena.

1. Introduction

The governance of resources, and the role of the central government therein, is complex and the subject of some debate. The governance of resources is especially complex because of the human-nature interaction. When different actors have different interests and want to employ different activities within the same area, problems arise. Especially when both the wants and needs of the actors need to be considered, as well as the state of the environment they operate in. And because both the behaviour of nature and of people is unpredictable, the balancing of all those different interests and activities is complex (Ostrom 2007).

In other words, resource governance occurs mostly in social-ecological systems *'where aspects of behaviour are complex and unpredictable and where causes, while at times simple (when finally understood), are always multiple (Holling et al. 1998: 352).'* The SES-framework, which conceptualizes the interactions of governance systems, resource systems and units and actors and all their interactions and relations, is increasingly used to deal with this type of complex governing situation. It is a useful analytical device to diagnose the relevant elements and variables that govern particular situations. One of the main findings in this policy field is that there is no single solution, no panacea to solve this complex problem. There are however theories that describe the general patterns that emerge in cases where resource governance performs well.

According to Elinor Ostrom, adaptive governance is the most successful way to deal with this type of complexity. Adaptive governance is conceptualized as a structure of rules, norms and enforcement mechanisms. They are guided by their adaptive capacities through the inflow of information about the characteristics of an environment in order to evolve over time (Dietz et al. 2003). Or, in other words, *'It is the match of institutions to the physical, biological, and cultural environments in which they are located that will enable institutions (and the resources to which they relate) to survive into the twenty-first century'* (Ostrom 1994: 6). So governance of resources must be designed in such a fashion that it can adapt to a certain context in both social as ecological sense.

Ostrom claims that this governance mode is present in many pre-existing institutional arrangements. In her book *'Governing the Commons'* she investigated some institutional arrangements in Spain, Japan and Switzerland that were already in place for ages and functioned well. She abstracted the general patterns that seem to emerge in most of those cases. On the basis of those general patterns she stated eighth design principles that are associated with robust institutions. A design principle is an *'essential element or condition that helps to account for the success of these institutions in sustaining the common-pool*

resources' (Ostrom 1990: 90). These principles are clear boundaries, congruence with local conditions, monitoring, gradual sanctioning, low cost conflict resolution, autonomy of the local community and nested enterprises. Decades after the invention of these principles, they were studied in depth in several studies in many different countries (e.g. Morrow et al. 1996, Sarker et al. 2001, Sekher 2001, Yandle 2003). In these studies, the design principle proved to be a useful assessment criteria for institutional performance.

The question arises what part the government plays. In general, *'a set of rules crafted to fit one set of socio-ecological conditions can erode as social, economic, and technological developments increase the potential for human damage to ecosystems and even to the biosphere itself. Furthermore, humans devise ways of evading governance rules. Thus, successful (...) governance requires that rules evolve'* (Dietz et al. 2003: 1907-1908). A fixed set of rules that cannot adapt itself, inhibits the successful governance of resources. And this greatly resembles with the characteristics of most top down governments.

According to Ostrom, some institutions developed centuries ago proved its capacity for adaptive governance through self-organizing activities. Those pre-existing structures relied on social capital like shared relationships, norms, knowledge and understanding. But in many cases this social capital has been eroded through developments that were set in motion by many governing organisations and central top down governments (Ostrom 1994).

This can be illustrated by some empirical evidence. According to Lam (2011), the policy recipe for governing natural resources was characterized by having governmental authorities play the roles of provider, regulator and promoter of sustainable practices. But in reality, this meant the replacement of traditional forms of management. Examples of this replacement of local governance modes were nationalization of resources, the establishment of a strong centralized bureaucracy and the development of technical guidelines for system operation (ibid: 504).

However, considerable evidence has shown that government agency-run governance systems may be outperformed by systems run by farmers (Lam 1998). Most governments lacked the funds to maintain the newly devised rules, so de facto most areas were ungoverned. And even in the places where the governments succeeded in funding monitoring processes, they turned out to be less efficient (Arnold 1998, Arnold & Stewart 1991); (Curtis 1991, Panayotou & Ashton 1992, Ascher 1995). Other research showed the negative influence top down governance has on the social capital that farmers have created through interactions (Hunt 1989). So in sum, the efforts of the government to centralize resource governance to increase efficiency and performance, in many cases deteriorated the existing

structures that were functioning splendidly.

Even though the Ostrom gives a negative impression on the role governments play in resource governance, some critical remarks and nuances can be made. Ostrom does not accurately depict the role the government should play. A minimum amount of governmental support seems to be a *conditio sine qua non* for most traits of the design principles. Most rules in use can only function with a government that protects the legal rights of its citizens. Property rights for instance are very important in that respect. So the role of the government cannot be abolished altogether. Also, the top down government regulations, as described in the studies mentioned earlier, were in general exercised by low performing governments. Not only with respect to resource governance they did a poor job, but in general.

However, this cannot be said for the countries on which the design principles are based. Spain, Japan and Switzerland can be considered as relatively well performing countries. As the maps in figure 1 demonstrate, in the last decades Spain, Switzerland and Japan showed to be countries with a government that performs excellently. In these countries, governments kept pre-existing institutional arrangements in place and are functioning well in general. In sum, on the one hand we have governments that tried through heavy regulation to replace pre-existing structures, but those were badly functioning governments in general. On the other hand we have countries like Spain, Japan and Switzerland that did not override pre-existing structures with heavy regulation, but are well performing governments.

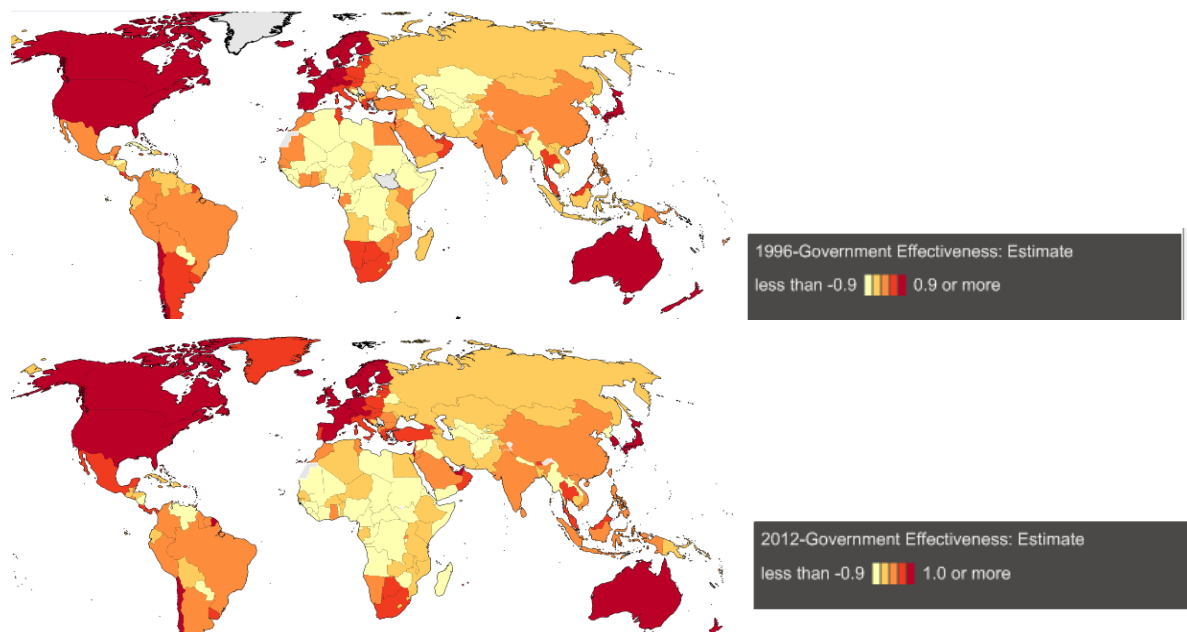


Fig 1. Source: Worldwide Governance Indicators from the Worldbank

But what about countries that have well functioning governments, but have a history nevertheless of replacing pre-existing arrangements for heavily regulatory regimes? In this respect, it is interestingly to discuss the case of the Netherlands. For this country, the maps of figure 1 also demonstrate its excellent performance. But in the Netherlands, the pre-existing institutional arrangements are replaced mostly public or private regulations. The Dutch *marken en meenten*, institutions for common-pool resources, are examples thereof (De Moor 2008).

From Ostrom's theory, one could expect suboptimal outcomes of the institutional context in a country like the Netherlands. *'Any single, comprehensive set of formal laws intended to govern a large expanse of territory and diverse ecological niches is bound to fail in many of the habitats where it is supposed to be applied (Ostrom 1994: 6)'*, this quote of Ostrom seems to be relevant in the Dutch regulatory context. This context is characterised by other scholars as a *'highly regulated policy arena'* (Termeer et al. 2014). This *'high incidence of rules and policies'* (ibid) can cause conflicts with other actors that want to look after their interests through self-organizing activities (Baker et al. 2009, Sørensen & Triantafillou 2009, Termeer 2009). Clearly, this situation resembles the *'single set of formal laws'* that Ostrom mentioned. And supposedly, this situation inhibits the adaptive type of governance that is necessary to govern social-ecological systems.

The question is, how does resource governance perform in terms of adaptive governance with this type of government? Or in other words, what picture arises of the government when we assess the design principles in a case of a Dutch highly regulated policy arena? In this respect, the Waddenzee area¹ can be interestingly to examine. This area is an interesting example of a social-ecological system, where interests of many actors in both natural and economical sense are confined to a small area which only allows a limited set of activities. Moreover, those actors function within a *'highly regulated policy arena'*. It is regulated by many different laws and regulations, and governed by many governing actors.

By examining the Waddenzee area through the scope of the SES-framework, the elements in terms of resources, actors and governance systems that are most salient can be diagnosed. Further on, by assessing those relevant factors with the help of the design principles, the institutional performance of this area can be investigated in depth. In this way,

¹ In this study, I chose to refer to the 'Waddenzee area' because I especially want to investigate the dynamics of the entire area that surrounds the Waddenzee instead of only the sea itself. In some parts of this study I refer to the 'Waddenzee case', but this is purely from an esthetical point of view. In general, most Dutch names were not translated to prevent the loss of meaning. A short description in English is provided in the abbreviations section for all Dutch names.

a qualitative exploratory account can be provided, of how the government should operate in a social-ecological system that functions within a highly regulated policy arena.

1.1 Problem Definition

The role of the government in resource governance within a highly regulated policy arena can largely be described as the overarching theme of this research.

Both a scientific and policy problem can be addressed. The scientific problem concerns the contested role of the governments in the theory of Ostrom with respect to the design principles. More specifically, the type of governments that function well in terms of government performance but have replaced pre-existing institutional arrangements by heavy regulation. The theory of Ostrom does not provide an satisfying account on how to perceive such type of governments. The general perspective to governmental regulation from the point of view of Ostrom is rather negative. Should this perspective be reconsidered? Moreover, can the findings of a study in which a highly regulated policy arena is assessed on its institutional performance add something to the theory of social-ecological systems, and the SES framework in particular?

The policy problem entails the specific role of a government in a resource governance institutional landscape. This study contributes to the larger study of the WRR (Dutch Scientific Council for Government Policy) on action perspectives for sustainability. One of the subdivisions in this project is the institutional workings of the Dutch government in the long term. How can institutions be designed in such a way that actors and interests are balanced in a sustainable way? By clarifying the institutional landscape of the Waddenzee area, an overview is provided how multiple actors look after their interests and what role the Dutch government plays on this behalf. By reflecting on these institutions by means of the design principles of Ostrom, a qualitative outlook is provided by which practical concrete knowledge becomes available about the way the Dutch government shapes resource governance and how this could be optimized.

1.2 Research Question

The previously stated problem definition leads, in combination with factors that will be explained in more detail in the next paragraphs and chapters of this thesis, to the following research question.

"To what extent does the highly regulated policy arena of the Waddenzee area perform according to the institutional design principles of Ostrom, and how can the Dutch government facilitate sustainable resource governance in this social-ecological system with these principles in mind?"

In this research question, both the scientific and policy problem are accounted for. In the first part of the question, the focus is on the performance of a highly regulated policy arena like the Waddenzee area according to the design principles. In the second part, the question is in what sense the Dutch government can play a facilitative role in stimulating sustainable resource use and how this reflects on the design principles of Ostrom.

1.3 Outline of the thesis

The thesis is built up as follows. In the next chapter, the concepts that were part of the research question will be further discussed and explained. In the third chapter, the case of the Waddenzee area will be discussed. The purpose of this chapter is to show that the Waddenzee area is a social-ecological system and that actors in this area operate in a highly regulated policy arena. Those concepts are defined and explained in chapter two, but by means of a short historical overview and a factual representation of the laws and regulations in chapter 3, the case can be made that these concepts fit the local context. In chapter four, the methodology and the research approach is explained in more detail and followed by the actual data analysis in the fifth chapter. In the last chapter, a conclusion will be provided, supplemented with some policy recommendations and a short discussion.

2. Theoretical approach

2.1 Sustainable resource governance

Sustainable resource governance refers to the governing structure that ensures the sustainable use of a resource. Sustainable resource use can be defined in a few ways. The most common way to define it is by referring to the sustainable yield of a resource. The exact definition varies from resource to resource (there is a different one for fish, forestry etc.) but in general one can say that the definition for sustainable resource use in biological sense is the use of a resource in such a way that a resource will not be depleted or exhausted and, in case of renewable resources, will be able to restore itself (Brown et al. 1987).

There is however a problem with this type of definition. It is shaped by a narrow view on resources and the use thereof. In this study, the challenge is to examine the complex interrelations between different resources and activities that revolve around resources. The Netherlands is a densely populated country where the challenge lies in the balancing of different activities of actors with different interests. In the case study that will be analyzed in this thesis, the Waddenzee area, this tension is very clear. Activities like recreation can cause serious harm to the nature of the area, but at the same time form an activity of great cultural and economical value. Recreation would not fit in the narrow definition of resources, it is evident however that it is important to consider it. Nature protection can be looked upon from the same point of view. It entails parts of land, water and animal species which in one way or another can be considered as an resource.

But purely defining resource in the traditional manner, the concept becomes too narrow to form an answer to the research question. In short, in this study I have chosen to define sustainable resource use as the sustainable balancing of multiple activities and interests that have different type of values. In this sense, the study is more shaped towards defining sustainable in the sense of sustainable development. Sustainable development is perceived from a people, planet, profit perspective. Not only the nature (or natural resources) are important to consider, but also the economic and cultural activities that people value (Elkington 1998).

Now that sustainable resource use is discussed and defined, it is imperative to focus on the governance of resource use. As discussed before in the introduction, this study has a specific focus on the role of the government in the governance of resource use. And as was described before, a lot of empirical evidence shows the negative effects of top down policies by governments in the 50s in 60s that shaped the governance of resource use.

Ostrom claims that resource governance should be orchestrated through complex adaptive systems. These systems are composed of a number of separate elements with a rich pattern of interaction. The interaction of agents in this system is described in terms of rules. And agents can adapt by changing their rules as they gain more experience within a certain situation. Those systems, with all those separate elements, will show strong coherence because of the anticipation of those rules and therefore need no central direction (Ostrom 1999; Holland 1995). In other words, Ostrom prescribes self-organizing institutions that thrive on the interactive rule-making to govern resources. To induce this type of governance, Ostrom designed eight design principles (Ostrom 1990) that can establish a robust institutional arrangement. In paragraph 2.4 these principles are described in more detail.

Some examples can be found in the Netherlands of institutions that resemble this structure. These institutions that were founded in the Middle Ages, called 'meenten' or 'marken', were special because they were not based on kinship but on mutual agreement and they existed both among villagers as well as between lords and villagers (De Moor 2008). These institutions align perfectly with some of the design principles. These institutions were formed on mutual interest and guided by rules that were monitored and sanctioned if necessary. Also, research showed that the ones that frequently met and therefore had lots of opportunities to adjust rules if necessary had a longer life span, which is also one of the findings of Ostrom (De Moor & Tukker 2013). Even though most of those institutions functioned well, and some even lasted till the 20th century, most of them were abolished and replaced by private or public rule in the last ages.

In sum, in the Netherlands top down regulation replaced pre-existing institutional structures which functioned as complex adaptive systems of self-governance. However, as explained before in the introduction, it cannot automatically be assumed that this means resource governance of The Netherlands is flawed. But it illustrates why it can be interesting to assess the Dutch regulatory context through the scope of the design principles. In the next section, it is shown how this regulatory context can be perceived in more detail.

2.2 Highly regulated policy arenas

In the previous paragraph the concepts of resource use and governance were elaborated upon. Even though the Dutch regulatory developments in the last ages has eliminated the pre-existing institutional arrangements that greatly resemble Ostrom's theory of adaptive governance, it cannot be automatically assumed the Dutch governance mode is flawed. It can be interesting though to examine the Dutch regulatory context through the scope of the design principles.

One of the few studies that have been conducted which applied the design principles to a Dutch case-study was Termeer et al. (2014). This study researched self governance in the Dutch agricultural sector within a so called 'highly regulated policy arena' through the scope of the design principles of Ostrom. However, this institutional environment was not clearly defined. The only reference to it was the mentioning of a 'high incidence of rules' and the statement that this can lead to problems with self-governance activities. This last statement was backed by several references to other articles. In those articles, the depth of this concept was developed a bit more.

In general, a 'highly regulated policy arena' can be described as '*a highly regulated principal-agent relationship*' (Baker et al. 2009: 78). With the principal being the central government and the agent being the actor that is willing to employ self-organizing activities. The principal agent theory refers to a situation where the one actor (the agent) conducts activities which the other actor cannot fully observe (the principal) while both actors operate in the same uncertain environment. The principal cannot fully control the agent because it does not have the specific knowledge and information, while at the same time the agent is formally accountable to the principal (Grossman & Hart 1983: 7). In other words, the problem where a government cannot fully assess the activities of actors that are formally bound to comply is solved in highly regulated policy arenas by means of strict regulations.

Because of the information asymmetry, there exists a '*fear of not reaching governmental targets and of undermining existing policy*'. Moreover: '*the public managers feared that they could no longer ensure that targets negotiated in complex processes with other governmental organizations would be met*' (Termeer 2009: 312). This of course has some repercussions for self-organizing activities. By trying to regulate every possible action of actors involved, a lot of restrictions are set up that inhibit self-governance. This is especially true for policy environments which have a long tradition of regulation. '*Self-governance is more likely to be effected where it does not have to contend with pre-existing and institutionalized forms of political authority*'(Baker et al. 2009: 92).

The problem of self-governance in environments which deal with institutionalized forms of political authority, lies within the transformation of legitimacy from the representative government and public bureaucracy towards novel forms of institutional designs. In this model, the principal-agent relation is managed through the logic of appropriateness, i.e. the actions of individuals are legitimized through procedural criteria. One way this works in practice is that *'courts (...) will strike out executive decisions and administrative actions on the basis of non-compliance with publicly sanctioned decision rules.'* (Baker 2009: 80). So, this type of environment makes it difficult for self-governance activities to develop, because they cannot be incorporated easily in the legitimization structure by means of procedural criteria.

In general, the exact look-out of such a highly regulated policy arena is as follows: *'the provision of public services by government bureaucracies(...), legitimized through a transparent processes of ex ante electoral contestation, legislatively sanctioned executive decisions, operational activity by a meritocratic and neutrally competent civil service, and ex post scrutiny by political principals, a free media and civil society'* (Baker et al. 2009: 80). These elements make up the institutional environment of a highly regulated policy arena and inhibit, theoretically, self-organizing activities. However, this study aims to examine such a case in more detail and therefore has the objective to find out how this works out in practice.

In other words, is the role of the government in this type of situations that restricting? In the next chapter, the Waddenzee case will be examined and with this definition in mind, the case will be made that policymaking in the Waddenzee area also occurs in a highly regulated policy arena. The aforementioned characterization of a 'highly regulated policy arena' is in no way a strict definition. Moreover, it is as said a characterization which we can use to look upon the Waddenzee case and see how it fits in this kind of typology.

2.3 Social-ecological system framework

Most studies of Ostrom, and studies that use the theories of Ostrom, focus on 'common-pool resources'. *'A common-pool resource, such as a lake or ocean, an irrigation system, a fishing ground, a forest, or the atmosphere, is a natural or man-made resource from which it is difficult to exclude or limit users once the resource is provided, and one person's consumption of resource units makes those units unavailable to others'* (Ostrom et al. 1990: 12). As this definition illuminates, a common-pool resource is a very specific type of resource. In this study however, the aim is not to restrict the study to some resources while leaving other resources out. By focusing on common-pool resources alone, the complexity of

a situation of multiple resource related interests and activities cannot be comprehended in a holistic fashion. Most of the problems that are discussed before, are dealt with in highly complex systems. Those systems are composed of different parts that strongly interact and are hard to predict. In natural science, this notion of complexity, that is accompanied by the notion of chaos, has been established for many decades. The interaction of multiple factors within one system leads to unpredictability over time in outcome. This makes one unifying solution hard to achieve (Cox 2011: 346).

In more recent years, the same quality was attributed to social systems. Sets of rules in governance arrangement interact in a complex manner, and removing one rule can change the effects of the other rules (Ostrom 2005). Moreover, those complex systems in both ecological terms and social terms are interrelated and it makes no sense to study one system in isolation of another, since humans are part of virtually all ecosystems (Redman 2004: 161-162). This notion is extremely relevant for this study. Some scholars are invested in examining the role of the government in self-organizing activities in the Netherlands, but did not take other relevant components of other relevant systems into account (Bakker: 2012), (Edelenbos 2005).

So, a study which deals with governance complexity, can best be conducted through the scope of a social-ecological system. Such a system can be defined as follows:

'A coherent system of biophysical and social factors that regularly interact in a resilient, sustained manner:

- 1. A set of critical resources (natural, socioeconomic, and cultural) whose flow and use is regulated by a combination of ecological and social systems;*
- 2. A perpetually dynamic, complex system with continuous adaptation; and*
- 3. A system that is defined at several spatial, temporal, and organizational scales, which may be hierarchically linked'*

(Redman et al. 2004: 163)

One problem with the social-ecological system approach is the perceived need of scholars to use the analysis of social-ecological systems to derive general lessons from it and form an overarching solution to all social-ecological system related problems. The problem of simplified solutions, of one size fits all blueprint and panacea's to policy problems has been demonstrated repeatedly and extensively (Scott 1998), (Korten 1980).

In other words, there are no simple answers because the developed concepts and

methods can only address the generic nature of problems but not the complexity of problems which have always multiple causes (Holling et al. 1998). Therefore, a couple of scholars identified the need for an examination of the attributes of the resource units and system generated by the ecological system and how this affect the incentives of actors within sets of rules of multiple governance scale that make up the social systems (Ostrom 2007: 15181).

With other words, there is a need to investigate social-ecological systems by means of a holistic framework. The social-ecological framework (SES) from Ostrom (2007) provides such an analytical framework. An elaborate framework, that structures research and serves as an analytical tool, can be useful to guide this research. A framework, according to Ostrom (2011: 8), identifies *'the elements and general relationships among these elements that one needs to consider for institutional analysis, and they organize diagnostic and prescriptive inquiry'*.

Moreover, they provide *'a general set of variables that can be used to analyze all types of institutional arrangements'*, and *'help analysts generate the questions that need to be addressed when they conduct an analysis'* (Ostrom 2011: 8). Complex problems have no simple answers and can only be understood through *'diagnostic methods that identify combinations of variables that affect the incentives and actions of actors under diverse governance systems'* (ibid). Ostrom argues that the complexity of environmental governance problems can be understood by considering a case as a complex system with a decomposable structure. By subdividing SES's in different spheres and levels, one can estimate the separable subsystems that are independent but affect the components of each other. In this way, one can *'organize an analysis of how different attributes (...) jointly affect and are indirectly affected by interactions and resulting outcomes achieved at a particular time and place'* (Ostrom 2007: 182).

The SES framework, developed by Ostrom and further developed by many other scholars, is very valuable to grasp the underlying processes of resource governance and contributes greatly in finding the big patterns of this type of governance. However, more studies are needed to develop this framework even further. The framework was designed to build on the work of previous scholars. *'Long term goal (...) is to recognize which combination of variables tends to lead to relatively sustainable and productive use (...) and which combination leads to resource collapse and high costs for humanity'* (Ostrom 2007: 183). The SES framework is designed to expand, the variety of variables are meant to serve an ever increasing group of scholars. The more case studies on a greater variety of circumstances, the higher the validity of this framework. This will make the framework more

solidified and more robust. Highly regulated policy arenas like the Netherlands are still greatly underrepresented in these types of research. The SES framework will benefit greatly from a contribution from such a country.

In practice, the framework works as follows. The SES is built up around four main subsystems (as illustrated in figure 2). The Resource System (RS), the Resource Units (RU), the Governance System (GS) and the Actors (A). RU is part of the RS, and GS shapes the environment for A. Those four systems come together in the Focus Action Situations, where the mutual interactions (I) shape the resulting outcomes (O). Those four systems and their action situations are themselves shaped by (and reshaping) the social, economic and political settings (S) and the related ecosystems (ECO). Each of these components (RS, RU, GS, A, I, O, S and ECO) can be subdivided in multiple tiers which can in turn be used as variables.

Those variables can serve as the basis for measurement of a case study. Results from these separate variables can be used within the framework to analyze the interactions within the overall system. In figure 3 a list of possible variables is provided. This is no exhaustive list, every sub-tier can be subdivided in even more sub-tiers. The choice to do this, depends on the type of research and the specific context of the case that is examined. So the framework can take different forms in different studies. Therefore, it is important to stress that a framework is not the same as a theory. There are no underlying assumptions or normative statements that guide the use of this framework. So besides this framework, a theoretical lens is still needed, this will be discussed in the next paragraph. How this framework will ultimately be used will be discussed in chapter four.

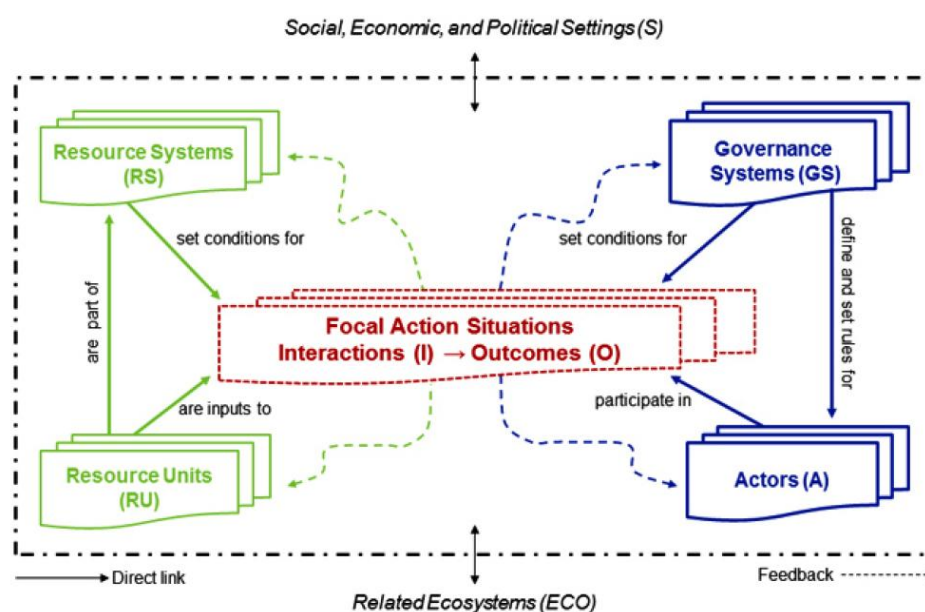


Fig 2: SES framework in McGinnis & Ostrom (2014).

Social, Economic, and Political Settings (S)		
S1 – Economic development. S2 – Demographic trends. S3 – Political stability. S4 – Other governance systems. S5 – Markets. S6 – Media organizations. S7 – Technology		
Resource Systems (RS)	Actors (A)	GS5 – Organizations
RS1 – Sector (e.g. water, forests, pasture, fish)	A1 – Number of relevant actors	GS5.1 Government organizations
RS1.1 Marine benthos	A2 – Socioeconomic attributes	GS5.1.1 Support enforcement
RS2 – Clarity of system boundaries	A3 – History or past experiences	GS5.1.2 Support funding
RS3 – Size of resource system	A3.1 Crisis	GS5.1.3 Restoration efforts
RS3.1 Carrying capacity	A3.2 Duration	GS5.2 Non-government organizations
RS4 – Productivity of system	A4 – Location	GS5.2.1 Capacity building
RS4.1 Stock status	A5 – Leadership/entrepreneurship	GS5.2.2 Linking
RS4.2 Biophysical factors	A6 – Social capital	GS5.2.3 Bridging
RS5 – Equilibrium properties	A6.1 Trust and reciprocity	GS5.2.3.1 Unions
RS6 – Predictability of system dynamics	A7 – Knowledge of SES/mental models	GS5.2.3.2 Cooperatives
RS7 – Storage characteristics	A7.1 Mechanism to share knowledge about the fishery	GS6 – Rules-in-use
RS7.1 Storage in their natural habitat	A8 – Importance of resource	GS6.1 Property rights
RS7.2 Storage in a human-designed facility	A8.1 Economic dependence	GS6.1.1 Open access
RS8 – Connectivity	A8.2 Cultural dependence	GS6.1.2 Moratory and total allowable catch
RS9 – Location	A9 – Technologies available	GS6.1.3 Catch shares
	A9.1 Ownership of technology by fishers	GS6.1.4 Territorial use privileges
	A9.2 Homogeneity	GS6.1.4.1 Sea-bed tracts
		GS6.1.4.2 Individually owned fishing spots
		GS6.1.4.3 Territorial use communal rights
Resource Units (RU)	Governance Systems (GS)	GS6.2 Operational rules
RU1 – Resource unit mobility	GS1 – Policy area	GS6.3 Collective-choice rules
RU2 – Growth or replacement rate	GS1.1 Environment	GS6.4 Constitutional rules
RU3 – Interaction among resource units	GS1.1.1 Benthic marine	GS7 – Norms and strategies
RU3.1 Reproduction	GS2 – Geographic range	GS8 – Network structure
RU3.2 Settlement	GS3 – Population	GS8.1 Horizontal
RU4 – Economic value	GS4 – Regime type	GS8.2 Vertical
RU5 – Number of units	GS4.1 Democratic	GS9 – Monitoring
RU6 – Distinctive characteristics	GS4.2 Autocratic	GS9.1 Social
RU6.1 Hatchery		GS9.2 Biophysical
RU6.2 Wild		GS10 – Sanctions
RU7 – Spatial and temporal distribution		GS10.1 Graduated sanctions
RU7.1 Patchy		GS10.2 Grim trigger strategies
RU7.2 Random		
	Related Ecosystems (ECO)	
	ECO1 – Climate patterns. ECO2 – Pollution patterns. ECO3 – Flows into and out of focal SES	

Fig 3: List of (possible) variables of the SES framework (Basurto et al. 2013: 1368)

2.4 Design principles

It has been established so far that this study aims to assess how the government can facilitate sustainable resource use within the realm of the highly regulated policy arena of the Waddenzee area. Sustainable resource use is defined as the activities and interests that are associated with resources in the Waddenzee area. The balancing of all these different activities, interests and actors is depicted as complex. This complexity of both ecological and social factors is expressed in the frame of a social-ecological system which will be employed in this study. This frame takes the form of a diagnostic framework that will help in unlocking all different layers of this complex system and map their interactions. But one element is still missing. There is need in this study for assessment criteria for institutional performance to guide the reflection on the role of the government in the social-ecological system of the Waddenzee area. Just describing the complexity is not enough, it is necessary to critically assess the role of the government and to do that there is a need for an ideal typical notion of institutional performance within sustainable resource governance.

Ostrom supplies such an ideal typical notion by means of the design principles for resource governance institutions. A design principle is '*a conception used either consciously or unconsciously by those constituting and reconstituting a continuing association of individuals about a general organizing principle*', and they '*characterize most of the robust*

(...) *institutions*' (Ostrom 1994: 4). In her book *Governing the Commons* (1990), she discusses several cases of successful complex resource governance and tries to derive lessons from their success. She discusses cases that show sustainable resource use, as well as meet the criterion of institutional robustness, which is a set of rules that are modified over time according to collective and constitutional choice rules (Shepsle 1989). Also, they have '*endured while others have failed*' (Ostrom 1990: 89). The design principles are created on the basis that they characterize all the cases of robust governance. Ostrom stresses however that she is not implying yet that these principles are necessary for an institution to be robust. Therefore, more scholarly contributions are needed to establish this. However, in the decades after this groundbreaking work, many of scholars have used these design principles to structure their research. Seeing as most empirical work has proven its validity over time, this study can safely assume the design principles are useful as assessment criteria for the performance of the Dutch governance mode.

The design principles are as follows. *Clear boundaries*, it must be clear who can and cannot use the resource. *Congruence*, between rules and the local context both in cultural as economic sense. *Collective-choice arrangements*, the actors that are affected by the rules must be able to participate in its modification. *Monitoring*, the behavior around a resource and its conditions must be monitored. The monitors must be accountable to the resource users, or be the resource users themselves. *Graduated sanctioning*, the ones that do not comply with the rules must be sanctioned, and those sanctions must have a gradual (incremental) nature. *Conflict-resolution mechanisms*, there should be a low cost arena that can solve conflicts between all types of actors. *Autonomy of the local community*, actors should be able to organize self-governance without being hindered by the government. And lastly, *Nested enterprises*, which only applies to large (complex) systems and refers to the need for multiple smaller enterprises that carry out all the governance tasks in multiple layers that are strongly interconnected (Ostrom 1990: 90).

These design principles are in no way laws of nature, or facts of life. They can however serve as the assessment criteria for this study. They are thoroughly used and researched with great success. So, the research will be structured by the SES-framework, but critically assessed by means of the design principles. And although these principles guide this research, they will themselves also be critically assessed. In this way, it can be examined whether or not the design principles also apply to cases in a 'highly regulated policy arena'. How this works in practice, will be explained in chapter four.

3. Case description of the Waddenzee area

The previous chapters have respectively sketched the problem and the research question and provided a theoretical background to support this research question. In this chapter, the conceptual frames that were chosen for this study, the frames of ‘social ecological system’ and ‘highly regulated policy arena’, will be backed by a preliminary assessment of the case. By reviewing some historical developments, and facts concerning the present governing framework through the scope of the chosen frames, the choice for these frames can be defended.

3.1 Introduction

This chapter has a twofold purpose. One purpose is to establish the definition of the Waddenzee area as a social-ecological system. By means of the definition of a social-ecological system that is provided below, the different layers of this definition will be assessed by means of some background ‘data’ on the Waddenzee area in its institutional context.

‘A coherent system of biophysical and social factors that regularly interact in a resilient, sustained manner:

- 1 A set of critical resources (natural, socioeconomic, and cultural) whose flow and use is regulated by a combination of ecological and social systems;*
- 2 A perpetually dynamic, complex system with continuous adaptation; and*
- 3 A system that is defined at several spatial, temporal, and organizational scales, which may be hierarchically linked’*

(Redman et al. 2004: 163)

In the next paragraph, the reason to focus on four main ‘resources’ will be explained and elaborated upon, which will give some support for the first layer of the definition (1). In the second paragraph, a general overview of the historical development of the governance of the Waddenzee area will be provided. In this part, the second layer of the definition (2) will be established. In the third paragraph, an overview will be provided of the most relevant and prominent governing organizations and laws and regulations that together form the institutional framework. In this sense, the third layer (3) will be established. Conclusively, in the fourth and last paragraph a reflection will be provided on why the findings of those separate background studies give raise to the notion that the Waddenzee area can be framed

as an social-ecological system and thus as '*a coherent system of biophysical and social factors that regularly interact in a resilient, sustained manner*'. This same paragraph will be used to serve the second purpose. To support the statement that the Waddenzee area can be looked upon as a 'highly regulated policy arena'. The findings of the first paragraphs will serve as the background 'data' and be reflected upon. For the backing of this statement, the following characterization of this concept will be used:

'[The] provision of public services (...) through transparent processes of ex ante electoral contestation, legislatively sanctioned executive decisions, operational activity by a meritocratic and neutrally competent civil service, and ex post scrutiny by political principals, a free media and civil society' (Baker et al. 2009: 80).

This characterization will be used to grasp how exactly the Waddenzee area can be understood in terms of regulatory systems. It is in no way meant as a strict definition in which the Waddenzee area must fit perfectly.

This chapter is in no way meant to provide an exhaustive account of all the policy developments of the last decades, or all the laws and regulations and governing actors that are in place. It serves the purpose of providing some background of the case and at the same time backing up the choice to consider the Waddenzee area as the case study for this research project. The historical developments, laws and regulations and governing actors that are described in this chapter are chosen because of the perceived utility to the understanding of this case and later on the understanding of the results of the interviews.

3.2 Critical resources of the Waddenzee area

For this study, the choice was made to focus the research on the 'resources' of fishing activities, gas extraction, recreation and nature protection. Of course, those activities are too complex in itself to simplify by the term of 'resource' . Resource is not defined in a narrow and precise fashion. The terms of resource and resource use, relate in this study to resource related activities and interests. The resource category of the SES framework provides a strong tool to assess the role of different activities and interests in the Waddenzee area, and how this relates to the governance arrangements, actors and interactions.

It is imperative to narrow the scope to gain a concrete focus within the limited time and resources of a thesis research project. In that sense, it is important to have a diversity of resource activities and interests that are interrelated. Gas extraction, fishing activities,

recreation and nature protection are diverse in scope and salient in the sense that they are directly interlinked. Both clam fishing and gas extraction can cause damage to other 'resources' like nature. For instance because they can both damage the soil which in turn has a negative influence on the ecosystem of the Waddenzee area. But also, the gas extraction activities can have negative influences on the soil which in turn can negatively influence the clam fisheries. Recreation on the other hand, can be negatively influenced by gas extraction as well (especially tourism and recreation based on nature parks) but in turn can also negatively influence 'nature'. Nature protection can cause damage to other activities in a different way. (Too) stringent regulations that hold other activities on a tight leash, especially in the case they restrict certain activities that pose no direct threat to the environment, can cause negative effects to activities like gas extraction, fishing and recreation.

Still, there are more resource related activities and interests in the Waddenzee area than the aforementioned ones. Salt extraction, and military activities to name a few. Important as they may be, the choice was made not to focus on them. Gas and salt extraction can both be found in more or less the same category, but gas extraction has been a controversial topic for some decades and is therefore more interesting to assess, also because gas is economically more salient than salt and is therefore a more pressing issue. The military activities and its interference with other activities, is rather limited in comparison with some of the other resources under scrutiny of this study.

Despite their limitations, the reason to focus on other resources does not mean they will not be discussed entirely. The focus is necessary to fix an appropriate amount of interviewees, in order for this research to remain within its boundaries in the sense of time and money. But when during those interviews, interesting notions from within other resources are discussed they will surely be discussed in the analysis.

3.3 The historical development of the institutional context of the Waddenzee area

This paragraph sketches the historical development of policymaking in the Waddenzee area. The reports of Oosterveld (2011), RVW (2005) and the AR (2013) were the basic sources for this piece, with some supplements from other literature. Some of the terminology that is used has been described by its Dutch name, the translation can be found in the 'Abbreviations' section (page..).

3.3.1 Commissie Staatsen and Commissie Mazure (1965-1980)

The sustainable management of the Waddenzee area has seen some changes throughout the ages. In the 19th century, there were already very ambitious plans to drain the Waddenzee, which culminated in the Plan Van Diggelen in 1849 (Oosterveld 2011: 23). This however never was implemented. In 1965, a very ambitious plan by the Friesche Maatschappij voor Landbouw to drain the Waddenzee led to considerable political discussion and the founding of the Waddenvereniging. The 'Tweede Nota Ruimtelijke Ordening' in 1966, did not mention the Waddenzee area specific as an area which required extra protection with regards to the environment. Only some parts of the Waddenzee area (Borschplaat on Terschelling and the Slufter on Texel) were explicitly mentioned. Also, the installment of a commission was announced, to investigate the costs and benefits of the drainage of the Waddenzee.

The Commissie Mazure was installed in 1970 and they advised in 1974 against the drainage. The need for new land was not urgent, the costs high and the value of the Waddenzee area for fishery, recreation and the nature was too high (RVW 2005: 13). This commission also pointed out the fact that the Waddenzee area was not governed on a municipal and provincial level and was only managed and governed by the central government. They advised to use the WRO to establish 'streek' and 'bestemmings-plannen'. In this way, the several interests in this area could be balanced in a thoughtful fashion. In general they proclaimed the rearrangement of the Waddenzee area in terms of provincial and municipal governance with space for common governance and the participation of the central government. (RVW 2005: 13). This was the first initiative towards a more integrated perspective on the Waddenzee area.

This tendency was expressed in the installment of the Commissie Staatsen in 1976 by the Waddenvereniging, which was asked to examine this integrated approach on the governance framework. They pointed out that the installation of a general governance framework (in the form of municipalities and provinces) alone like the Commissie Mazure advised, was unfit to serve the interests of the natural values of the Waddenzee area. Aside from this installation, the goals and norms of the Waddenzee area should be embedded in legislation. They advised to design a general law for the Waddenzee area, with some accompanying governmental organizations that would see to the achievement of the goals, and monitor their progress (RVW 2005: 14). The urge for a coordinated national policy with respect to the Waddenzee area was felt by the government as well, but it would take another couple of years before a PKB for the Waddenzee area specific was established in 1980 (Oosterveld 2011: 14-15).

To sum it up, in the period 1965-1980, the depiction of the Waddenzee area as an environment with specific natural values was established. The plans for drainage led to the founding of the Waddenvereniging and the Commissie Mazure which produced the first thoughts on an integrative Waddenzee area policy framework. Also, the difference between the Commissie Staatsen en Mazure shows the tension between general governing authorities and task specific governance with direct focus on the values in the Waddenzee area.

3.3.2 The first PKB Waddenzee (1980 – 1994)

In 1980, the Dutch government decided to introduce a PKB for the Waddenzee area specifically. The choice was made for this 'RO' instrument because the assessment of competing interests and spatial claims were best suited within such a framework. Such a framework facilitates an equal balance between all activities and functions (infrastructure, nature, recreation etc.). The installment has complex implications, in the sense that each governmental scale has its own considerations and sectoral laws that structure the way they implement governmental policy (RVW 2005: 19).

The PKB Waddenzee was a blueprint for the arrangement of environmental tasks and duties in the Waddenzee area. Aside from this, the plan was instrumental for stating what could not be done with regards to activities in this area. This culminated in 1986 to the actual arrangement of the Waddenzee area in provincial and municipal terms. Through this, the central policy (PKB) was embedded in the more local policies of 'streekplannen' (provincial level) and 'bestemmingsplannen'(municipal level). In this way, a document that only enforced the central government, now also structured the behavior of other governing authorities and user actors (by means of the 'bestemmingsplan' and 'streekplan'). This arrangement provided the provinces and municipalities with specific authorities for their part of the Waddenzee area, like provincial environmental regulations and APV's for municipalities(RVW 2005: 15).

For the coordination of this policy plan, the CCW (Coördinatie College Waddenzee) was founded. This commission served as a governmental body for both the central government and the region. Participating parties were expected to respect the agreements from this organization. The call for an all-encompassing law for the Waddenzee area however still had not silenced yet, especially the Waddenvereniging urged the government to consider this. They fear that the protection of nature is still subdued by economic interests. After some political discussion, the proposal for a separate law for the Wadden was ultimately rejected in 1990.

In 1991 however, the CCW was relieved from some of its duties, and the RCW (Regionaal Coördinatiedcollege Waddengebied) was instated. The RCW was assigned with a coordinating and managing role, they were responsible for the implementation of the Waddenzee policy and the management of the area. The CCW had to focus on the main lines of the policy, and the deliberative process between parties. Together, the CCW and the RCW form the core governing organization of the Waddenzee area (Oosterveld 2011: 81).

However, according to an evaluation report in 1994, these governmental bodies did not function as expected. The deliberative culture was considered to be too introvert and inward. There was no shared responsibility and the visibility of the governing parties was lacking. The central government considered the deliberation process as a tool to force their policies, while the local governments did not get a chance to influence the policies from the central government. (Everink & Tromp 1994).

In sum, the central government decided to use the RO-instrument and to organize the Waddenzee area with municipal and provincial layers. This provided the different scales of governance with some freedom to employ their own laws and norms, within the framework of the central government of course. The CCW and later the RCW were assigned to coordinate this process, but in the first evaluative moment it was shown that this set up did not prevent the lack of shared responsibilities and the inward focus of most governmental bodies.

3.3.3 Conflict, Commissie Meijer, towards a new PKB (1994 – 2007)

In 1994, the second PKB for the Waddenzee area was established. The main targets for this policy was the sustainable protection and development of the Waddenzee area as a natural habitat (RVW 2005: 15). Also, the plan entailed an assessment framework for the governmental process with respect to expected activities that serve different interests and have different consequences for the environment. The plan stated that it takes the cumulative effects of activities into account. The translocation principle was included, which entails the following. A clear proof of societal need must be provided. In order for an activity to be justified, the societal need and the need for this activity to be employed at this specific location should be proven. Also, the precautionary principle was introduced. When during the assessment there is serious doubt about possible negative effects for the ecosystem, the benefit of the doubt will be in favor of natural protection (Oosterveld 2011: 17).

As far as the governmental arrangements, they stayed largely intact. In the PKB, it was stated that no changes were in order before an thorough evaluation was conducted. But

even after the evaluation (of Everink and Tromp in 1994) there were no radical changes. In 1997 the government stated that the existing organization was maintained. (RVW 2005: 16). This however led to some conflictuous situations between the central government and the provincial governments. In 1992, the provinces gained some decisional power regarding concessions and permits on areas that did not concern national interests.

In 1998, the new *Natuurbeschermingswet* (NBW) was introduced. This law dictated however that some parts of the implementation remained within the jurisdiction of the central government. This was part of the unique position of the Waddenzee area, which would also apply to some other protected areas, where there is a special need for coordinating on a central governmental level. This reduction in decisive power on the provincial scale was cause for some conflicts in the CCW and RCW. The provinces threatened to leave the RCW altogether. The provinces were eventually brought back to the negotiation process, but because of all the friction the third PKB was delayed (Oosterveld 2011: 82).

In 2004, the Commissie Meijer launched a critical report which state that the governance structure is not resolute and lacks transparency. *'A lot of players has the power to stop certain policies, but no players have the power to enforce it'* (Oosterveld 2011: 83). They recommended the following things. Separate strategic policy making from strategic management. Strategy should be directed towards the entire Waddenzee area. Strategical policy making should be done on the national level, with a clear role for the parliament. The daily maintenance and governing of the Waddenzee area should be on a regional level, that operates in one clear unambiguous frame. The RCW can be the basis for this (RVW 2005: 17), (Meijer et al. 2004: 5).

In 2005, the provinces and municipalities proposed to instate a general governing body that can relieve the central, regional and local government of the main part of their tasks and budget for the Waddenzee area. The plan, called Plan Alders after the chairman of the RCW, indicates that this general body should be responsible for integrated governance like permits, maintenance, inspection and monitoring. Some central governmental tasks like security, shipment and military activities should remain in the boundaries of the government. This general body should include provincial and municipally elected representatives. The plan was ultimately rejected due to the undesirable extra governing layer and the fact that the central government wanted to maintain the division between central, local and regional governments - also known as the Huis van Thorbecke (Oosterveld 2011: 85).

Under influence of the European Habitat and Bird Directives, and the renewed NBW in 1998, it was increasingly felt that spatial policy making should not be the guiding principle

in the coordination of the Waddenzee area (RVW 2005), Oosterveld 2011: 85). Moreover, nature protection should be the basis of policy making, therefore the coordinating role should shift from the Ministry of VROM to the Ministry of LNV.

In 2005, the central and regional governments reach an agreement on the governing structure. They chose to proceed as before, with an strengthened RCW that gets to design an implementation plan for the developmental perspective from the new PKB that would be formally introduced in 2007 (Oosterveld 2011: 86).

In sum, this period in the Waddenzee institutional history knew some conflictual situations and heated discussions, especially with regards to the jurisdiction of the provinces. However, it did not lead to great organizational change. The proposal to form an extra representative layer as a general body was rejected because the government tried to maintain the structure of the Huis van Thorbecke.

3.3.4 Decentralisation and the ‘new’ role of the RCW (2007 – present)

In 2007, the third PKB Waddenzee is introduced. The first plans were already designed in 2001, but due to some conflictuous situations (among others with regards to gas extraction), the final version was presented in 2006 to the parliament and definitively established in 2007. New in this PKB is the specific addition of the preservation of the unique character of landscape. This is literally defined as the '*preservation and protection of landscape qualities like quiety, wideness, a free horizon and nocturnal darkness*' (Derde Nota Waddenzee 2007).

A new assessment framework was designed that shows what procedures have to be followed to assess whether an activity has negative effects for the protection of nature, landscape or archeological values of the area and if the admission of a permit is an option. Activities that have a significant negative influence on natural values are not allowed, unless there is a great societal need and no alternative location to employ this activity. Also, by employing this activity, there is always a need for compensation for the loss of nature (Oosterveld 2011: 19). Within this assessment framework, the European Habitat and Bird Directives are incorporated and show the steps the government needs to take in order to take these directives into account. Both of these directives were already established in respectively 1979 and 1992, but this PKB firstly incorporated them in a policy plan.

According to the RVW, the original PKB was designed in order for the government to equally balance the different interests and activities. However, these European directives made the preservation and conservation of nature an obligatory feature of the Waddenzee area governance. In this sense, not all activities were balanced equally, nature prevailed. It

would only be logical to abolish the PKB and instate a nature policy plan that was built upon the NBW. This could form the policy framework on which to base the balancing of different activities in the Waddenzee area (RVW 2005: 20-21). However, the choice was made to continue with the PKB, but incorporate the binding legal obligations in European sense in the assessment framework. In this sense, the PKB as an policy framework to guide the balancing of activities was kept in place.

In general, the need for more economic activities and development in the Waddenzee area was shown by the considerable amount of amendments that were made on the PKB, especially with regards to harbors and the expansion thereof. This also led to an special covenant of the government with societal organizations regarding recreation (Oosterveld 2011: 21). As far as the organizational set-up is concerned, this remains the same. The CCW, and the RCW remain in place as the core of the decision-making structure. However, in 2010 a report of Berenschot (a consultancy firm) to investigate the organizational complexity of the Waddenzee area, advised the change of this structure. They advise a shift of the RCW from a more coordinating to a more directing role (from 'Regionaal College Waddenzee' to 'Regiecollege Waddenzee').

In general, as agreed by the ruling parties in the government in 2010, the task of nature protection was greatly decentralized towards the provinces. The spatial planning was no longer designed by the central government, but was decentralized towards the provinces and municipalities. Also, there was no role for a 'coordinating' minister with regards to the implementation of the Waddenzee area policy and the Waddenfonds was also fully decentralized to the provinces. The tasks of physical management and the monitoring and enforcement by RWS and EZ, remained in place (AR 2013: 9).

In sum, the last decade of policymaking in the Waddenzee area knew some change. By establishing a new PKB, policymaking maintained within the realm of the spatial planning but with an assessment framework that made the natural interests (in line with European regulations) prevail. As far as organizational change is concerned, the RCW was changed and the CCW was abolished. Also, more tasks were decentralized which is interesting if one considers the problems between the central and provincial governments that caused conflicts in the decade before this one.

3.4 Institutional framework of the Waddenzee area

3.4.1 Governing framework

Ministry of I&M (RWS)

This ministry is the coordinating department for the Waddenzee policy area. They are represented by RWS, the implementation organization of I&M, as the resource manager of this area. RWS is responsible for the physical maintenance of all waters in the Netherlands, and is therefore responsible for nautical activities, and water and coastal security. Activities range from making sure the fairways are deep enough, and making sure the water quality concurs with the regulations of the Framework Directive Water. RWS is responsible for permits regarding the water security, for instance a permit for substance discharge, or building near a dike or a pumping station.

Ministry of EZ

The minister of EZ is responsible for the protection and maintenance of nature in the Waddenzee area. Most of the tasks that are associated with this responsibility, are delegated to the provincial and municipal governments. Despite this decentralization, the minister remains fully responsible for the results of the policymaking, and the information-sharing towards the European Union. This ministry also has a decisive role in granting permits for fishing, gas extraction and (sustainable) energy. Therefore, they still have a main role in monitoring and enforcing. The Waddenunit is responsible for these tasks, which ranges from the closing of certain areas for breeding purposes (of birds) and plotting the areas for fishing purposes.

Provincial governments

Since 2004, when a policy note of the Ministry of VROM introduced the steering policy of ‘act decentralized when you can, act central when you must’, some tasks were decentralized to the provinces. It started in 2005 when the responsibilities for the granting of permits for the NBW for some of the activities was transferred to the provincial governments. This meant the provincial governments were responsible for a great share of the balancing of multiple activities. For instance, whether or not the placement of wind turbines is allowed, or the organization of seal trails. For activities that entail the entire Waddenzee area, the provincial government of Friesland has the final decisive power. In 2007, some parts of the

implementation of policy making for nature protection is assigned to the provinces. In 2011, the full responsibility for the implementation and maintenance of the Waddenfonds was also assigned to the provinces.

Municipal governments

The municipalities are formally responsible for the formation of their own 'bestemmingsplannen'. These plans are subjected to the more central 'structuurvisie' of the provinces. Also, they can implement APV's to govern some behavior or conduct in their own areas. However, their role in the maintenance and governing of the Waddenzee area is less significant than the rest of the governing actors.

Other governing actors

Besides the governmental actors, there are also other actors responsible for the maintenance and managing of some parts of the Waddenzee area. **Natuurmonumenten** and provincial nature maintenance organizations like **It Fryske Gea** are NGO's, that own some parts of the Waddenzee area and see to it that the nature is protected and maintained. **Staatsbosbeheer** maintains some areas in the Waddenzee and has operating tasks, but is still partly connected to the Ministry of EZ. It is an autonomous governing authority, but its budget and goals must be reported to the Ministry of EZ. These organizations are de facto in charge of the physical maintenance on the islands themselves. They are also involved in all kinds of restoration activities and promotional and educational activities.

There are of course still other actors that have a role in the governance of this area, for instance the Ministry of Defense (because of the military bases on Texel, Vlieland and Lauwersoog) and other private actors. The choice was made however to leave these actors out and to focus on the actors that actively deal with (and have a large role in) the balancing of the use of the resources of nature, fish, gas and recreation. Off course, there is also an international dimension with international governing actors and deliberation structures. This however goes beyond the scope of this research. Of course, international actors and institutions have a role in this dynamic process but the choice was made to focus on narrow it down to national actors and national regulations, unless the international regulations are directly incorporated in the Dutch regulatory regime.

3.4.2 Regulatory framework

Directives

In 1979 the **Bird Directive** was established by the European Union to protect the environment and nature without throwing the relations between countries in terms of competition off balance. The objective of the Bird Directive is the preservation of all natural wild bird species in the European Union. The **Habitat Directive** was introduced in 1992 to supplement and largely replace the Bird Directive. The Habitat Directive serves as a framework to maintain biological diversity and, if possible, restore it by protecting natural habitats (De Waal 2007: 16). The Habitat Directive prescribes the establishment of a '*coherent European ecological network of special protection zones (SBZ's)*' (De Waal 2007: 18).

This network was later called **Natura2000**. Because of this guideline, the Waddenzee area is officially labelled as an SBZ and is therefore legally part of Natura2000 (De Waal 2007: 38). In general these guidelines prescribe a result based obligation. Which means that the Netherlands is lacking the requirements for this guideline if a disturbance occurs with respect to one of the species or habitats. In that case, governmental intervention is mandatory in order to restore the state of the habitat or species (RVW 2005: 20).

In 2008, the **Framework Directive Water** was introduced. This is an European guideline that has 'the good quality in chemical and ecological terms of the water' as the primary objective. This guideline is incorporated in the **Waterwet** of 2009. So permits can be obtained by complying to the Waterwet, which is shaped by the Framework Directive Water. There is a 'krW-toets', a assessment framework that assesses whether the activities pose no significant effects or when the expected effects are significantly compensated or mitigated.

Laws and regulations

In 1968, the first **Natuurbeschermingswet (NBW)** was introduced. This made it possible to impose the label of protected nature monument on private and public areas. In 1974, this led to the first protected nature monument in the Waddenzee area. In 1998, the new NBW was established by law, and implemented in 2005. This new law was established to implement the guidelines of both the Bird Directive and the Habitat Directive.

In general, this law prohibits all '*projects or activities without a permit that deteriorate the quality of the natural habitats and the habitats of species or have a disturbing effect on the species in the area*' (De Waal 2007: 39). To require the permission to employ this

activity, an permit for the specific activity is not enough. This means that a permit for fishing, mining or use of the water is not enough for a resource user in the Waddenzee area to employ an activity, an extra permit is necessary, a so called 'Natuurbeschermingswetvergunning'

The granting of these permits is dependent on two assessment frameworks. The 'habitat assessment', which assesses if certain activities have significant effects on the natural values and characteristics of an area. The 'significance' is assessed by the mandated authority (the provincial government or the ministry of EZ). The accumulation assessment is the other assessment framework, it assesses whether the effects of the own activity can, in combination with already existing activities, cause harm to the natural environment. Another feature of this law is the possibility to close of certain areas when a species or habitat has been threatened. The **Flora en Faunawet** is the other law that was introduced to implement the Bird Directive and the Habitat Directive. This law is meant for specific species, as a supplement for the Natuurbeschermingswet which applies for entire regions.

Other (international) regulatory frameworks

As explained before, **Natura 2000** is derived from the Habitat Directive that prescribed a coherent ecological network in Europe. It was not until 2007 when the third PKB Waddenzee was established, before a design concerning the Natura2000 infrastructure was constructed. The first design involved the boundaries of the Natura2000 Waddenzee area and the goals for the preservation of nature. In 2008, the plan for closure of areas in certain cases (as was established in the NBW) was implemented and provided with some behavior guidelines. The specific guidelines for the Waddenzee area design of Natura2000 entails the expansion of mussel beds, salt marshes and seagrass fields within the borders of the area specific possibilities. To implement Natura2000, each six years a 'beheerplan' is designed with the measures and means to preserve nature and also to assess external activities and regulatory frameworks (Oosterveld 2011: 34-35).

Since 2009, the Waddenzee area is officially assigned a monumental status, as 'World Heritage' by **UNESCO**. This however did not lead to new regulatory regimes. Also, the Waddenzee area is part of the **EHS**, which is an all-encompassing network of nature protected areas.

3.5 Reflection

This paragraph provides a reflection on the previous paragraphs. First, a general reflection will be provided which will abstract some general patterns that can be found. Second, the Waddenzee case will be reflected on from the point of view of the concept of 'highly regulated policy arenas'. Third, this chapter will be closed off with an account of how all these paragraphs and sub paragraphs support the statement that the Waddenzee area is a social-ecological system.

3.5.1 General reflection

Some major lessons can be derived from this short historical overview.

Firstly, there is a clear tension between the different scales of governance. In the 90s, there are some conflicts between the provinces and the central government with regards to the division of authority. Also, these tensions lead more than once to the proposal of one overarching governance body, ranging from the Waddenwet, the Plan Alders and the plan for an overarching Natural Park Waddenzee. However, these plans are never implemented due to the perseverance of the government with maintaining the 'Huis van Thorbecke', the structure of central, provincial and municipal governments.

Secondly, the governance structure is characterized by adaptability and change due to external shocks and new developments. Both the organizational structures, as the plans and laws that govern them, are changed due to new political and social developments, as well as evaluative reports. The commissions Meijer, Mazure and Staatsen all had a clear impact. But also the increasing importance of nature protection and conservation policies as well as the role of European regulations.

Thirdly, the role of the PKB as the mechanism for integrative policymaking with an clear effort of balancing the different interests and activities in the area. The role has shifted over the years, and although the interest of nature protection prevails over other activities by law, the mechanism for balancing interests was kept in place. Moreover, economic interests have been taken increasingly more seriously, and this is accepted as long as it does not damage the nature. This shows the willingness of the government to maintain the Waddenzee area as an area of multiple interests and activities.

3.5.2 The Waddenzee area as a ‘highly regulated policy arena’

This subparagraph serves to reflect on the concept of ‘highly regulated policy arena’ with the aforementioned historical developments and regulatory description in mind. The characterization of this concept, i.e. '[The] provision of public services (...) through *transparent processes* of *ex ante electoral contestation*, *legislatively sanctioned executive decisions*, *operational activity by a meritocratic and neutrally competent civil service*, and *ex post scrutiny by political principals, a free media and civil society*' (Baker et al. 2009: 80), will be guiding in this effort.

First of all, the *transparent processes*. Not all of the processes of legislation are of course transparent in the Netherlands. Though because of the highly controversial nature of some of the resource related activities, most decision making processes are highly politicized and therefore become quite transparent. The *electoral contestation*, i.e. decision making through parliament, can be witnessed publicly and is therefore well known. The amendments on the third PKB, which showed the increasing economic interest in the Waddenzee area, prove that.

Secondly, *legislatively sanctioned executive decisions*. Most of the official decisive power lies within the legislature of the ministries and some of the provincial government. Especially concerning permits, and the monitoring of compliance.

Third, *operational activity by a meritocratic and neutrally competent civil service*. Operational activity is partly employed by the civil servants of EZ, by means of the Waddenunit. But also some other governing authorities like the civil servants from RWS and Staatsbosbeheer are responsible.

And lastly, *the ex post scrutiny*. As described, a lot of reports from former *politicians* that were active in the Waddenzee area (Staatsen), or politicians that were active while writing it (Meijer) are appeared throughout the years. But also from the *civil society*, for instance the scientific community, but there was also the report from Berenschot. The *media* of course plays its part, partly because it is used by politicians to politicize some issues, partly by angry actors to put issues on the agenda. This is however not explicitly shown in the case description, but is part of the Dutch political landscape.

Besides the characterization that has been given, the 'highly regulated policy arena' is also described before as a highly regulated principal agent relation with a high incidence of rules. These descriptions can be applied to the Waddenzee case as well. As showed, there is a lot of tension with respect to the delegation of authorities. Provincial governments are granted more capabilities, but the main tasks lie with the central governmental actors. This might be

attributable to the fact that they are still politically accountable. They do not trust other governing actors too much because of the *ex-ante electoral contestation* and *ex post scrutiny*. Also, it is clear that the Waddenzee area is characterized by a large sum of rules and regulations, as is shown in paragraph 4.3.1.

In sum, the Waddenzee area clearly can relate to the general depiction of a highly regulated policy arena as described in our theoretical chapter. In that sense, the statement that the Dutch government is operating within a highly regulated policy arena when dealing with the Waddenzee area is hereby supported.

3.5.3 The Waddenzee area as a ‘social-ecological system’

In this subparagraph, a last concluding remark will be provided on how the Waddenzee case fits to the description of a social-ecological system.

First, the *set of critical resources*. The choice was made in this study to focus on four main resources, although there are a lot more. The resources that were described, varied in its specific value. Nature protection of course showed the natural values, gas extraction is a clear example of a resource that shows great socio-economic value. And fishing and recreating can be considered both a socioeconomic as well as a cultural value. All these resources are regulated by many different ecological and social systems, but they are all clearly interrelated. Each activity of one of the resources affects another.

Secondly, the *perpetually dynamic and complex system with continuous adaptation*. One of the elements that clearly stands out of the historical development of policymaking in the Waddenzee area, is that it is complex and dynamic. A lot of different actors, interests, and resources are continuously interacting in many different regulatory processes. Regulatory bodies like the RCW and the CCW, and later on the Beheerraad are established, evaluated and sometimes abolished and replaced when they are not performing well.

At the same time, the way resources are looked upon and regulated is also not fixed. The interest for nature protection has risen in the 60s and 70s, which stimulated more regulations to support this. But in later years, economic interests gained more attention and were incrementally taken seriously in policy making again. Those dynamic processes are all shaped by the complex interaction between natural, cultural and economic interests and all the regulatory bodies, rules and regimes that are accompanied with this process. The continuous adaptation also takes its form in the constant scrutiny by different scientific, political and other types of actors that evaluate the regulatory processes and call for action of some sort.

Thirdly, the *system defined at several scales that is hierarchically linked* is effectively demonstrated in paragraph 3.4.2. Not only are some of the regulations derived from guidelines that have a larger spatial dimension (via the EU), but they are also clearly hierarchically organized. The laws that protect nature, like the NBW and Natura2000 are clearly guiding and other interests and activities that cannot be conducted with these laws in mind must be aborted.

In sum, together all those elements prove effectively that the Waddenzee area is '*a coherent system of biophysical and social factors that regularly interact in a resilient, sustained manner*' (Redman et al. 2004: 163).

4. Method

In the previous sections, the problem definition and question were provided, backed by theoretical considerations and the description of the case study that strengthened these theoretical considerations. In this chapter, the exact strategy will be explained in detail through which the problem and question will be addressed, and through which the theoretical considerations will be funneled. The first paragraph will explain how exactly the SES-framework will be used in this study. In the second paragraph, the approach to data collection will be described. In the third paragraph, the variables that are chosen for this research will be elaborated upon.

4.1 Use of the SES framework

It is imperative to show how the framework can be used in relationship to the theory, the question and the case. The objective of this study is to show how the government, characterized as operating in a highly regulated policy arena, functions within the social-ecological system of the Waddenzee area. The choice was made to use the SES framework to structure data on the case of the Waddenzee area through the categories of resource systems and units, the governance system, actors and interactions. After this structure has been established, the design principles of Ostrom will be used to test whether or not the institutional environment within this social-ecological framework performs according to the conditions of the design principles.

4.1.1 Chosen categories

First, the choice to focus only on these aspects of the SES-framework must be defended. The original SES-framework consists, beside the aforementioned categories, also the categories of

S (social, economic and political settings), O (outcomes of action situations), and ECO (related ecosystems). Each of these categories has a great salience when one examines the social-ecological system of the Waddenzee area. Two considerations however restrain the options of this research.

Firstly, time and money constraints within this research project. Secondly, the specific focus points that are chosen in this study. O, for example, is very useful if one wants to measure performance of some sort. Ranging from social to ecological performance. This study however does not aim to establish causal relations between institutional design and performance. It aims to investigate qualitatively how the government functions in this system. Performance indicators are not needed for this task.

As for the category of S, of course the settings in political economic and social terms are important to consider. However, the salient information that would be acquired by using this category can also be acquired through some of the other categories. Economic settings can be examined through the 'economic value' and 'economic dependence' variables within the A category. Political and social settings will also come up when discussing some of the constitutional governance arrangements. Therefore, it is not necessary to instate a separate category.

Lastly, the ECO category. It is very clear that other ecosystems have very large effects on the Waddenzee area. However, for answering the research question to what extent the Waddenzee area performs according to the design principles of Ostrom, and how the governmental position can be reflected upon through this result, the added value of this category is questionable.

4.1.2 Use and definition of variables

Another choice that needs to be defended, is how and why this study makes use of the different variables and categories. Very important on this behalf, is the notion that this study uses very loose definitions of the variables and categories. This is in line with the tradition of the SES-framework, and how it is mostly used. The SES framework should be used as an analytical tool for descriptive inquiry, in that sense the definitions of what exactly a resource system or unit is should not be that rigid. Moreover, a lot of categories within the SES framework have changed over the years.

One example of this is the category 'actors' in the SES framework. This category was invented later on to replace the category of 'users'. This was, according to McGinnis & Ostrom (2014: 6), because the '*SES framework drew the attention of researchers*

investigating diverse types of resources'. Therefore, they define actors as follows: *'the characteristics of the individual or corporate users of the common-pool resource or third parties who are not direct users or consumers of the product or service in question'* (McGinnis & Ostrom 2014: 6). By defining actors as such, all actors who are directly or indirectly involved in activities that are related to the research system and unit are involved. This made the SES framework suitable for a different type of research. The framework serves as a descriptive inquiry tool, not as a critical measurement tool. The categories and sub-tiers help to structure the case study at hand, but must not be applied too rigidly. The value of this framework lies in the multiplicity of adaptation options.

The same applies for the definition of resource and resource system. Gas, recreation or nature protection are not easily subscribed to the label of resource systems or units. This can be illustrated by looking at some definitions. Resource system, *'the biophysical system from which resource units are extracted and through which natural dynamic processes regenerate the levels of the focal resource'* and unit, *'the characteristics of the units extracted from a resource system that can then be consumed or used as an input in production or exchanged for other goods or services'* (Basurto et al. 2013: 1376), are characterized by the renewable nature of the resource. Gas, in this respect, cannot be considered as a resource unit per se. But important elements like nature protection and recreation are also impossible to fit in these definitions. In this study however, the choice was made to consider both gas, fish, recreation and nature, as resources within the category of resource systems and units. This also in line with our definition of resource use, as all resource related activities and interests.

In the same fashion, the variables and what they entail must not be applied too rigidly. In the paragraph 4.3, for each of the chosen variables there will be a description of what it entails within the scope of this study. This however does not mean that there will be very strict assessment of these variables. The variables will be used to focus on specific aspects of the categories that are useful to assess with the design principles in mind. They structure the data-collection and the eventual analysis of the data. They are in no way themselves calculable or measurable. The reason for this will be explained in paragraph 4.2

4.1.3 Framework and design principles

After it has been established that this study uses only the relevant categories, and doesn't apply too rigid definitions of variables and categories, this paragraph will serve the purpose of showing how the SES framework relates to the design principles in practice. As discussed before, the SES framework serves as a diagnostic analytical tool to structure the data within

relevant categories. The design principles serve as the assessment criteria through which the Waddenzee area will be assessed.

In concreto, the SES framework along with all the categories, sub-tiers and variables will provide the general overview. By organizing the data in this fashion, the interrelations between all the different systems and actors will be more illuminated. However, the choice for the exact variables that will be used, is made on the basis of the design principles. In figure 4 the SES-framework is depicted with variables from the first sub-tiers. It is important to stress however that not all of these variables are necessary. Each individual case has an unique context and therefore the use of variables should be tailored according to the specifics of the case involved.

With the design principles in mind, the choice must be made for each of these variables if they will be included in the study. In paragraph 4.2, this choice will be made and defended. The chosen variables will be assessed only in a qualitative sense. That is, the assessments that are made are on the basis of stakeholder opinion, and not on the basis of quantitative scientific data. For instance, when the variable of 'economic value' is assessed, this variable will be described according to the opinion of relevant stakeholders and not on the basis of factual reports or data.

Of course, this approach has some limitations. Stakeholders are biased according to their specific interests. This research however is meant to unravel the interactions and interrelations within the social-ecological system of the Waddenzee area. It is not concerned with the exact figures of variables like 'economic value' but with the perceived outcome of this variable. It is the possible perceived low economic value of a resource, which makes actors perceive the rules as not congruent with the local conditions and therefore not in line with the design principles. The actual facts are in that sense less relevant. Moreover, (scientific) knowledge is never fully value free. So perceived knowledge is in that sense not that much different from actual knowledge, and it serves the purpose of this study perfectly. How data is collected in practice with the design principles and SES framework in mind, will be discussed in paragraph 4.3.

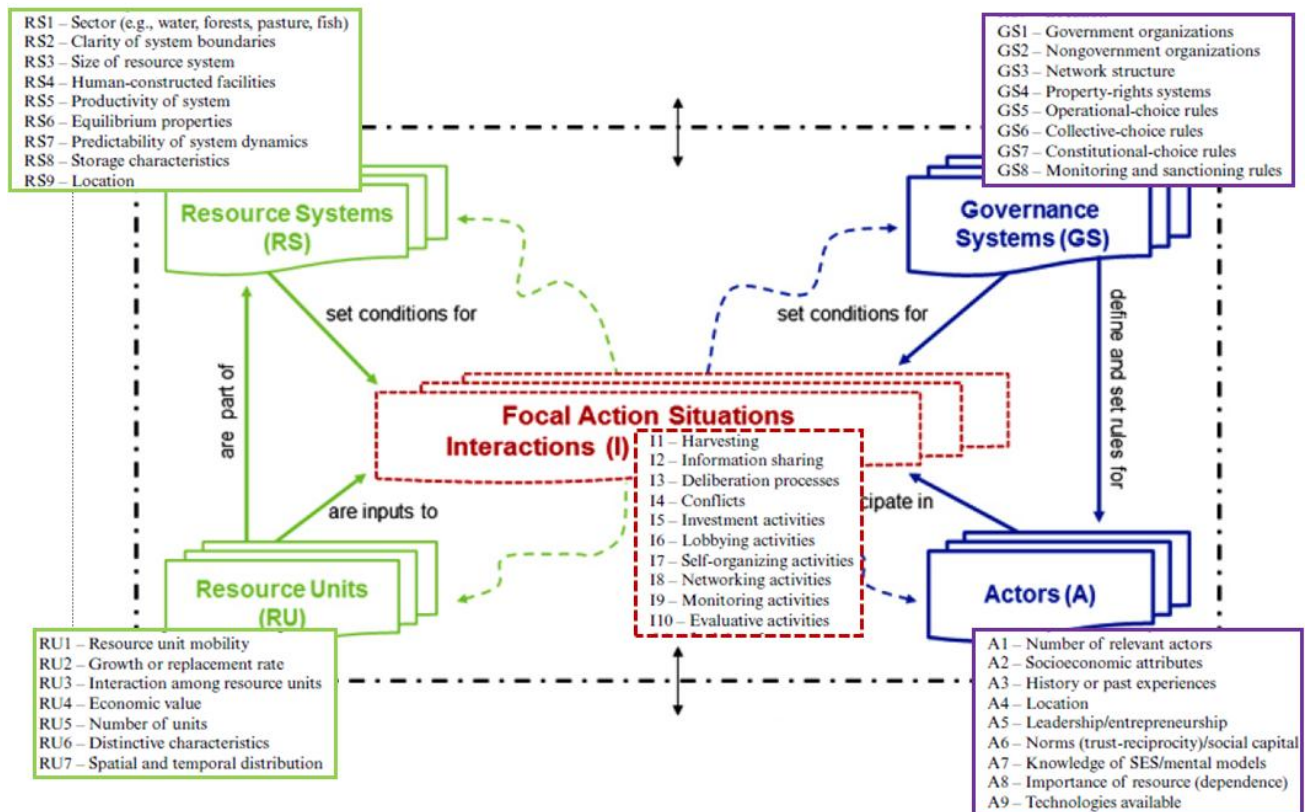


Fig 4. The SES framework with the respective potential variables per category.

4.2 Variable selection

The selection of variables will largely be based on a congruence between the SES framework and the design principles and also on the local context of the Waddenzee case itself. The variables that are best suited to critically assess the design principles are chosen, with the input from the historical overview of the Waddenzee case in mind. To do this in an orderly fashion, it makes sense to make a graphical depiction of the SES framework with the respective possible variables, and then couple the design principles to this framework (see figure 4) Now we can look more closely at the possible variables and choose which ones are most suited. The chosen variables will be discussed alongside the respective design principles.

Clear boundaries

The obvious choice from the resource system category is the variable of *'boundaries'*. The design principle of 'boundaries' refers to the fact whether or not it is clear which actors can or can't use a certain resource. The variable of 'boundaries', refers to the fact whether or not the resource systems have clear boundaries. It seems like these definitions of 'clear boundaries' are very different. However in practice both definitions refer to the same. For the design principle of boundaries, it is necessary that each actor knows what resource he can and cannot use. The variable of boundaries refers to physical boundaries of resource systems. However, because of the definition of resources that is wielded in this study, both things refer more or less to the same phenomenon. Resource in this study are all resource related activities and interests. So to find out if the design principle of 'clear boundaries' is met, one must know if the physical boundaries of the resources, i.e. if each of the different actors knows what specific area he can use for its specific activities, are clear.

The next variable is a bit complex, the variable of *'distinctive characteristics'*. The literature on SES-frameworks is not very clear on the exact meaning of this variable. In the first version of the SES-framework, this variable was dubbed 'distinctive markings' and referring to whether it was clear that a certain resource was different from another resource (Ostrom 2007). In this research, this variable is defined as whether or not the resource has been identified as a separate and valuable resource relative to other resources. For instance, if it is clear that tourism in a certain area has the same right to be considered as an important resource as nature. This again, can be considered as relevant in the light of the design principle. If one wants to assess whether or not there is a clear boundary between different resources, first one needs to know whether the different resources are acknowledged for their own distinctive value by the community and the governing authorities. This variable was chosen specifically to make sure that there is a clear balance between economic and other values. This variable makes sure that this study can also assess whether or not activities that are not economically very relevant, will be taken seriously.

The third variable that was chosen in line with this design principle is the variable of *'constitutional rules'*. This variable refers to the rules laid down in the form of an institutional framework. As defined by Toonen en Staatsen (2004), governance in the Waddenzee area can be divided on three different levels. The operational (or management) level which refers to the goals that are established and the activities that are employed to achieve those goals. The collective choice (or governance) level which deals with the layer of governance that defines the goals and is accountable to the public for those goals. And lastly the constitutional choice

(or institutional) level which deals with the governmental organizations themselves that should be in itself reliable and sustainable. So constitutional rules will be defined in this study as the rules that are established by the governing organizations and authorities in the Waddenzee area. They are relevant for assessing whether or not the governing organizations in the Waddenzee area have established rules to make sure that there are clear boundaries between resources and the interest that accompany those different resources.

Congruence

This design principle states that the rules should be congruent to the local conditions. In practice this means the costs and benefits of each participating actor should be congruent (Termeer et al. 2014). The investment actors make should be appropriate to the gains. How this works in practice can be illustrated by the variables that are chosen for this principle.

The variables of '*economic value*' and '*productivity*' from the resource units category and of '*economic dependence*' and '*importance of resource*' from the actor category are all interrelated. The economic value of a resource, the productivity and the dependence that can result from this is relatable to the possible economic dependence.

For example a fisherman does not get a lot of money for the fish he catches (*economic value*) and / or he can catch less fish because of depletion or regulation (*productivity*). But the resource is very important (culturally or because there is no other economic activity possible) than it is clear that there is some form of economic dependence and also there is a problem with the congruence principle. In this way, the local condition of the fisherman is assessed and in the same fashion one can review whether or not the investments are congruent with the gains.

The definition is not as rigid as proposed here. It can also refer to other dynamics when considering another resource. For instance, a hypothetical gas extraction firm deals of course with a resource of great *economic value*. The resource is important because it's expensive to employ such an activity so they will not quickly shift to another resource. This shows a great *economic dependency* and in turn, shows the malevolent effects of rules that would limit the inflow of the resource for this firm. For this variable selection, there is some variance in the way this study labels some variables and in the way the variables are framed in most studies of the SES-framework. *Economic dependence* is in most studies a sub-tier of *importance of resources*. By rearranging this into two variables, there is extra emphasis on the importance of both economic and cultural values. Again it is important to stress that the

variables are valued according to the perception of interviewees. So it is 'perceived' economic value and 'perceived' productivity.

Collective-choice arrangements

This principle refers to what extent actors that are affected by the rules can participate in collective choice arrangements which can facilitate modifications of those rules.

The most evident variable in that sense is the variable of '*collective choice rules*' within the governance category. Placed by Toonen and Staatsen (2004) within the collective choice level of governance, this category deals with the accountability of rule making authorities to the public it regulates. In this sense it perfectly fits to acquire the assessment of this design principle.

Another variable that is related to this design principle is the variable from the interaction category, '*deliberation*'. Deliberation between actors is necessary for the possibility of modification of rules by those affected. Also '*truth/reciprocity*' from the actor category is necessary. Only when there is a sense of trust and reciprocity between actors, there exists a climate in which the modification of rules is possible.

Monitoring

The design principle of monitoring is quite straightforward. It prescribes the existence of monitoring rules which result in actual monitoring activities. Also the monitoring should be exercised by actors that are accountable to the using actors, or part of the user actors themselves.. Therefore, the choice for the variables of '*monitoring activities*' and '*monitoring rules*' from respectively the I and GS categories, is a logical result. The first variable refers to the monitoring itself, the second variable refers to the official rules that are in place that guide this process.

Graduated sanctions

The graduated sanctioning principle can be defined just as easily as the previous design principle. It refers to the extent to which the sanctions that are bound to the rules in use have a gradual nature. In other words, they have an incremental character. The GS variable of '*sanctioning rules*' is sufficient to capture the meaning of this design principle.

Conflict-resolution mechanisms

This design principle is incorporated in the institution when there is a basic conflict resolution mechanism available which can quickly and cheaply resolve possible conflicts between diverse actors that are involved in the resource governance of the Waddenzee area. The variable '*conflict*' from the I category is suited to examine the exact nature of the conflict resolution mechanisms in place. By using this variable, the design principle of low cost conflict resolution can be assessed.

Autonomy of the local community

Authorities should give local communities the right so self-governance. In what sense are local governance practices actually cases of self-governance? This statement and question largely symbolizes the meaning of this design principle (Ostrom 2011). The variable of '*self organizing activities*' is the only chosen variable for the examination of this design principle. It's part of the I category and therefore can clarify in what sense there is room for self governing initiatives within the interaction of actors. In this sense, the autonomy of the local community can be assessed.

Nested enterprises

This design principle refers to the interconnectivity of the diverse governance structure in the entire social-ecological system. In other words, within the whole area of the Waddenzee area, are there smaller institutional layers nested within larger institutional layers?

Because this design principle clearly refers to the networks of different institutional arrangements, the variable of '*network-structure*' is therefore well suited. Another important variable is '*information-sharing*', when one can depict the extent to which actors share information, this can also offer some insights in whether or not this sharing of information happens between different governing organizations.

This design principal is a bit contested. It is meant only for large, complex systems. But it is not clear how to define large and complex. In her description of her case studies, Ostrom (1990) depicts all her cases as complex. Moreover, compared with other countries and areas, the Waddenzee area is not particularly large. However, for the Netherlands, it is quite large. The choice was made eventually to take this design principle into consideration as well. However, some adaptations are made. It not only refers to the interrelation of multiple separate governance structures, but also to the capability of these separate structures

for participative purposes from outside these structures. This gives extra meaning to the concept of network-structure, and moreover to the role of networks in the Waddenzee area.

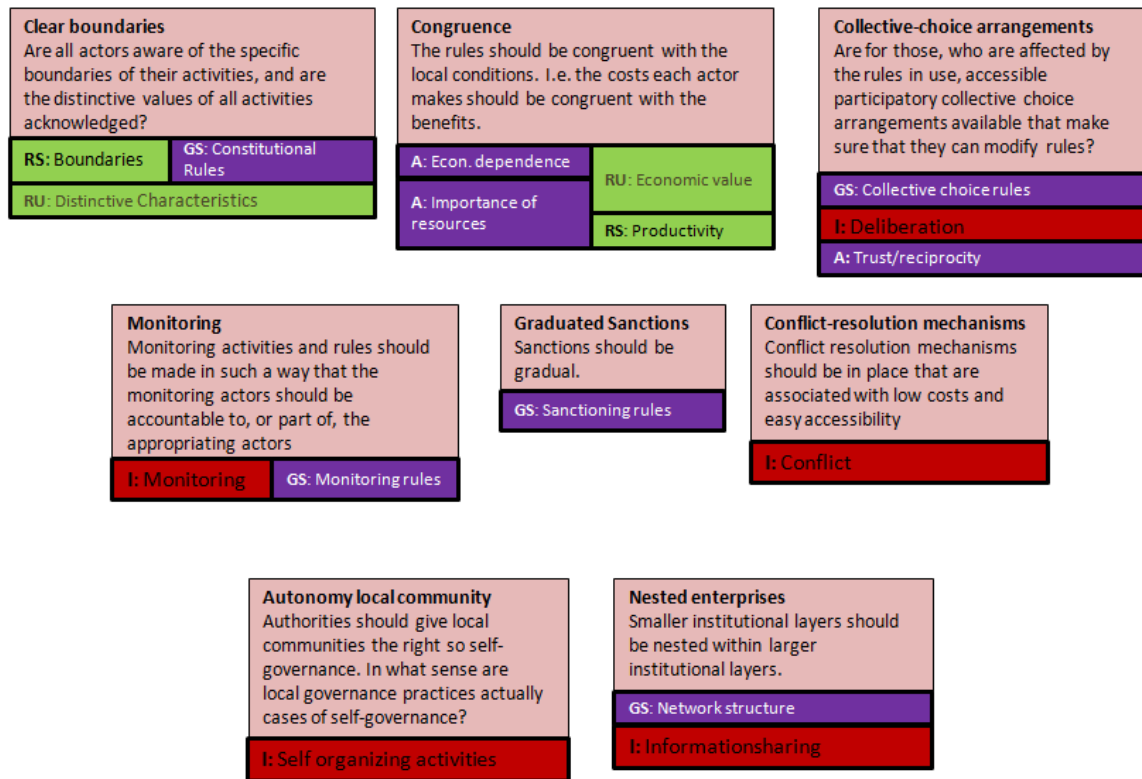


Fig. 5. The design principles with the chosen variables

4.3 Data collection

In this paragraph, some attention will be given to the exact nature and practical approach of the data collection. First, the case study design will be discussed. Second, it will be explained how the chosen variables will shape the interviews.

4.3.1 Exploratory case study

For this study, I have made the choice to conduct an exploratory case study of a single case. But even though it is one case, the focus will be on four ‘resources’ in order to gain the needed analytical depth. If one wants to assess a social-ecological system in a holistic fashion, it will not suffice to focus on one resource alone. Fishing activities is an interesting sector as such, but it would be most important to know how the management of this resource is connected to the managing of gas extraction and nature and recreation.

Most studies that use the SES framework look at one resource in particular, like fish (Basurto et al. 2013) or water by means of irrigation systems (Cox 2014). By analyzing that

specific resource in depth, they try to extract patterns that guide institutional behavior regarding resource management. This study however aims to investigate a social-ecological system on a more broad level. The explicit interactions between different actors, interests and resources drives this research, not the specific managing of one resource.

'Exploratory (...) case studies tell a story (what happened and how), but they do not pinpoint causality (why it happened) beyond identifying the chronology of events' (Mills et al. 2010: 137). Given this definition of an exploratory case study, this seems highly suitable for the purpose of this study. One of the characteristics of the SES framework, is that it deals with problems that *'are rarely attributable to a single cause'* (Basurto et al. 2013: 1366). The system is *'multivariable, nonlinear, cross-scale, and changing'* (Ostrom 2007: 181). In short, the SES is not suitable for any causal analysis. Moreover, by means of an exploratory case study, it is possible to identify the important elements which strongly resembles the description of Basurto et al. (2013: 1375) of SES framework research: *'organize information about a particular phenomenon or system of interest'*.

The data that will be used for analysis in this study, will be qualitative data. The link between exploratory case studies and qualitative research designs is rather clear. *'Exploratory research usually relies heavily on qualitative research methods because they are particularly well suited to the exploration of patterns in data that are not guided by a priori expectations or constrained by the operationalization of complex phenomena'* (Mills et al. 2010: 154). So, using qualitative data allows this study to examine the complex processes with more detail. This in turn provides the possibility to *'understanding its complexity in as complete a way as possible'* (ibid).

4.3.2 Semi-structured interviews

In paragraph 4.1, it was explained how the variables and the design principles must be understood in the light of this research. In this section, it will be explained how the variables and principles will guide the interviews. The interviews will be designed in a semi-structured fashion. This means the questions will be asked in the form of overarching themes, through which the respondents can openly associate and elaborate on the specific components. These themes are based on clusters of design principles.

The interviews will be divided in three themes. The relation between governing actor and resource user, which entails the design principles of clear boundaries and congruence. The act of governing itself, which entails the principles of monitoring, graduated sanctioning and conflict resolution. And lastly the theme of participation and self-governance, which

entails the principles of collective choice arrangements, rights of self-governance and nested enterprises. The variables can be used to focus these themes, and to make sure that the respondents shed their light on all relevant components of the design principles, and also to make sure they don't drift off.

Also, the chosen variables can be used according to the situation at hand, and the salience of these variables can differ from one respondent to another. For instance, resource related actors are expected to have more sector specific knowledge than (some) governance related actors. On the other hand, as far as rules and regulations and processes that revolve around these factors are concerned, the governing actors can be expected to know more about that. So it can be useful to probe each respondent according to their expected knowledge.

In figure 6 a list is provided with all the respondents. The respondents were chosen on the following criteria. The organizations they represent have either an important governing role or an important role with respect to resource use. Secondly, within this organization, they are responsible for work related activities in and around the Waddenzee area. Third, they were willing to cooperate in an interview. In the next chapter, the interviews with these respondents will be analyzed. Of course, some respondents will have a very specific area of expertise, and cannot contribute on every level. So the analysis will not be framed in terms of questions and answers (Q&A), but in terms of the overall patterns that emerged from these interviews. For each design principle, the main patterns shall be described and analyzed by means of the data of the interviews.

Interviews			
Governing actors			
Type of governance	Actors	Interviewees	Function in organisation
Central government	Ministry of Economic affairs (EZ)	Dhr. Jaap Verhulst	'Regioambassadeur' for the Waddenzee (representative of the central government for the Waddenzee area)
	Rijkswaterstaat (RWS)	Dhr. Floris van Bentum	Aviser environmental management for the north of the Netherlands
Other governing organisations	Staatsbosbeheer (SBB)	Dhr. Michiel Fiet	Program manager Waddenzee
	It Fryske Gea (IFG)	Dhr. Henk de Vries	Director
	Provincie Fryslân (PF)	Mevr. Renate Kern	Coordinator Waddenzee
		Mevr. Waldina Hulshoff	Secretary 'Regiecollege Waddenzee' (RCW)
Resource actors			
Resource	Actors	Interviewees	Function in organisation
Fishing	PO-Mosselcultuur (PO-M)	Dhr. Hans van Geesbergen	Secretary of the board
Gas	Nederlandse Aardolie Maatschappij (NAM)	Dhr. Pieter van de Water	Juridical employee for projects in the Waddenzee area
.Recreation	Algemene Nederlandse Wielrijders Bond (ANWB)	Dhr. Eric Neef	Regional manager public affairs for the North of the Netherlands
Nature	Vogelbescherming (VB)	Dhr. Fred Wouters	Director

Fig 6. List of respondents

5. Analysis

This chapter will present and analyze the data that was collected through semi-structured interviews. Because of the nature of the research design, the interviews are only structured by general 'themes' and sometimes probed by direct questions based on the specific variables. Therefore, a general structure of data analysis, by means of attributing scores of some sort, will not be provided. The data will be structured by the design principles, and the respective variables. However, the structure of how the data is presented can differ from one paragraph (and design principle) to another. The common element is the presentation of the data in terms of the chosen variables, accompanied with preliminary observations and cautious conclusions. The data is presented in the form of accounts from the perspective of the organisations that have been interviewed. Those organisations are referred to by abbreviations, that are explained in the abbreviations section of this thesis, and also demonstrated in figure 6. In the next chapter, the observations and conclusions from this chapter will be further elaborated upon and linked to the research question.

5.1 Clear boundaries

The analysis of the design principle of 'clear boundaries' will be structured in the following fashion. The first subparagraph will discuss the variables of '*constitutional rules*' and '*clear boundaries*'. First, a distinction between activities on a small and on a large scale will be explained, followed by illustrations provided by interview data. The second subparagraph will discuss the variable of '*distinctive characteristics*'. This subparagraph is structured by those actors that feel more valued, and actors that feel less valued.

5.1.1 Constitutional rules and boundaries

This paragraph will present the data for the variables of '*constitutional rules*' and '*boundaries*'. It deals with how the rule making of the institutions work in practice, and how this affects whether or not users know where they can and cannot employ their activities.

As far as the variables of '*boundaries*' and '*constitutional rules*' are concerned, the following applies. The laws and regulations that cover the boundaries of all the different activities can be perceived on multiple scales. With respect to small scale use, like recreation and small farming, there is a dynamic relation between regulators and users. The more regular and frequent the use, the better the relationship which has positive effects for the clarity of boundaries. On a larger scale, there is a problem with the rigidity of regulations. Large infrastructural projects are severely assessed through all the regulatory frameworks,

and often rejected on the basis of one aspect of the entire ecosystem, while a more holistic view would show that the project is in fact beneficial for all actors.

However, some regulatory actors (like PF, and RWS) show a tendency to go beyond the strict interpretation of the regulations. For political controversial issues like gas extraction and clam fishing the regulatory regime is quite strict, but also for these resources there is room by means of covenants to give space to the industry to adapt their means of production when it is not compatible with the other activities in the area. In general, the strictness of rules is perceived as a positive factor by these actors.

To illustrate these observations, some interview data is presented below from the perspectives that were mentioned. So one section will describe the problematic situation of specific policymaking while holistic policymaking would be more appropriate. One section shows some examples of dynamic policymaking that transcends this aforementioned problem. And one section will illustrate the beneficial effects of heavy regulation on political controversial resources.

Holistic versus specific interests

Laws and regulations in the Waddenzee area can, according to SBB and IFG, be too rigid. This is especially relevant when considering projects that can actually improve the state of nature, but are officially not covered by the laws in place. In these situations, specific interests prevail over holistic interests. A couple of examples can be mentioned.

Firstly, the thistle regulatory regime in the Netherlands require the trimming of the thistles when they overgrow a certain standard. But the thistle growth always aligns with the breeding season of birds. Young birds often seek shelter in the thistles and are then killed by the trimming. This is prohibited according to the NBW. This is an example of two laws that are directly interfering with each other which makes the boundaries of activities unclear.

Another example is the blocking of the admission for a pumping station. The Raad van State (RVS) blocked this request of the Waterschap Friesland because someone within the area has an acre of ownership. This is an example of only one small issue that overrules the more holistic, integrated issues at hand.

A third example concerns the renewable energy of wind turbines in the North Sea. These turbines must be connected to the electricity network somewhere. The shortest road for this connection, and the one with the least trouble for natural habitats, is through Lauwersoog. However, the connection cannot be established due to restrictions in the

Waterwet. Officially because this would hinder the shipping industry. In this case, the law indirectly favours the shipping industry above nature.

These examples show how the densely regulated area of the Waddenzee area sometimes can constrict plans that in a holistic sense can cause an improvement for multiple actors and activities, on the basis of laws that cover only a specific aspect.

Other respondents only partly agree. The PF state that they are assessing the admission of certain activities through the legal frameworks at hand. They have very specific competencies with regards to permissions, enforcement of compliance, they assess all activities to the PKB, the NBW. Within those frameworks, activities are possible. In general, this assessment functions well, however some users are not always sure what institution can give what specific permit. Also, they perceive the permission procedure as too long and bureaucratic. Partly, they recognize the problems of too rigid regulations. Especially the Natura2000 regulatory regime can be perceived as too narrow. An example of this is a project for a natural approach to keep the harbours accessible. Instead of dredging there is a possibility for an artificial lake that will solve this problem in a natural fashion. This is cheaper and safer. It does not necessarily fit into the Naturo2000 framework, which makes it difficult to develop. However, both PF and other actors also have examples where rulemaking is dynamic.

Dynamic rulemaking

The PF claims that the opportunities for dynamic rulemaking are increasing. According to PF, the boundaries of the legal framework are clear, but within the framework there is room for fine-tuning. PF claims that this can be accomplished by pilot projects, to specifically investigate how to deal with regulations. Most of these plans are made with the cooperation of all the actors, both the NGO's as the users that want to employ a certain activity that officially is against the law. By means of mediation, nature organisations are convinced to have some patience in order for the using actor to have time to adapt and make their activity more sustainable. An example of this is the shrimp fishing industry. They were allowed to fish a couple of months without a permit. They were not prosecuted because the mediation process was still in place.

RWS refers to the same ways of dealing with the legal framework. When assessing a certain activity they assess whether it fits the specific legal frameworks. Most regular users know these frameworks and behave accordingly. However, RWS states that they are increasingly looking for new ways for the admission of permits, with a less steering and

correcting role of the government and more responsibilities for the companies involved. They are experimenting with this new type of permits in the harbour of Delfzijl.

The ANWB agrees that the laws and regulations used to be very rigid. For their specific sector however this has changed with the introduction of more digital means of regulations. For the tourist sector, there used to be a topographic map which showed what places people could and could not enter. This map was only published once a year. Now this map is digitalized and updated very frequently. This makes the relation between regulator and user more dynamic.

This description is supported by EZ. The Waddenunit of EZ has four boats that are frequently investigating the Waddenzee area. They have a direct relation with most of the fishermen, tourists and some farmers. In general this leads to very clear boundaries, on what you can and cannot do. However, when the activities of users are more incidental, this has consequences for the clarity of boundaries and rules.

Positive effect of rigid rules

For the more large scale resources that are itself political issues surrounded by controversy, like gas extraction and clam fishing, a more specific story can be told.

The NAM states that there is a high density of rules, they are however not necessary dissatisfied with this situation. Next to the necessary NBW they have specific mining laws and regulations which they have to comply. The NAM however has a strong interests in strict laws and regulations, if they provide clear norms. On these norms, the NAM can be accountable. So the heavy regulation itself, they don't perceive as a problem. But right now, the NAM perceives some laws, like the NBW, as too fuzzy. The clarification of the law is ten times as thick as the law itself. There are no clear frames for terms like 'significant effects'. Therefore, when you go to court it is always a surprise how the judge interprets the rules.

PO-M states that the clam fishing industry was forced to change their means of production in 2008, otherwise their permits would be invoked. Therefore they participated in a covenant with nature organisations and the government. It was agreed that the problems were discussed and solved within mediation processes, and not by means of court. They also agreed that alternative sources for clam seed had to be found. But most importantly they agreed to the closing off of some areas of the Waddenzee area for clam fishing. In 2009, 20% of clam bank area was closed off. In 2013, another 20% was closed off. PO-M is very content with the covenant and perceives the closed of areas as a prove of their willingness to comply

to the rules. In this sense, they agree with the NAM that clear and strict rules are not constraining per se but can be beneficial.

5.1.2 Distinctive characteristics

Another variable that needs to be considered in this section, is the variable of '*distinctive characteristics*'. This variable refers to whether resources are perceived as unique and valuable resources in general. This paragraph will be divided in accounts from the perspective of the different sectors that are under scrutiny in this study.

Gas extraction and clam fishing

Especially with regards to clam fishing and gas extraction this variable is relevant. Most conflicts surrounding the Waddenzee area occurred in relation to these resources. However, according to the PO-M and NAM, there is a shift in how they are perceived by NGO's. In general, this can be attributed to scientific research. Most of the research has showed that gas extraction and clam fishing are not all bad. According to PO-M, clam fishing even has a positive effect on the nutrition of birds. The clam productivity is 15% higher when there are clam fishers involved, then when they are not around. As for the NAM, most research has showed that there is not a necessary danger of gas extraction. Moreover, the value of the NAM is recognized because of their monitoring activities, the knowledge that results from these activities is greatly valued by the scientific community. Also, the money that is generated through the NAM is being reinvested in strengthening and preserving nature through the Waddenfonds.

Tourism and nature

However, from the nature and tourist perspectives there are some concerns. The VB observed that more value is attributed to the economical activities. In 2008 when the VB won the court case against the clam fishing industry, considerable political pressure was unleashed at the VB. Politically the VB was framed as the organisation that had a problem with the clam fishing sector, instead of addressing the non-sustainable production method of the clam fishermen. The ANWB states that the tourist sector is sometimes overlooked in the bigger governance structures and deliberation processes. For instance they are no longer represented in Programma Rijke Waddenzee (PRW). Another example was the nature park Lauwersmeer. There was a deliberation structure for this park and the ANWB was part of it. But after some

time, this structure was abolished and replaced by a steering group with only the municipality and the provincial government.

5.1.3 Conclusion

The design principle of 'clear boundaries' can be assessed from multiple perspectives. As far as the variables of '*constitutional rules*' and '*boundaries*' are concerned, the perspective of the small scale user that is in direct contact with governing actors is rather positive. The perspective of the somewhat larger activities that deal with inflexible rulemaking is quite negative. On the other hand, the organizations that are invested in resources that are surrounded by political controversy are very positive about the rules because it provides them with clear guidelines and proof of their compliance.

The variable of '*distinctive characteristics*' differs also per actor. The larger sectors are quite positive about how other actors perceive their activities, the smaller sectors are quite negative.

5.2 Congruence

This design principle refers to the extent to which the local conditions are congruent with the regulatory regime. In other words, each user should be able to receive benefits of the activities they employ that are congruent with the costs. To investigate this design principle, four variables were chosen. '*economic dependence*', '*productivity*', '*importance of resource*' and '*economic value*'.

First, these variables will be reflected upon from the point of view of the main resources that are under scrutiny in this study. After that, the situation of all these sectors will be reflected upon from the point of view of the regulatory actors in order to see if regulations are congruent with the conditions. The paragraph is divided in subparagraphs which presents the data from the specific sectors that were under scrutiny. Nature is exempted from this analysis, because most economic variables don't apply to this sector. Important with respect to congruence and nature, are the distinctive characteristics that are already discussed in the previous chapter. Within these subparagraphs, the separate variables are discussed. In the last subparagraph, it will be discussed whether or not the rules in the Waddenzee area are congruent with the local conditions on the basis of the data.

5.2.1 Tourist sector

First the tourist sector will be discussed. The description of the variables for this sector are provided by the interview with the ANWB. As far as the '*economic value*' is concerned, the tourist sector never had a large share in the economic performance of the Waddenzee area. Especially on the shore, of Noord Holland and Groningen there is in general an economic decrease in activities. However, in absolute sense, the tourist sector is increasing in this area.

The '*productivity*' is increasing, mainly due to actors that employ a second or third activity. Farmers that start a bed and breakfast or a gallery. More importantly, these activities are no longer incidental. The initiators are forming alliances that work together. For instance, the 'Hotel de Marne'. This is not a hotel in the regular sense, but a chain of small bed and breakfasts that actively work together.

The '*importance*' of this '*resource*' is not only expressed in purely economical sense but also in cultural sense. Fishermen offer their services as a captain for tourists to show them around in the Waddenzee area. In this way, people are better informed about the Waddenzee area and know better what they should and should not do.

The '*economic dependence*' variable differs a bit for the islands themselves and the shore regions in Groningen, Friesland and Noord-Holland. In general, the islands are economically speaking more prosperous than the shore regions. They are however dependent on tourist activities. On the shore in turn, they are coping with a lot of unemployment due to a lack of economic activities in this area. So, even though the tourist activities on the shore don't make up a high share of the total economic activity, it might be one of the few opportunities for a better economic position. In that sense, both areas are somewhat economically dependent on tourism.

5.2.2 Clam fishing sector

Secondly, the clam fishing industry will be discussed. This industry is discussed from the point of view of the PO-M. The '*productivity*' of this sector is largely decreased in the last couple of years due to regulations and the closing of certain areas. Next to the closing of areas, there is another reason for decreasing productivity. The cultivation zones are decreasing due to the general dynamic of the Waddenzee area, and also partly by the artificial insertion of sand. According to PO-M, the government used to feel responsible to keep the amount of cultivation zones to a specific level, since 1995 this stopped.

In the covenant it was stated that with 40% closing of areas, new cultivation zones should be made available. This is however increasingly difficult. A lot of acres of ground are

already vetoed by NGO's. Only 50 to 100 acres are expected to be found. After 2019 this will lead to more scarcity and therefore more problems. The *'economic value'* is decreasing too. The new sustainable way to cultivate clams costs 85 cent (in Euro) per kilo, the old non sustainable way costs 10 cent per kilo. This makes it hard to make a economically viable business of clam fishing.

The *'importance of resource'* of clam fishing has a strong cultural dimension. People perceive the catch and consumption of clams as a cultural heritage, although that is mostly the case in Zeeland. After the clam seed is cultivated in the Waddenzee area, they are placed in the waters of Zeeland where they are eventually harvested. The *'economic dependence'* is therefore more present in Zeeland than in the Waddenzee area. When the clam fishermen lost the court case in 2008, there were a lot of protests in Zeeland. More than 3500 jobs were on the line. But in general, most of the clam fishermen are bailed out by the government. According to PF, already 30 of the 90 ships are bailed out. This makes the economic dependence less devastating, since most fishermen are compensated.

5.2.3 Gas extraction sector

Thirdly, the gas extraction. This sector is discussed from the point of view of the NAM. The *'productivity'* of gas extraction is decreasing. The NAM is increasingly invested in pursuing the smaller projects because the larger gas fields are already extracted. Even though it is technically and economically more viable due to the existing infrastructure to pursue these projects, the profits are still less than they used to be.

This decrease in *'economic value'* is even more deteriorated due to the regulatory pressure. Permits and monitoring are expensive, but also the accompanied delay. When one invests 10 million in a drill, the longer it takes before you can start, the less revenue one can expect. The *'importance of resource'* can be expressed in the influence it has on the Waddenfonds. Most of the budget for this fund is directly paid by the revenues of gas extraction.

The *'economic dependence'* of this resource can also be explained because of the increasing salience of the smaller projects. To be profitable, the NAM needs to invest more in these type of projects because the bigger ones are no longer present. But the smaller the expected gas output, the more expensive it is to extract it. Still, contractually they are obliged to extract as much as possible. Otherwise, the government can decide to invoke the concessions and the NAM loses the complete site of the Waddenzee area, including the

investments they have already made in the existing infrastructure and their monitoring knowhow.

5.2.4 Regulatory pressures

Now that the main resources are discussed from the point of view of the different variables that belong to the design principle of 'congruence', it can be useful to reflect upon this with the question in mind whether or not regulatory pressures are congruent with this local economical conditions.

First of all, the tourist sector. It is in general equipped with a more private-judicial code of honour which stipulates what tourists can and can't do. However, some new small scale activities are restrained by laws that are meant for another industry. One example is provided by PF. Shrimp captains that want to take tourists on their boat to show why the area is so special, have to apply to the same permits as the big shrimp boats. Research of the PRW showed that the small scale exploiter of the new opportunities of the World Heritage label, is increasingly constrained by the same regulatory pressure as the large industries. So, in this example the regulatory context is not congruent with the local conditions of the small touristic enterprises.

Another example is the introduction of powerboat races in the Waddenzee area. This example was provided by RWS. NGO's went to court to try to get this activity prohibited. But according to the legal frameworks, there was nothing against these power boat races. Still, even though he won the case, the organising agent decided to cancel the race because he lost too much money by going to court. In this sense, the legal instrument is a powerful tool for NGO's to reject activities that are legally sound, but which they perceive should not be exercised in the Waddenzee area. In this example, the legal framework was congruent with the local conditions, but the legal process to apply a permit was not. Even though the activity was perfectly viable, the costs to obtain a permit were too high.

5.2.5 Conclusion

The previous subparagraphs have presented the data on the specific sectors and the regulatory pressures associated with it. The question is whether the local conditions are congruent with the regulatory pressures. The answer differs per sector. The tourist sector is an economic factor with increasing importance. They are however sometimes restricted by permits that were meant for other industries and other types of users.

The clam fishing industry has seen its productivity and revenues decreasing due to regulatory pressure. However, the government did bail a lot of fishermen out. And agreements were made to increase the amount of cultivation zones. The position of the NAM is less favourable. They are obliged to obtain as much as gas possible, even from the smaller enterprises, while the costs of obtaining them increases due to permits and monitoring activities. Still, if they would not be able to make a profit they would have stopped their activities.

To make a definitive statement whether the rules are congruent with the local conditions or not, is arbitrary at best with the qualitative data at hand. However, there are clear problems associated with this design principle. The tourist sector is constrained by some of the regulations, and the NAM and the PO-M experience more economic damage while their revenues are decreasing.

5.3 Monitoring

The design principle of 'monitoring' is examined by means of both '*monitoring rules*' and '*monitoring activities*'. The '*monitoring rules*' refer to the actual legal obligations that are in place which obliges certain actors to monitor certain activities. The '*monitoring activities*' refer to the factual monitoring that occurs in the Waddenzee area. In general, both the rules and activities should be performed by actors that are accountable to the user actors, or conducted by the user actors themselves. Overall, this seems largely the case. The problem lies in the absence of an integral and holistic monitoring system of the entire Waddenzee area. In the next paragraphs, the data that is presented will illuminate these findings. First, the monitoring rules will be discussed, followed by the monitoring activities and lastly by the problems associated with a lack of holistic monitoring.

5.3.1 Monitoring rules

Firstly, the '*monitoring rules*'. According to SBB, there are three types of monitoring in the Waddenzee area. Monitoring out of curiosity, monitoring of operational agreements, and legally mandatory monitoring.

The first one is meant to investigate in a holistic fashion a certain area. It is mostly used to test and adapt certain scientific models. The second type of monitoring is to investigate the compliance of rules of certain actors in the area. And the last one is the type of monitoring that certain organisations are legally obliged to do because of permits or governmental tasks. 90% of all modelling is legally mandatory monitoring. The other two

become less and less present due to cut backs.

The legally obliged monitoring is organized in the following fashion. PF states that each governing actor monitors according to its own jurisdiction. Recreational activities like sailing are for instance completely monitored by the provinces because it is an economic activity and the provincial government has jurisdiction in that sector. Municipalities monitor their APV's.

RWS claims they monitor ecological parameters within the domain of water. One instrument is the MWTL, the Monitoring Water Toestand des Lands, the Monitoring of Water Conditions in the Country. It measures water quality, sedimentation, waves. Also, RWS monitors in the field. They fly over the area with helicopters and examine possible oil spills or the trespassing of tourists. EZ has four boats in the area. They monitor fishing and recreational activities. There are some complaints however by actors like IFG and VB that EZ only hands out permits and does not actively monitor the compliance to these permits. Most other actors however perceive the Waddenunit as a valuable monitoring facility.

5.3.2 Monitoring activities

The NAM has a heavily legally mandatory monitoring program. They pay 10 to 15 external bureaus a year to monitor all types of activities. These bureaus report each year to the NAM, and the NAM must hand over all the findings to the governmental agencies. It is exactly juridically established how and when this reporting should be done. All the costs involved are paid by the NAM. There are some complaints that the monitoring of the NAM is not scientifically enough. It is of a more 'juridical' nature. The NAM tries to show that there are no causal relations between gas extraction and some of the ecological parameters. A more scientific approach would try to provide an holistic picture.

The PO-M has to hand in a 'passende beoordeling' (also known as a habitat assessment) to show that the area does not deteriorate. They conduct the studies that are needed for this assessment with the help of biologists from IMARES. Besides that, their monitoring is mostly self governed. PO-M, is a professional organisation and the behaviour of fishermen is regulated. They have their own rules, own disciplinary court and an independent fine commission. Faults are investigated and dealt with by the organisation itself. But most faults are prevented because of the black box system. Each fishing rod is being monitored and it shows where the boats have been and what it has been fishing. Besides that there is a mandatory measurement of the fishing ships. If a fisherman fishes too many, he gets a fine.

How are the monitoring activities perceived in practice? The VB is very content in general. Monitoring is an obligatory feature of Natura2000. Frequently, rapports must be send to the European Union. According to the VB, a lot of other countries in the EU are less honest in what they rapport. The Dutch government monitors just those things that are obligatory and nothing else. But the things they monitor, they monitor in a honest fashion.

Also, besides the legal obligatory monitoring there is voluntarily monitoring. According to the ANWB, in the recreation sector, organisations of water sports have volunteered to monitor their own behaviour. They asked if they could sail on the boats of the Waddenunit. And they are in continuous communication with one another. They are part of each other's associations and go to the meetings of each association. Also, in the tourist sector there are all kinds of codes and behavioural agreements. This entails a great sense of social control through which they correct each other.

5.3.3 Holistic monitoring

The problem associated with monitoring, is that most actors monitor activities and ecological parameters in a narrow fashion. There is no holistic view, no integrated way in which the monitoring occurs.

One example for this was provided by SBB. NUON, a Dutch energy company, had to monitor the movements of porpoises because they were driving piles into the ground in a building project and those porpoises could be possibly affected by the noise and trembling. This is a topic of concern, but it does not help to understand the entire ecological system of the Waddenzee area.

The NAM generates a lot of data but is also concerned with the lack of a systematic approach. They prefer a system where a central governing authority (possibly from the central government) conducts a more general holistic monitoring process of all parts of the system. And all actors that employ activities that affect the ecology of the Waddenzee area must contribute to the payment of this system.

Another problem of the monitoring activities can be illustrated by SBB with respect to the Razende Bol, an uninhabited island near Texel. When the SBB was discussing the monitoring responsibilities of this island, eight different authorities claimed that they had a responsibility to monitor part of this island but also that they never did it. Some of them claimed their bosses did not gave them enough time or resources to do it, other ones stated that it had a low priority on their to do list.

In general, the salience in political sense of the activity that must be monitored

determines whether or not the monitoring activities are employed. SBB considers the politization of operational activities the main problem. Don't directly examine the using actor by political control, but make an operational actor (like IFG, Natuurmonumenten or SBB), responsible for a certain monitoring commission and let the political actors control this commission. So, let maintaining actors monitor the using actors, and let those maintaining actors be accountable to the political actors.

5.3.4 Conclusion

In the previous subparagraphs it was established that the monitoring rules and activities that are in place are mostly valued in a positive way. Also, most monitoring occurs by the users themselves, and the monitoring processes that are done by regulators are often accompanied by initiatives of cooperation. This was illustrated by the example of the recreational sailors that wanted to join the Waddenunit in their monitoring activities. However, there are also problems associated with the monitoring activities that go beyond this design principle. The monitoring process should be more holistic and integral. In that way, the entire Waddenzee area can be assessed instead of some parts of it.

5.4 Graduated sanctions

This design principle will be estimated through only one variable: '*sanctioning rules*'. Are the rules for sanctioning devised in such a way that sanctions have a gradual nature? Through data analysis, the image arises of a division between sanctioning of small scale activities and that of large scale activities. The small scale activities are dealt with mostly by sanctioning that resembles police enforcement. The large scale activities are mostly never sanctioned because of the heavy regulations. But if they are sanctioned, the sanctions are severe and gradual. This is illustrated in the next subparagraphs by means of the data. In the last subparagraph, another issue with regards to sanctioning is discussed that is not present in the design principles.

5.4.1 Small scale activities

The PF and RWS both have some examples of how they sanction. The PF does not have ships of their own to enforce compliance on the Waddenzee area, but they sail along with the boats from the Waddenunit. PF illustrated one case in which they had to enforce the law. The case entailed a party on the airport of Ameland. One of the strict conditions for the approval of this party was the protection of a specific bird, the kite. But while monitoring this party,

the PF spotted the endangerment of this bird. When dealing with this type of situation, they take juridical steps.

RWS dealt with water cabs that did not have the proper material to operate during the night time. To capture and sanction those cabs, RWS employed tactics similar to that of the police. By smart strategic enforcement actions, those cabs were traced and sanctioned. Both the PF and RWS refer to fines as a possible way of sanctioning. And those fines have a gradual nature.

But in general, most governing actors claim to prefer the provision of information. They rather show users the consequences of their actions than to enforce law and impose sanctions. The PF has all kinds of information programs to show recreational users what exactly happens when they drive their boats into areas where seals and birds are breeding. EZ wants to investigate the possibilities of an app for the Waddenzee area through which users can see exactly what is and what is not allowed.

5.4.2 Large scale activities

For the bigger activities, a different story can be told. The NAM claims (and this was later attested by EZ) that they never received any sanctions because there were no irregularities or breaking of the law. Everything is very tightly monitored and even if a irregularity comes up, it can be dealt with in time before an enforcer would be obliged to take action.

The PO-M has much self control and as described before in the monitoring chapter, it is very hard to break the rules because of the very accurate monitoring system. Still, if a ship does break the rules, the sanctions can be severe. They range from small offences which lead to fines of 1.500 to 3.000 euro, to very large fines of 200.000 euro and sometimes even seizures of ships. But according to EZ this almost never happens because ships are frequently warned beforehand and they always respond to those warnings.

5.4.3 Contractual relationship user and governing actors

However, despite this seemingly positive picture of sanctioning, there are some problems with the system. According to SBB, the Waddenzee area lacks private contractual relationships between the user and the governing actor of a certain area.

In other parts of the Netherlands, the SBB employs farmers to perform certain nature protecting activities like trimming bushes in exchange for the usage of that specific area. The do's and don'ts of this relationship are all contractually established. When a farmer does not perform according to plan, the contract can be abolished. This is not present in the

Waddenzee area, everything is governed by permits which incorporate no invested relationship between the user and the governing actor. For instance, the fishing industry pays 5 million euro's per year for the lease of certain areas in the Waddenzee area. This money directly flows in the treasury of the Dutch government but the Waddenzee area itself does not benefit from it.

The SBB has some examples on how this contractual relationship could work in practice. Already, NGO's are trying to buy up permits, with financial support of the Waddenfonds, for shrimp fishing. In this way, they can personally have a contractual relationship with the shrimp fishing industry. If they fish according to sustainable standards, the contract will be extended, if not the contract can be invoked. Moreover, the NGO's can help the shrimp industry with investments in sustainable fishing techniques.

The problem of the lack of interaction of users and governing actors with regards to permits is attested by other actors as a well. The VB claims that permits are granted very easily but they are not enforced. Another point, according to IFG, concerns the state of nature. If a permit is granted, and the one that is using the permit behaves according to the rules but still the ecological state is deteriorating, then EZ does not feel responsible to actively engage in this situation. Even EZ admits that a offence to the usage of a permit is dealt with by the OM (District Attorney).

5.4.4 Conclusion

So to conclude, the sanctions that are actually employed are mostly gradual. But the sanctioning system and rules are problematic in relation to the permits. There is no clear relationship between the one that grants the permits and the ones that use it, while a more invested relationship shows a lot of potential for better governance of the Waddenzee area.

5.5 Conflict-resolution mechanisms

This design principle will also be examined through the scope of one variable, 'conflict'. How is the interaction of actors shaped in conflictuous situations and can these situations be solved through low costs and easy accessible conflict resolution mechanisms?

Again a twofold division between small scale and large scale activities can be depicted. The activities on a larger scale, like the fishing industry and the gas extraction activities of the NAM, thrive through juridical procedures and conflict resolution through court. It can even stimulate some of the bigger players to change their strategies which leads to innovative practices. For the small scale activities however, the large distance in the

relationship between users and governing actors leads to a low level of local conflict resolution practices. This in turn, can cause small players to be forced out of practice while in fact a possible transitional period could benefit all parties involved.

The analyzed data in the subparagraphs below will illustrate these observations. First the mostly used forms of conflict resolution will be abstracted and explained in terms of their accessibility and whether they are associated with low costs. Then, the use of these conflict resolution modes will be highlighted by the data through subparagraphs of small scale activities and large scale activities.

5.5.1 Modes of conflict resolution

The analyzed data shows that there are two modes of conflict resolution that is used most. Mediation processes and juridical processes through the RVS or through court. The first one can be perceived as a low cost and easily accessible mode of conflict resolution. It is not very costly to negotiate with other actors, and it is very accessible if all actors are willing. The juridical process is relatively more costly and less accessible. Costs associated with juridical processes, like hiring lawyers, greatly exceed that of negotiating. Because of these costs, and the long time it often takes before a juridical process is initiated and completed, the juridical process is also less accessible.

5.5.2 Small scale activities

The PF claims that they try to solve most problems by mediation. And the NGO's have an important instrument of naming and shaming, but always prefer the negotiation process.

However, when two interests are directly opposed towards one another and negotiation does not work, the conflict is often resolved in the court of law, or the RVS. Regulations for shooting rabbits, for the emission of ammoniak by certain farmers, those cases the PF did not succeed in coming to an agreement themselves. Those cases were handed over to the RVS. RVS also sometimes deals with cases that need the ruling of the RVS. For instance the main traveling agency to Terschelling, the EVT, that was being pushed out by another travelling agency. This had to be resolved in court.

According to SBB, the fact that opposing parties are quickly inclined to go to court stems from the same problem as with sanctioning. Local conflict resolution can be achieved when there is a more direct contractual relationship between user actors and governing actors. If there is a conflict of interest, it is possible to change contracts of some sort. One example SBB mentions is transitions in bulb farming. Even though the farmer is not allowed to farm

bulbs anymore, it should be granted time to perform a transition. A bulb farmer that has a shop on the side, should be able to make a transition through its shop. Right now, there is a big chance that this conflict of interests is resolved through court, while there is a perfectly fine opportunity to provide the farmer with a transitional period.

5.5.3 Large scale activities

However, not all parties perceive the usage of courts to resolve conflicts as a problem. The PO-M used to have a highly accessible low costs conflict resolution mechanism in place within its own organisation. It was called the Arbitrage Commissie Visserij (Arbitration Commission Fishery). But this has been abolished, now when conflicts occur it is often send to court. However, the PO-M does not perceive this as a bad thing. When a fine is imposed, it is often a just ruling because of the extensive monitoring system. In the words of the respondent from PO-M: *'when we give a fine, someone deserves it'*. In the old situation, fishermen would go to the arbitration commission for every fine imposed, even the small ones.

The NAM has an entire department for mediation, to figure out where the tensions are present in current regulations. Nevertheless, they are not dissatisfied with using courts to resolve conflicts. The RVS is a useful mechanism to deal with the balancing of interests. Also, prior to some laws and regulations there is an extended preparation procedure, through which the governing actors present designs of their policy plans. Everyone can react to this and try to make adjustments. In the end, the minister decides and when you don't agree you can take it up with the RVS.

EZ even considers a juridical procedure as a device for the stimulation of innovation. When there is a structural element which makes it impossible to extend permits, it is dealt with through the RVS. Following the invoked permit, the need to adapt and make a transition arises. This can lead to innovative solutions with those parties involved. This dynamic is further explained in paragraph 5.8.

5.5.4 Conclusion

In sum, even though most actors show willingness for mediation, most conflicts are resolved through court. This mode of conflict resolution is associated with relatively high costs and low accessibility. Therefore, this design principle seems to be performing negatively in this case study. However, for the large scale activities the conflict resolution mechanism of court seems to work in a positive way. So, it can be interesting to consider this design principle as not completely valid for the specific Waddenzee case.

5.6 Collective-choice arrangements

The assessment of the design principle of collective choice arrangements is structured through three variables. '*Collective choice rules*', the rules that are in place that arrange whether or not the ones that are affected by the rules can participate in modifying them. '*Deliberation*', that refers to the possibility of deliberation processes through which all actors can participate in the modification of rules. And '*trust and reciprocity*', referring to a trusting the state of the relation between all actors which would stimulate better deliberation and in turn better use of the collective choice rules.

The three variables are directly linked towards one another. The '*collective choice rules*' facilitate forms of '*deliberation*', which in turn affects the '*trust and reciprocity*' between actors. If there are no clear '*collective choice rules*', this will negatively influence possibilities for '*deliberation*' and in turn this will decrease relationships of '*trust and reciprocity*'. If one actor does not experience possibilities to influence rulemaking, he will distrust the government. And he will not participate in forms of deliberation. Because of this direct interrelation between the variables, they are not discussed separately. Moreover, the relationship between those variables is elaborated upon from two points of view that are abstracted from the data.

The starting point is the same for both points of view. An informal network of actors that is active on many different topics throughout the Waddenzee area and have several tasks and responsibilities. This network is active in discussions about existing and new rules. Because of this network, there is a lot of trust between actors and a lot of different deliberation processes on several different items. Those processes shape multiple moments for agenda setting. The one thing those two points of view disagree on, is the role of the government. The first statement that is discussed in subparagraph 5.6.1, considers the government as the driving force. The second statement, discussed in subparagraph 5.6.2, considers the government as important but more passive.

5.6.1 Dynamic governance and the '*Waddencommunity*'

Both PF and RWS mention a group of people they call the '*Waddencommunity*'. This group is an important force of the dynamic governance process that is in place in the Waddenzee area. They don't form an official organization, but an informal group of 50 to 100 professionals that are active on different topics and representing multiple interests. It consists of both professionals from NGO's, as the government and the scientific community. They know each other and they know each other's interests. Furthermore, because of the crossover of

their tasks and the topics in which they are active, they can use knowledge from one topic to provide a solution for another problem. In this way, there is a learning process from multiple cases which provide useful platforms.

Also, these platforms serve the purpose of agenda setting. One example is the NAM. Their ecologists have a lot of knowledge concerning many different monitoring practices. Because of this knowledge on a large variety of topics, they are often asked to participate in '*deliberation*' processes concerning rules and regulations. So, the interrelations between different actors are characterized by '*trust and reciprocity*'. They know each other and respect the different interest, but moreover they meet each other during many different meetings where they speak from many different positions. This in turn leads to a lot of deliberation processes about rules and the modification of rules which stimulates the dynamic governance process as constituted by the government authorities.

The PF, RWS and EZ consider the '*collective choice rules*' of the government as a driving force in this form of dynamic governance. PF states that they are heavily invested in co-management structures. People are made responsible for the use of certain areas in the tourist sector. This mutual responsibility shapes a different usage. RWS explained how the legal frameworks, like the PKB and the Framework Directive Water, are regularly changed (every six years). During those evaluation moments, and prior to it, many actors are participating and are expressing their wishes. The PKB that is now in place ends in 2017. Already there are wishes from the harbour companies about the size of the harbours.

EZ states that the labels that are in place, are consolidated but rules may never hinder excellence. Then the rules are devised in favour of innovative ideas. An example was mentioned of an innovative system of dredging in one of the marina's in the Waddenzee area. This did not fit the permit, but EZ was heavily invested in changing those rules.

5.6.2 Governing triangle

SBB provides a somewhat different story. They do stress the possibilities of deliberation and relations of trust through the informal networks that exist. One example, is the cooperation with canoe associations. They were very astonished that some areas were closed off for them because they claimed that they were not causing any harm in terms of sound. SBB decided to start a '*deliberation*' process with this party what it exactly was they wanted, and in turn tried to design rules through which it was possible for this canoe association to get what they wanted without bringing harm to the environment. It turned out that the canoe association was allowed to make trips that they perceived as special and interesting, through routes that

were closed off for motorboats. This was a direct cause of being in constant '*deliberation*' and building relationships of '*trust and reciprocity*'.

However, according to SBB the role of the government with respect to '*collective choice rules*' is a bit different than described by PF, RWS and EZ. They perceive this deliberation process as a triangle, with the user and representative of nature on the top end and the government on the low end. The users and the nature representatives make covenants and the government consolidates it. The 'Pakt van Rede' a covenant between nature organisations and user organisations, was consolidated by the government in the Action Plan Sailing Recreation. So the government is not in a leading role. The government is a necessary feature because of the mandatory democratic process. But the government is reactive and passive. Their behaviour is determined by sectoral interests. An using actor applies, and the government responds. According to SBB intermediaries are necessary. For instance nature organisations. They can stimulate transitions and can participate in a mutual gain approach.

5.6.3 Illustration of the governing triangle

Interesting to discuss in the light of this discussion is the case of clam fishing, from the point of view of both the PO-M as the VB. In 2008, when the fishermen lost the court case and their permits were no longer valid, the government could not help them out. They said, according to PO-M, '*if you want to organize something you have to do it yourself*'. In the beginning there was a lot of hostility between nature organisations and fishermen. Billboards were placed by fishermen with 'green maffia' on it. And the politically speaking, the VB was framed as the problem.

According to the VB, they were called by the minister of LNV with the question why the VB had a special grudge to the clam fishing industry. When the VB replied that officially the ministry is also responsible for nature policy, and if she would have called him if the VB would have lost the court case, the minister had no satisfying answer. In other words, according to the VB, the government was not actively invested in getting the two actors as equal parties at the negotiation table, but were favouring the interests of the clam industry. According to the PO-M, the clam industry is closely connected to the minister and has a good reputation in politics. This also illustrates a possible bias of the government in this case.

But eventually the PO-M admitted that they had to change their ways of production, and the nature organisations saw the value of clam fishing in cultural sense. Then a covenant was made that no party would try to further their demands through a juridical procedure but through a negotiation process. The government was part of this covenant and played a very

important role. Together with nature organisations and IMAREs a plan was designed, including an habitat assessment and the mandatory closing of areas for fishing.

So in sum, the establishment of *'trust and reciprocity'* and the residual *'deliberation'* process eventually led to a covenant. In the establishment of the covenant, the government played a decisive role. But the deliberation process and the relationship of trust was not stimulated by the government but by the nature organisations and user organisation themselves. Of course, this is only one case and one example. But still, it gives raise to the suggestion of SBB. Use nature organisations as intermediaries to establish relations of trust and deliberation processes. Then the government can join in to consolidate the covenant.

5.6.4 Conclusion

To sum this section up, there is clearly some room for collective choice arrangements in the Waddenzee area. An active *'Waddencommunity'* participates and joins in agenda setting to devise and modify rules. However, there is some debate on the exact role of the government in this. Some actors perceive the government as a facilitator of this type of governance, other actors perceive the government in a more passive, but still important role. The short description of the case of the conflict between the clam industry and nature organizations shows the importance of this discussion, and gives raise to the thesis of the government as a passive actor.

5.7 Autonomy local community

This design principle refers to the assessment whether or not the government allows the local community to employ activities of self-governance. The variable through which this will be examined is the variable of *'self-organizing activities'*. Within the interaction between actors, governance systems and resources, what kind of self organizing activities are present in the Waddenzee area? First *'self-organizing activities'* will be discussed, then the scope will be on the local community as present in the Waddenzee area.

5.7.1 Self-organizing activities

SBB states that pure self-governance is not beneficial for the Waddenzee area. This is because there is no absolute common goal.

According to SBB, the *marken* (common-pool resource institutions in the Netherlands) were abolished because there were too many different goals of different actors, that's where the government comes in. They should function as a *primus inter pares*, to state

clear goals. To balance all those different interests through a democratic process, and shape it towards one common goal. There is a trend in the Netherlands to try to remove this duty, let other actors organize the specific goals. On the short term, and looking through a narrow scope, this looks promising.

For instance. A group of farmers decide to give a specific piece of land in Ameland an agricultural purpose, an agricultural goal. However, maybe from an holistic ecological point of view, another part of the Waddenzee area may be more suited for this purpose. It is exactly this position, where the government is irreplaceable. Of course in policymaking there must be a participatory component, but the government should provide the goals and the general direction.

One example the SBB mentions concerns bed and breakfast entrepreneurs in Friesland. The government can provide the specific goals towards which those entrepreneurs can organize their specific enterprises. Interestingly enough, the ANWB mentions the same case and the same role for the government. They too perceive the role for the government as one in which they state the concrete goals that can be derived from the World Heritage Label.

In sum, self-organizing activities are possible and beneficial within the governmental framework but complete self-governance is not favourable for sustainable outcomes.

5.7.2 Local community

Now that the act of self-organizing activities in the Waddenzee area is discussed. it can be interesting to discuss the local community on the Waddenzee area and how they relate to self-organizing activities.

According to most actors, the local community in the Waddenzee area is not very clearly organized. EZ states that most people on the islands themselves have a complex relationship with the governing authorities. They earn money from tourists that go to the beach and the pubs, that's where they gain their revenue. But those people are not going to the Wadden themselves, the nature itself. In other words, those people have no direct interest in the preservation of this nature, and are mostly bothered by all the things they can't do because of regulations.

EZ provides an interesting parable of other 'Wadden' areas in other countries. For instance, in Korea there are islands quite similar to that of the island in the Dutch Waddenzee. these Korean islands however are completely used. People use every square meter of soil themselves to gather food and for other activities. This is not the case in the Dutch Waddenzee area.

However, some sectors have organized themselves quite well. Parts of the tourist sector, like the sailing sector, have a clear code of honour and strict guidelines for their members. Those clubs are therefore extremely motivated to keep an close eye on offenders. And when they spot offenders, they report this to the government. The same applies for the clam fishing sector, as demonstrated in earlier sections of this chapter. Their strict codes and guidelines, and monitoring processes show a strong self organizing capacity.

However, as far as participation of members is concerned, this is rather low. According to the PO-M, the chairman and secretary (who are both from outside the fishing sector) of the board have a strong saying in the policy preparation process. The proposals they hand to their members, are already negotiated with other parties (like the NGO's and the government) and are almost never rejected by the members.

5.7.3 Conclusion

In sum, the local community of the Waddenzee area is not organized in self-organizing entities because they are not organized as a local community. They are sometimes organized through specific sectors. But even within these organizations, the goals as posed by the government are guiding. This story follows logically from the story of collective choice arrangements. On that topic, it was mentioned that nature organisations and user actors should be able to find a solution together. However, the government is still needed to consolidate their agreement. Added to this, the government needs to draw the borders in which the activities can be employed, and the common goal to which both parties should strive. Complete self-governance does not benefit anyone in that sense, some guiding principles provided by the government is always necessary.

5.8 Nested Enterprises

The design principle of nested enterprises is formed by the variables of '*network-structure*' and '*information-sharing*' and refers to the relation between multiple separate governance structures within the Waddenzee area. So, how does the network function of those different structures, and how does the sharing of information occur? In the first subparagraph, the two variables are discussed. In the second subparagraph, this study goes beyond the variables and assesses the network-structure of the main governing organizations of the RCW and the Beheerraad.

5.8.1 Network-structure and information-sharing

In general, the network between actors with a maintenance task functions well. According to IFG, the maintenance actors are actively exchanging experiences and learn from each other. The SBB agrees with this notion. Those actors know each other's competencies, and are in direct contact. For instance the light house keepers are in close contact with the Waddenunit. These meetings are also facilitated by nature organisations. The PF add to this notion that it is a great advantage that a lot of public servants have multiple hats, are responsible for multiple tasks throughout different competencies and responsibilities. For instance, some civil servants from the PF are also responsible for the governance of the Waddenfonds. This type of information-sharing induces dynamic structures of governance and transcends single issues.

The network-structure of the Waddenzee area offers great potential for transitions and innovation, according to EZ. The case of clam fishing is an example of this opportunity. According to EZ, there are some intermediary actors that knew about the new innovations concerning sustainable clam seed production, but were also linked with NGO's. They told those NGO's to pursue a lawsuit against the clam industry because they knew that the permits would not hold. At the same time they knew the economic context of the clam industry, and they knew that they needed economic injections from the Waddenfonds to make this transition.

In sum, when you have actors that are linked to both governing and user actors on different layers, they can push certain transitions and innovations. The same situation occurred in the transitional phase of the shrimp industry. Some actors had the knowledge that the shrimp industry needed a new permit, and that money was available from the Waddenfonds and innovative techniques to make this possible. Then those actors caused administrative pressure, and political pressure to make sure that the permits would not be extended. So the shrimp industry had to make a transition towards these new technique.

According to EZ, these developments are attributable to the fact that the government no longer holds all the cards. To achieve change, they used to have all kinds of monopolies. Now they are no longer in place, actors need some leverage to achieve change, and brokers to organize this. Brokers like intermediary institutions, for instance SBB.

5.8.2 Network-structure between governing organisations

The two main governing organisations that need to govern the Waddenzee area, the Beheerraad and the RCW, are met with some criticism.

According to the SBB, those councils are not concerned with the actors in the Waddenzee area themselves. Tourists and fishermen are on a large distance from these governing structures. They know some people in, for instance the SBB, and they know there are more layers behind this organization but they don't know how to reach it.

RWS agrees. The Beheerraad is very static. The operating actors that are involved in this organisation are not sharing experiences but are mainly attacking the actors from the central government. The RCW functions better, because it has an independent chairperson that assures the balancing of different parties. According to IFG, the Beheerraad is a 'chat group', with too many members. It is used for information-sharing, but not for concrete action.

When discussing what could be done to improve these organisations, the SBB replies that in general, the maintenance actors should have explicit ownership for the grounds they govern. The government can provide the goals and the objectives, as a professional bidder. The Beheerraad can serve as the place where those maintenance actors meet to discuss how exactly they will employ their operational tasks. The RCW can serve as a place where government actors can make a concrete agenda on how the area should be governed, to make explicit objectives and goals.

The IFG proposes a similar change. EZ should be responsible for policymaking, RWS for the operational activities on the sea and waters, and the nature organisations should be responsible for operational activities on land. According to the PF, a change process is already set in motion. A governing plan was made to streamline all the operational actors into one governing actor. In 2018, all those actors should work as one. An collective of bidders, in which RWS, EZ the provinces and the operational actors are participating) will guide the maintenance tasks and RWS will have the main responsibility. In spring 2015, this plan will be discussed in parliament.

Even though the Beheerraad and RCW are mostly negatively viewed, in general most

respondents don't consider the Waddenzee area as a particular institutionally crowded area. The SBB claims that the 'governing spaghetti' as it is often called, is an overestimation. The institutional crowdedness of the central government, provinces and municipalities is just as much crowded in other areas where interests of nature protection and other activities cross each other like the 'Groene Hart', or the 'Veluwe'. What makes the Waddenzee case complex, is the ownership of most of the area by the central government. RWS states that the amount of governing actors is quite 'mean and lean' for the Waddenzee area with respect to its size. Besides, because of the multiplicity of interests, a lot of actors need a stage to express those interests and balance them out. The biggest problem with respect to the network of separate institutional arrangements, is the mismatch between them.

According to EZ (and this was confirmed by SBB), the Waddenzee area is not geographically dispersed, but thematically. There is a mismatch between who is responsible, and who actually performs the task. Officially, RWS is responsible for nautical governance, and for some parts of the environment. But they are not responsible for the governance of nature, while some of these tasks require some sort of operational activities with regards to nature. EZ is responsible for the governance of nature, but the money for this task lies with the provincial governments that have no responsibility for it. So, when there is a problem with the governance of nature, EZ is held responsible by parliament, while the provincial governments have the money for it. RWS is willing to step in, but not from their own budget.

5.8.3 Conclusion

In sum, the network of operational actors with maintenance tasks functions well. The fact that a lot of actors have multiple responsibilities and tasks even provides opportunities for them as brokers for innovations and transitions. However, the collaboration between the larger governing structures is less fluently. The Beheerraad and RCW are not functioning well, and in general there is a mismatch between the different tasks and competencies of most governing actors.

6. Conclusions and recommendations

This chapter will answer the research question by means of three paragraphs. In the first paragraph, the data analysis will be discussed by means of a reflection on the design principles of Ostrom and the results of the case. Also, a reflection will be provided on the role that the 'highly regulated policy arena' played on the performance of the design principles. In this paragraph, the first half of the question, i.e. *'To what extent does the highly regulated policy arena of the Waddenzee area perform according to the design principles of Ostrom?'* will be answered.

In the second paragraph, concrete policy recommendations for the Dutch government will be provided, which answers the second part of the research question. *'How can the Dutch government facilitate sustainable resource governance in this social-ecological system with the design principles in mind?'* In the third and last paragraph a general conclusion will be provided of this research, including recommendations for further research and a discussion.

6.1 Conclusion data analysis

This paragraph will discuss each of the design principles and will reflect on how does principles should work according to Ostrom, and how they work in practice in the highly regulated policy arena of the Waddenzee area. So first, the general observations that were provided in the previous chapter will be elaborated upon and put into perspective, secondly the notion of a 'highly regulated policy arena' will be discussed and how the findings reflect on this aspect of the Waddenzee case.

6.1.1 Clear boundaries

The design principle 'clear boundaries' of Ostrom is needed to achieve a clear system of what actors can use what specific resources. Moreover, in Ostrom's theory it is needed to keep out exclude non entitled parties.

In the case of the Waddenzee area, the situation is a bit different. The objective is not to exclude, but to make sure that every activity can be employed without causing harm to another activity with the general purpose in mind of sustainable resource use. As described before there are both positive and negative aspects of this principle in the Waddenzee case.

On a small scale, with recreational actors and small farming, there is continuous communication between law enforcers and user actors which makes sure of clear boundaries. But on a larger scale, with respect to some bigger infrastructural projects, the boundaries are too tightly enforced. The more holistic notion of sustainable development is therefore

challenged.

On the other hand, most governing actors claim that there is a shift going on to a more dynamic style of enforcing and permitting. Moreover, the more politically controversial resources like gas and clam fishing are quite content with the strict rules under which they need to operate.

As for the aspect of distinctive value of each of the activities, the more controversial resources have gained more appreciation by nature organisations because of its willingness to comply and their specific value to the area. But nature itself copes with the increasing role of economic considerations in policymaking, and recreation sometimes feels overlooked.

It is interesting to reflect on the aspects of a 'highly regulated policy arena' from the point of view of both the positive and the negative points associated with the 'clear boundaries' design principle. The negative aspects of this boundaries, the restriction on larger infrastructural projects, follow from a stringent interpretation of the legal frameworks. Which in turn resembles the 'highly regulated principal-agent relationship' as described before in this study. The principal, the government, does not allow the agent to freely interpret the law but in turn restricts the agent through heavy regulation.

The positive aspects of the boundaries however show another picture. Small scale activities are characterized by an tight relationship between governing and using actors. This relationship shows a less stringent regulatory approach and therefore poses another view on the principal-agent relationship. Moreover, the positive effects associated with strict rules by the more controversial issues, like gas and fishing, show a positive effect of the highly regulated policy arena. Here the '*transparent processes of ex ante electoral contestation, legislatively sanctioned executive decisions*' and '*ex post scrutiny by political principals, a free media and civil society*' (Baker et al. 2009: 80) that surround those controversial issues, make the need for strict rules to which they can be accountable more necessary.

6.1.2 Congruence

Congruence refers to the congruence of rules with the local conditions of the actors involved. As described before, some problems come up with the discussion of this principle. Some small touristic enterprises are being constrained in their activities because they are covered by the same rules as the big industries, while they don't cause the same problems. With an increasing value of tourist activities in economic sense, this can be considered a problem.

As for the fishing industry, the shift to a more sustainable means of production has decreased their possibilities of selling clams at a viable price. Moreover, the closing off of

certain areas reduces their productivity. But they get a lot of financial compensation in return. The NAM also has problems with the increasing demands of the government for monitoring and permits, while the productivity is decreasing.

Of course, one can argue that the revenues of the NAM are still high enough to cope with these increasing costs and in that sense the imposed regulations are still congruent with the conditions of the NAM. Other extraction activities, like salt, are not bound to such enormous monitoring processes which they have to pay themselves. Because if they would, they would not be able to exploit it because the margins on salt are not that high.

So in general, one can say that there are some problems with the performance of the Waddenzee area with respect to this design principle. But those problems are mostly similar to the problems in the principle of 'clear boundaries'. Some regulatory processes are too strict and restrain small actors for which those rules should not apply. But as already discussed, there is a shift towards a more dynamic type of rulemaking.

For the PO-M and the NAM, there are considerable economic burdens that are involved with the regulatory process. But they are to some extent congruent with the conditions of these sectors. The PO-M is bought out mostly, and financially supported in their transition process. The NAM is not, but their margins are still high enough to cover the loss in economic sense.

Reflecting on the 'highly regulated policy arena', the same dynamics apply as in the previous design principle. Only as far as this design principle is concerned, the regulatory pressure cannot be perceived as a positive factor. The large user groups that are under extensive political scrutiny experience economical damage while their revenues are decreasing. Also, even the small scale groups experience problems on this behalf.

6.1.3 Monitoring

The monitoring process is divided in both the variables of rules and activities. Those monitoring rules and activities should be in place, but also they should be conducted by the user actors or actors that are accountable to the user actors. This seems to be the case. Both the PO-M and the NAM conduct their own monitoring processes, within the legal frameworks that are imposed by the government. The recreational sector employs modes of self organizing monitoring processes. Besides that, the governing actors also perform a variety of monitoring tasks.

Another positive remark can be made about the activities vis à vis the rules. Not only are there legal obligations for monitoring, but they are conducted in practice. According to

VB, this is not regular in the EU where a lot of nations just fill in information that is not specifically scrutinized. The problems of monitoring however are related to another topic entirely. The monitoring process is not holistic. Each actor monitors separate things, just to make sure that their activities show no causal connection to any deterioration of the ecological state.

But no holistic picture can be provided. However, some efforts are being made to change this and some actors are involved in an effort to provide an integrated holistic monitoring of the Waddenzee area. So, this specific aspect of the monitoring process can add to the existing requirements for this design principle. In areas with a lot of different activities and interests, just monitoring is not enough, but there is also a need for holistic monitoring.

The reflection on this design principle clearly shows an interesting perspective on the notion of a 'highly regulated principal agent relationship'. The monitoring process is largely governed by the user groups themselves, i.e. the agents. This disavows the idea that the principal in this type of relationship binds the agent with heavy regulations in order to control him. Instead, in this case study, the agent is allowed to monitor himself.

6.1.4 Graduated sanctioning

For this design principle, a similar situation as with 'monitoring' arises. Also, the sanctioning seems to be of a gradual nature as prescribed by Ostrom. The bigger industries are so tightly regulated that it almost never comes to sanctions, but when they are sanctioned it has a gradual nature. The smaller activities however are mostly dealt with in a fashion that resembles police enforcement. The fines they receive are also of a gradual nature.

The problem with sanctioning however lies in the lack of private contractual relationships between user and governing actor of a certain area. The relationship is now governed by a permit system, which allows almost no interaction after the permit is assigned. A more direct relationship can improve the ways sanctions can be imposed. It improves the gradual nature of sanctioning. When two parties have a contract, the extent to which this contract is being respected can be discussed and contracts can be adapted according to new circumstances instead of expensive juridical procedures. This could be a nice contribution to the follow up research that use the design principles on highly regulated policy arenas.

6.1.5 Conflict-resolution mechanisms

The extent to which this design principle performs to the theory of Ostrom, is determined by the nature of the conflict-resolution mechanisms. According to Ostrom, they should be low cost and easily accessible. In the Waddenzee case there seems to be a division between the small scale activities and the activities on a larger scale. The small scale conflicts can most of the time be solved through mediation processes. But the larger activities often must resort to court and the RVS, which entail high costs and are therefore not easily accessible. However, this is not perceived as a negative effect per se. Both the PO-M and NAM are content with these procedures. The PO-M even abolished their local conflict resolution mechanism because they preferred juridical procedures.

It is the small scale activities that cannot be solved through mediation that perceive the conflict resolution mechanisms as problematic. Those conflicts must be solved through court as well, which is too costly for those actors. Sometimes, they are put out of business, while there was a perfectly suitable solution that could have been provided by a more invested relationship with the governing actors. This dynamic greatly resembles the situation of sanctioning. Direct contact and close relationships can solve this problem and provide low cost local conflict resolution mechanisms. Again, to some extent the Waddenzee area performs well with respect to the design principle, but there are some problems as well.

The description of the inclination to solve conflict through court largely resembles the logic of appropriateness, associated with highly regulated policy arenas, as described in paragraph 2.2. Actions of individuals are assessed through procedural criteria and *'courts (...) will strike out executive decisions and administrative actions on the basis of non-compliance with publicly sanctioned decision rules.'* (Baker 2009: 80). The quick route to the court of law can constrict small activities. However, interestingly enough for the larger activities that are under political scrutiny conflict resolution through court works often beneficial.

6.1.6 Collective choice arrangements

This design principle is met, when the ones that are affected by the rules are capable of participating in the modification of this rules. Overall this functions well. A dedicated and well informed and connected community of professionals, ranging from NGO's to officials from harbour companies, is allowed to participate in all kinds of preparatory processes with respect to legal frameworks.

However, there is some debate on how the government should act in these processes. Should the government directly involve other participants, or should user actors and nature

organisations deliberate together and work out covenants that the government can consolidate? Still, in general the performance of this design principle seems to be in order.

With the 'highly regulated policy arena' in mind, it can be interestingly to reflect on the findings of this design principle from the point of view of a 'highly regulated principal-agent relationship'. According to the point of view of the 'triangle', an intermediary actor should be placed between those two. The political pressure on a specific sector (as demonstrated in the clam fishing example) can force the principal to pick a side. When an intermediary actor is involved, this tension might be relieved and the government is less tempted to take the side of the politically more favourable actor.

6.1.7 Autonomy local community

Governments should allow self-organizing activities from the local community. In general there seems to be no problems in that respect. The recreational sector, and the fishermen are organizing themselves greatly. But these coherences are mostly determined by sectoral interests. Moreover, most of the actors that were interviewed were against absolute self-organizing activities. The government should always be involved with concrete objectives and goals. In concreto, the user actors and the maintenance actors should be allowed to figure out together what activities will be employed and how, but they will do within the scope of the goals and objectives that are formulated by the government. And when those actors produce a covenant, the government should be there to consolidate the covenant.

In sum, the Waddenzee area performs well in the light of this design principle, but this specific case is better off with a different perspective on self organizing activities. The role of the government that is depicted by the interviewed actors is interesting in the light of the highly regulated policy arena. The role of the government that is associated with *electoral contestation and legislative sanctioned executive actions*, remains very important and is not replaced by a need for absolute self-governance.

6.1.8 Nested Enterprises

Nested enterprises, the extent to which the separate actors are linked through networks and in that respect cooperate effectively, is used in this study not only to focus on the role of networks, but also on the main governing organisations, the Beheerraad and the RCW. The networks between different operating actors are functioning well. The Beheerraad and the RCW are critically reviewed, but there are transitions in the making to let these organisations function better.

The biggest problem is the mismatch in authorities and competencies. The networks between actors like the RWS, EZ and the provincial governments for instance are excellent, but the competencies they are granted politically are not. One organisation gets budget to perform an activity, that the other organisation is legally responsible for. This mismatch is the greatest problem that is associated with this design principle.

Nevertheless, with respect to the 'highly regulated policy arena' this particular design principle shows interesting insights on that behalf. The well functioning network of actors that have multiple responsibilities and tasks, combined with high regulatory nature of the Waddenzee area governance, shows great potential for innovative practices.

6.1.9 Overall conclusion

Overall it can be concluded that the Waddenzee case performs well with respect to the design principles of Ostrom, but there are specific problems that can be attributed to the Dutch regulatory context and the context of the Waddenzee area in particular.

In general the balancing of interests and activities in the Waddenzee area should be more integrated and holistic. Not just sectoral interests or the interests on some part of the Waddenzee area should be decisive in policymaking, but the state of the entire area. This is particularly relevant when discussing the design principles of clear boundaries, congruence and monitoring.

Also, the rigid regulatory regime on the one hand, and dynamic governance practices through which user and governing actors look for solutions together, are an important aspect. In sanctioning and conflict situations there is a need for more contractual relationships between user actors and governing actors. And the examination of the design principles of collective choice arrangements and autonomy of local community, showed the debate on the role of the government in dynamic processes of governance. The dominant opinion prescribes the government as the party that must state the goals and objectives of the specific area. Operating actors and user actors should together to deliberate and find a solution that fits within the overall goals and frames. And the government can consolidate this covenant in legal sense.

The network that exists between different tasks and topics in the Waddenzee area facilitate this type of dynamic governance. Moreover, the role of intermediary institutions and actors is stressed, that can work as facilitators of these deliberation structures and bring specific knowledge and resources to the table that is needed for transitions towards more innovative and sustainable practices.

In short, this study is only a single case study with a qualitative and exploratory research design. It is not suited to reject or attest the validity of the design principles of Ostrom. It has however shown the relevance of this design principles, even for cases of 'highly regulated policy arenas'. The difference between small scale and large scale activities, and the need for more interaction between governing actors and user actors, shows the salience of some of the main theoretical assumptions of Ostrom. Adaptive self governance can only work when there are close relationships between the ones that devise the rules and the ones that are affected by it. The specific experiences of the large scale activities show that the heavy regulatory regime that they are facing is not a problem per se. Because of the close relationship between the government, and the PO-M and the NAM, these regulatory process functions perfectly and even provides opportunities for those actors.

So in sum, the highly regulated policy arena of the Waddenzee area both has positive and negative effects on the resource governance of the Waddenzee area. Some small scale activities are restrained by aspects of the highly regulated policy arena, but most large scale activities that are associated with political controversy are governed well by this type of governance mode. And in some aspects, the combination of dense networks and high regulations even pose potential for innovative practices. However, other findings in this study suggest that some aspects of the highly regulated policy arena should be adapted in favour of a more facilitative government that still exercises the goals and objectives but leaves the operational details to other parties. In other words, the highly regulated principal agent relationship should be changed in a triangle where the operational actors and the user actors are on top, and the government is on the bottom to consolidate the covenants in legal sense and provide the general objectives and goals.

6.2 Recommendations for the Dutch government

Again, the limitations of this research should be stressed before the second part of the research question can be answered. In the last paragraph it was explained that the theory of Ostrom cannot be rejected or accepted through one exploratory case study. The same applies for the general lessons that the government should derive from this study. Only the Waddenzee case was examined, and from the point of view of some of the most important actors. But still, it is no exhaustive account of every aspect of the governance system of the Waddenzee area. Nevertheless, it is interesting to see that some general patterns emerged from the accounts of multiple respondents. Especially concerning what role the government should play.

In some aspects, the government needs to act more, in other aspects the government should act less. The establishment of clear goals and objectives of the Waddenzee area, is one task only the government should perform. Self-organizing activities are valuable, as long as sectors are not asked to define the goals of a specific area. In this way, sectoral interests are not guiding the policy process. Moreover, that policy process should be guided by democratic political processes, with the clear input from user actors and NGO's.

In other aspects, the government is expected to give more responsibilities to operating actors and user actors to find solutions to problems together. The government must facilitate this by posing the legal framework and the overall objective. But the operating actors and the user actors should be allowed freedom to work out a solution that both actors perceive as satisfying, within the legal borders and the objective of the area. Afterwards the government can consolidate these agreements.

These governing triangles can be empowered by providing the operating actors with more ownership and official responsibilities, and with contractual relationships between these owners and the user actors. Those owners themselves must be made accountable to the government, in this way the government can make the relationship with the users more tight by introducing an intermediary actor.

Another clear recommendation for the government that stands out in this research, is the problem of the mismatch in authorities and competencies in the Waddenzee area. A lot of governing authorities have specific responsibilities that don't match with their competencies. Some steps are already set in motion to change this, but the problems of ownership by the Dutch government of some parts of the Waddenzee area, instead of some of the operating actors, remains.

Again, it is important to mention a disclaimer. These recommendations are based on this research alone and on the specific accounts of the actors that were interviewed. Nevertheless, it can be fruitful for the government to look into these issues and see if they apply. Moreover, further research can also focus on these issues and see how they apply to other governance areas and other governance regimes. In the same country, or in countries that are also functioning within 'highly regulated policy arenas'.

6.3 Discussion

In the previous paragraphs the research question was answered. The Waddenzee case performs well with respect to the design principles, but also adds some case specific nuances that can be interestingly for further research. Also, the government is provided with clear action perspectives on how to deal with the Waddenzee case, although the nature of this research prevents this study from providing absolute truths. In this paragraph, a discussion is provided on the limitations of this research and how further research can fill the gaps that this study has left.

This study is an exploratory qualitative single case study. The study is not designed to show causal relationships or even correlations between variables. Is not meant to provide absolute connections between social phenomena. Moreover, it is meant to provide an in depth exploration on how resource governance in a highly regulated policy arena like the Waddenzee area works in practice, and how this reflects on the use of the design principles in this context.

This objective is largely accomplished in this study. It was shown that some elements of the theory of Ostrom are clearly present in highly regulated policy arenas as well. But also, some case specific situations came up, with the potential of providing new insights in the workings of institutions of resource governance in highly regulated policy arenas. However, the aforementioned limitations of this study prevents it from proclaiming those patterns as characteristic for a highly regulated policy arena. Moreover, this study should be read as a source of focus points for further research. The recommendations that were provided in the last paragraph, should be read as points to investigate by both government officials, as social scientists.

Some remarks can be made about the use of the SES framework. The liberal usage of this framework has allowed this study to shape it according to its specific need. However, some questions could be asked about specific choices that were made in this research. Categories that deal with other ecosystems and the political reality that are linked to the social-ecological system of the Waddenzee area were left out of the study. This choice was made to narrow the research down to a specific set of factors that were especially necessary to examine the design principles. The same consideration led to a narrow selection of variables of the SES framework. Other variables could have been useful or interesting as well, but the choice was made to keep this study as focused as possible also due to time and money constraints.

For this reason, any definitive remarks, additions or adaptations of the SES framework

cannot be provided. Some interesting findings can be used for further research, and used in other studies of other highly regulated policy arenas. For instance the relations between networking, highly regulatory regimes and transitional and innovative power can be further investigated. However, no definitive statements can be made on the basis of this research.

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