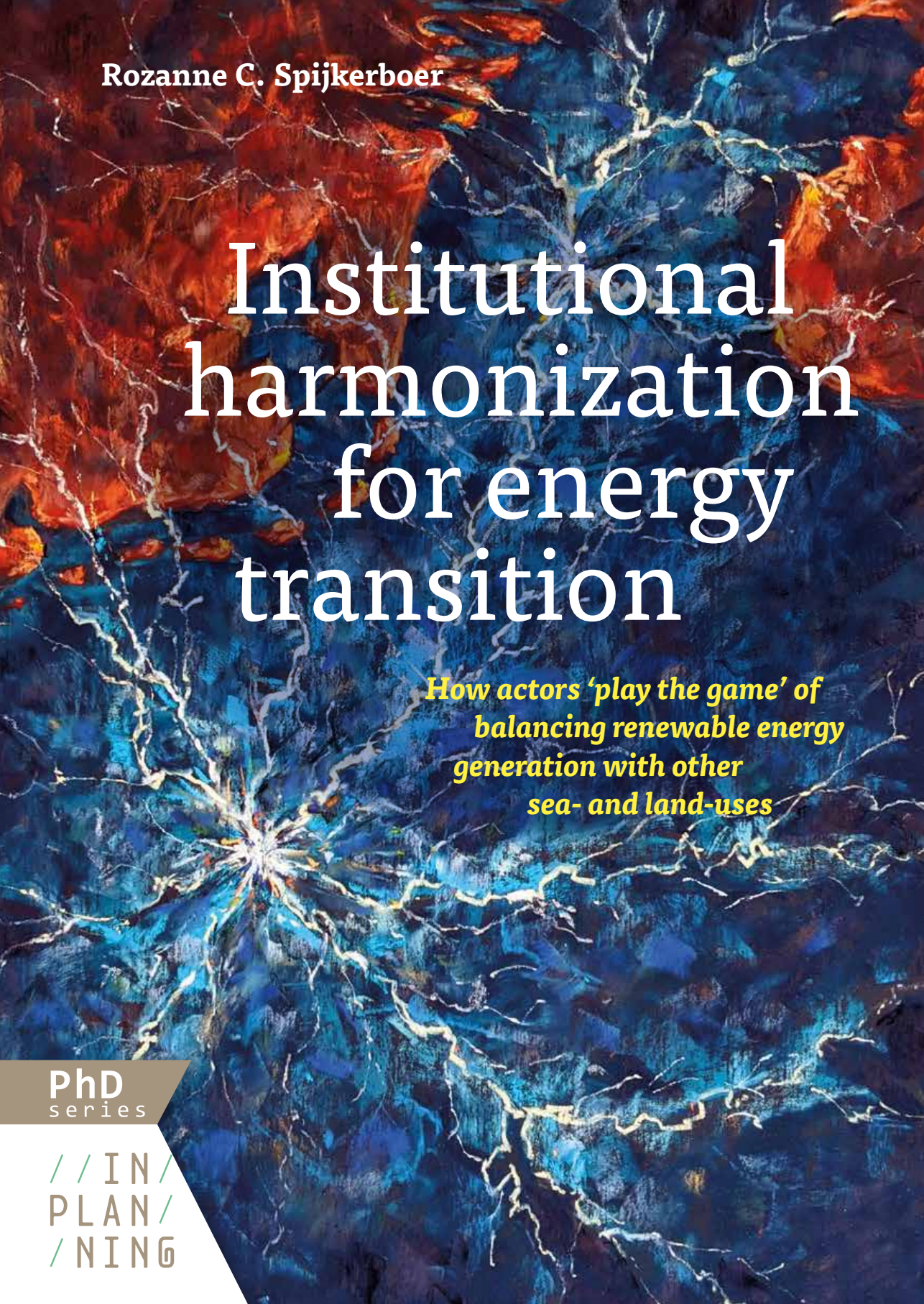
Rozanne C. Spijkerboer
Institutional harmonization for energy transition
How actors 'play the game' of balancing renewable energy generation with other sea- and land-uses
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INSTITUTIONAL HARMONIZATION FOR ENERGY TRANSITION

How actors 'play the game' of balancing renewable energy generation with other sea- and land-uses

PhD thesis

to obtain the degree of PhD at the
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on authority of Rector Magnificus Prof. C. Wijmenga
and in accordance with
the decision by the College of Deans.

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CONTENT

LIST OF ABBREVIATIONS

DI	Discursive institutionalism
EU	European Union
IAD	Institutional Analysis and Development
MSP	Marine Spatial Planning
NGO	Non-governmental organizations
NSD	North Sea Dialogues
OWF	Offshore wind farms
PV	Photovoltaics
RE	Renewable energy
RWS	Rijkswaterstaat

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Energy transition:

navigating institutional change

1.1 ENERGY TRANSITION: A CHALLENGE FOR SPATIAL PLANNING

Human society has become increasingly dependent on a secure supply of energy for our daily life and the overall functioning of our economies. Energy (infrastructure) has become intertwined with the landscape and with other infrastructure networks (Hoppe, Coenen, & van den Berg, 2016). However, research has shown that the energy sector is the main contributor to global greenhouse gas emissions, resulting in climate change (Bruckner et al., 2014). There is widespread agreement that mitigating climate change requires transition towards a low-carbon energy system, as also shown by international climate agreements such as the 2015 Paris Climate Agreement. Meeting the targets set in these agreements requires the world to shift from an energy system based on fossil fuels to one based on renewable energy (RE) (Bruckner et al., 2014; Hoppe et al., 2016; Milchram, Märker, Schlör, Künneke, & Van De Kaa, 2019; Rosenbloom, 2017; Thygesen & Agarwal, 2014; Warneryd, Håkansson, & Karltorp, 2020). Simultaneously, there is much societal and scientific debate regarding how energy transition can and should be pursued, because it entails changing the technological, economic, social, and institutional aspects of the energy system, while maintaining a secure and affordable supply of energy.

The two major pillars of energy transition are (1) the reduction of energy consumption and (2) the transition towards renewable sources of energy production (Stoeglehner, Neugebauer, Erker, & Narodoslawsky, 2016). This study focuses primarily on the second pillar of RE generation. RE generation requires large amounts of space and is highly visible in the landscape (Osorio-Aravena, Frolova, Terrados-Cepeda, & Muñoz-Cerón, 2020; Smil, 2010). As a result, there are numerous conflicts surrounding RE projects around the world (Fischhendler, Boymel, & Boykoff, 2016; Månsson, 2015; Wüstenhagen, Wolsink, & Bürer, 2007). As Stoeglehner et al. (2016) argue, *"energy provision directly competes with other ways to utilize land, like providing food and environmental services as well as preserving the variety of life forms"* (p.112). Particularly in densely populated countries such as the Netherlands (the country this study will focus on), RE is an additional contender for already contested space.

Despite the large spatial impact of RE, literature on energy transition tends to lean towards a technology-oriented perspective. This is reflected in policy goals regarding RE that are often technology driven and focus on technical capacity and economic viability (Stoeglehner et al., 2016). In light of these technological and economic goals and arguments, spatial planning has traditionally been perceived as a problem, causing delays to meeting renewable energy targets (Cowell, 2007; Pasqualetti, 2011). In the past decade, the roles of scale, place and society have increasingly gained attention in both science and practice related to energy transition (Bridge, Bouzarovski, Bradshaw, & Eyre, 2013; Coenen, Benneworth, & Truffer, 2012; De Boer & Zuidema, 2015; Stoeglehner, Niemetz, & Kettl, 2011), but the systematic interrelations between energy and spatial planning have been largely overlooked until

recently in both research and practice (see also Stoeglehner *et al.*, 2016; Cajot *et al.*, 2017; De Pascali and Bagaini, 2019; Asarpota and Nadin, 2020; Hoppe and Miedema, 2020; Dobravec *et al.*, 2021)

This does not mean that spatial planners have not engaged with the issue of energy transition in existing literature. Contributions from spatial planning in relation to energy transition include, for example, finding environmentally acceptable locations (Cowell, 2007) and organizing public engagement and social acceptance of RE (D. Bell, Gray, & Haggett, 2005; Cowell, 2007; Devine-Wright, 2011; Fast, 2013; Walker, Devine-Wright, Hunter, High, & Evans, 2010; Wolsink, 2012; Wüstenhagen et al., 2007). As such, this existing literature mainly focuses on using spatial planning to find locations for RE and increasing social acceptance, with a dominant focus on the roles of local and regional governments and local energy communities in this transition. Another strand of literature focuses on producing normative visions of how a more sustainable landscape configuration in terms of energy production, consumption and transportation ought to look and how planning can be used to achieve transformations towards these visions (see e.g., Bosch and Peyke, 2011; Leduc and Van Kann, 2013; Sijmons et al., 2017; Stoeglehner et al., 2011). In discussing these issues, this literature contributes to debates on multi-level governance for RE projects and policies (Dobravec et al., 2021; González, Daly, & Gleeson, 2015; Monstadt, 2007; Pasimeni et al., 2014; Thygesen & Agarwal, 2014), and discusses the relationship between RE and urban and rural land-use forms (Asarpota & Nadin, 2020; Cajot et al., 2017; La Greca & Martinico, 2016; Leduc & Van Kann, 2013; Stoeglehner et al., 2011). However, guidance on cross-sectoral coordination and cooperation between stakeholders within and across various scales in energy transition contexts remains limited.

Spatial planning can be a means to achieve such coordination and cooperation with regards to energy transition for a number of reasons: (1) a spatial perspective can shed light on opportunities and constraints for RE generation offered by the physical landscape (De Boer & Zuidema, 2015); (2) a spatial perspective can help identify opportunities and constraints offered by the socio-economic landscape at various scales, and thereby in the actors and sectors that need to be involved (De Boer & Zuidema, 2015); (3) a spatial perspective can help analyze and establish interconnections across (administrative) scales, from the local to (inter) national, and thereby help counteract fragmentation (Cajot et al., 2017; De Boer & Zuidema, 2015). As such, spatial planning can provide a systematic approach, including platforms, tools and instruments for coordination and cooperation between various sectors and actors in energy transition contexts (Stoeglehner et al., 2016). However, if spatial planning systems are to meet these expectations, changes in policies and institutional frameworks are called for to enable integrated spatial and energy planning (De Pascali & Bagaini, 2019; Dobravec et al., 2021) and create spatially integrated solutions through smart combinations between RE and other land-uses (Kempenaar, Puerari, Pleijte, & van Buuren, 2021).

The limited number of existing studies that that do address cross-sectoral interconnections between spatial and energy planning tend to approach this topic from a local or regional perspective (e.g., Cajot *et al.*, 2017; Hoppe and Miedema, 2020; Wiehe, Von Haaren and Walter, 2020) resulting both in calls for more national coordination, and calls for minimizing the constraints these national frameworks place on local development (Cajot et al., 2017; Dobravec et al., 2021; Wiehe et al., 2020). As such, existing research focuses on how local and regional governments and initiatives navigate within the context of national institutional frameworks to enable integration between spatial and energy planning, not on how these institutional frameworks can be harmonized to enable cross-sectoral interconnections. This study addresses this research gap by examining the spatial dimension of energy transition, specifically focusing on how institutional frameworks can be harmonized to enable (organizing) cross-sectoral coordination and cooperation, focusing predominantly on the national level, but also in connection to local and regional levels.

In this study, two cases are used that are illustrative of the need for cross-sectoral cooperation and coordination and institutional harmonization in energy transition contexts. The first case examines the domain of transport infrastructure development, which traditionally has a strong sectoral orientation, and their response to demands related to RE generation. While the significant opportunities for generating RE in combination with transport infrastructure networks are being recognized in the Netherlands (Ministry of Infrastructure and the Environment, 2016), acting upon these opportunities remains very difficult because of the tendency towards sectoral management of transport infrastructure on the national level. Integration between transport and land-use planning in general already proves challenging (Heeres, Tillema, & Arts, 2012; van Geet, Lenferink, Busscher, & Arts, 2021), and adding RE generation to this mix further increases the complexity of these challenges. Simultaneously, such spatially integrated solutions prove necessary to achieving the targets set in the Paris Agreement. For example, in the Netherlands, the target for onshore RE production has been set at 35 terawatt hours by means of wind and solar power (Klimaatakkoord, 2019). As emphasized by Stoeglehner *et al.* (2016), the question of how to balance RE generation with regards to other existing and new land-uses is not yet resolved.

The second case provides one of the most striking examples where a lack of spatial perspective leaves decision-makers ill equipped to deal with energy transition: namely, the planning of offshore wind farms (OWF). The Dutch North Sea – like many seas and oceans around the world – is often perceived as empty and, therefore, presented as the solution to experienced conflicts in finding space for RE generation onshore (Bilgili, Yasar, & Simsek, 2011). However, particularly those areas that are currently being considered suitable for OWF – usually closer to the coast with relatively shallow water depths – are intensively used already (Gusatu, Yamu, Zuidema, & Faaij, 2020). As such, offshore space is also contested: OWF as a relatively fixed use is introduced in a highly dynamic environment with an abundance of existing users such as fisheries, shipping, protected nature areas, oil- and gas extraction, sand extraction and suppletion, underwater cultural heritage sites, recreation, cables and pipelines, and military zones. Additionally, there is an abundance of ideas

regarding innovative ways of producing food and electricity offshore, for example, through seaweed farming, and other forms of ocean energy that require space for experimentation and scaling up. These various existing and new uses need to be balanced in a highly interconnected, heterogeneous, and dynamic ecosystem (Douvere, 2008).

The complexity of balancing OWF with other sea-uses is further increased because there is no tradition of comprehensive planning for offshore space. Ad-hoc and sectoral approaches to managing sea-uses still dominate offshore, with the first efforts at comprehensive Marine Spatial Planning (MSP) stemming from the early 2000s (Douvere, 2008). Since these early attempts, development has slowly progressed with many coastal states around the world currently entering their first or second round of MSP (Flannery & McAteer, 2020; Jones, Lieberknecht, & Qiu, 2016). However, these existing MSP practices are being criticized for resembling strategic sectoral planning that forwards the interests of powerful sectors such as offshore wind energy (Jones et al., 2016), rather than forming the basis for comprehensive spatial planning offshore. As a result, questions remain on how to balance RE – as a new occupant of offshore space – against other uses, in a novel context that is often still in the phase of developing and refining the institutional frameworks to support comprehensive planning. With European ambitions for an increase of installed capacity from the current 12 GW in European seas to at least 60GW in 2030 and 300 GW in 2050, a large amount offshore space will be required for OWF in the near future (EC, 2020). In the Netherlands, until 2030 the goal for offshore wind energy has been set at 45 terawatt hours (Klimaatakkoord, 2019), equaling an installed capacity of approximately 11 GW in the Dutch North Sea by 2030 (Ministry of Economic Affairs and Climate, 2019). Balancing RE with other users of space and achieving sustainable spatial configurations of these uses, both onshore and offshore, requires cross-sectoral coordination and cooperation between stakeholders. Rather than just examining how local and regional level actors navigate existing institutional frameworks, this also requires attention to these institutional frameworks themselves, which often are established at the national level.

1.2 ORGANIZING COORDINATION AND COOPERATION: AN INSTITUTIONAL PERSPECTIVE ON THE ENERGY TRANSITION

Institutions are the “the rules of the game in a society or, more formally […] the humanly devised constraints that shape human interaction” (North, 1990, p. 3). Institutions can be formal (e.g., laws, regulations and policies) or informal (e.g., norms, conventions and codes), and shape how actors behave in specific contexts (Kingston & Caballero, 2009; North, 1990; Ostrom, 2005). Energy transition introduces changes in the context in which various sectors operate, for example by requesting them to respond to, recognize, and act upon opportunities and challenges related to RE projects and policies. Many of these actors might previously not have had any dealing with the energy system, besides the financial

considerations of paying their energy bills. Often, actors reflect upon these new opportunities and challenges related to RE by referring to existing sector-specific institutional frameworks. These existing frameworks tend to be ill equipped for recognizing and acting upon opportunities for cross-sectoral coordination and cooperation, resulting in institutional barriers that hamper RE development (Lammers & Heldeweg, 2016; Negro, Alkemade, & Hekkert, 2012). In addition to these existing institutional frameworks, energy transition also requires the adaptation of existing energy-related institutional frameworks and the creation of new rules specifically related to RE (Fuenfschilling & Truffer, 2014; Jehling, Hitzeroth, Brueckner, & Ioer, 2019). This abundance of existing and new rules can result in institutional barriers. For example, questions can arise regarding which institutional frameworks actors need to apply in specific situations, actors can rely on existing frameworks that do not fit the new context, or on adapted and new frameworks that are (yet) unfinished. Such institutional barriers often hamper opportunities for cross-sectoral coordination and cooperation related to energy transition (Jehling et al., 2019; Lammers & Heldeweg, 2016; Spijkerboer, Zuidema, Busscher, & Arts, 2019). Finding physical space for energy transition, therefore, also requires institutional change and alignment towards improved harmonization between the institutional frameworks that guide various sectors. This will henceforward be described as institutional harmonization.

Institutional approaches have gained traction in energy transition research in recent years, after calls for increased engagement with institutional theories (Andrews-Speed, 2016; Kern & Rogge, 2018; Köhler et al., 2019; Lockwood, Kuzemko, Mitchell, & Hoggett, 2017; Sovacool, 2014b). However, these existing studies focus mostly on (the development of) institutions *within* the energy system. For example, existing studies focus on: the impact of institutions on the diffusion of RE technologies in various contexts (Bohnsack, Pinkse, & Waelpoel, 2016; Jacobsson & Bergek, 2004; Negro et al., 2012); the study of national energy transition policies (Iychettira, Hakvoort, & Linares, 2017; Kuzemko, Lockwood, Mitchell, & Hoggett, 2016); institutional developments surrounding smart-grids (Gui, Diesendorf, & MacGill, 2017; Lammers & Heldeweg, 2016; Warneryd et al., 2020); and the role of local and community based initiatives in various institutional contexts (Jehling et al., 2019; Kooij et al., 2018; Mahzouni, 2019).

Despite their importance in also advancing our understanding of the institutional dimensions of energy transition, these existing studies all focus primarily on identifying barriers within the energy sector, not on the need for institutional harmonization *between* RE and other sectors in specific regions and in their interactions across various scales. When these studies do address institutional change, they again tend to focus on change within the energy system, often on a specific scale – e.g., national (Kuzemko et al., 2016) or local (Kooij et al., 2018; Warneryd et al., 2020). Moreover, these studies apply relatively passive accounts of institutional change, such as historical accounts of changes that proved necessary in specific contexts (Kooij et al., 2018; Mahzouni, 2019), or relatively generic changes that need to occur, such as broader participation of a range of actors and interests (Judson et al., 2020) and improving government support (Jehling et al., 2019; Kooij et al., 2018). As such, these

studies are often better at explaining the barriers to change presented by various existing institutional frameworks, rather than how such change can be brought about. Therefore, there is also a research gap regarding how processes of cross-sectoral institutional harmonization can be brought about by actors to enable spatially integrated solutions for energy transition. One of the novelties of this study is that we explicitly explore the role of actors in progressing institutional change towards – or against – harmonization in the context of the energy transition, using institutional theories that place the agency of actors at the heart of change processes.

1.3 THE ROLE OF ACTORS IN ORGANIZING INSTITUTIONAL CHANGE

As described above, institutions are the relatively enduring formal and informal rules that structure how actors behave under specific circumstances (Giddens, 1984; Healey, 1999; North, 1990). However, despite being enduring, institutions are not static. There are many theories discussing how institutional change comes about (see Kingston and Caballero, 2009 for an overview). Within these debates on institutional change, there is an increasing body of literature that endogenizes institutional change, discussing the role of actors in bringing about such changes (Battilana & D'Aunno, 2009; Beunen & Patterson, 2019; Dorado, 2005; Lawrence & Suddaby, 2006; Schmidt, 2010; Seo & Creed, 2002). A key point of debate in these agency-oriented institutional theories is the so-called 'paradox of embedded agency', which deals with the question how actors can change the institutions that they are conditioned by, and that shape their actions and ideas (Dorado, 2005; Giddens, 1984; Lawrence & Suddaby, 2006; Schmidt, 2008, 2010; Seo & Creed, 2002). This study builds upon and adds to these theories, and, as such, acknowledges that such changes can be brought about by more or less deliberate actions of actors (Battilana & D'Aunno, 2009; Dorado, 2005; Giddens, 1984; Klijn & Koppenjan, 2015; Seo & Creed, 2002). Contrary to many earlier institutional theories that focus primarily on explaining continuity, these new agency-oriented approaches claim to be better equipped at explaining institutional change (Mahoney & Thelen, 2010; Schmidt, 2010).

A common denominator is the dynamic conceptualization of institutions in these theories that place the agency of actors at the heart of change processes. Schmidt (2008, 2010), using the term discursive institutionalism, sees institutions as both structures and constructs. Institutional change, then, is the result of the interplay between actors' 'background ideational abilities' and their 'foreground discursive abilities'. The background ideational abilities enable creation and maintenance of institutions by actors, while foreground discursive abilities enable critical reflection and change or maintenance of institutions (Schmidt, 2010). Similarly, Seo & Creed (2002) pose that actors' experiences of incompatibilities and conflicts between institutions in practice can lead them to reflect upon and initiate changes. Additionally, Lawrence et al. (2009) develop the notion of institutional

work, which focuses specifically on the simultaneous efforts of actors to change, maintain and disrupt institutions (see also Chapter 5). This study draws on these agency-oriented institutional theories to explore processes of institutional harmonization. Thereby, this study also responds to calls for more attention to and further expansion of these agency-oriented institutional change theories in environmental governance (Beunen & Patterson, 2019) and renewable energy studies (Genus, 2014, 2016).

This study not only focuses on the 'rules of the game', but also on the ideas, understanding and deliberations regarding these rules by various interacting actors in what is called 'the play of the game'. It is important to distinguish between the operational 'play of the game', which is about balancing various interests within the context of existing rules, and the meta-game which is about the rules themselves (Aoki, 2007). It is this second type of meta-level 'play of the game' that is the focus of this study, since institutional harmonization is about the process of aligning the 'rules of the game' that guide various actors.

In this study, the term 'actor' is generally used to refer to organizations, such as Rijkswaterstaat or the sector-organizations in the NSD. This is in line with Hodgeson (2006)[1] who explains that "organizations can be treated as a single actor" (p.9) as an analytical abstraction, as long as organizations are not defined as actors because "this would amount to an unwarranted conflation of individual agency and organization" (Hodgson, 2006, p. 10). As such, this study embraces the perspective that there are multiple encompassing rule systems, where organizations can be treated as actors on the meta-level (Aoki, 2007), while acknowledging that organizations themselves are also the consequence of rule-systems for individual actors.

1.4 SCIENTIFIC AND SOCIETAL RELEVANCE

Finding physical space for RE in a well-balanced manner that takes into account other interests and users of space is a huge societal challenge, both onshore and offshore. Solving this challenge requires balanced and well-informed spatial planning focused on identifying opportunities for combining functions where possible and separating functions when necessary, through cross-sectoral coordination and cooperation. This study addresses this societal challenge, by providing guidance on such the institutional dimensions of such cross-sectoral coordination and cooperation between stakeholders in energy transition contexts. Specifically, this study provides insight into how actors (can) pursue processes of institutional harmonization to address institutional barriers and seize opportunities for improving cross-sectoral coordination and cooperation, and find physical space for RE.

1 Based on personal communication with Douglas North regarding his use of these terms in his 1990 publication

Moreover, this study contributes to and builds upon existing theories that focus on agency-oriented institutional change. The role of actors in pursuing but also hampering institutional change in energy transition contexts is currently understudied. Multiple authors have called for more engagement with these agency-oriented perspectives in spatial and environmental planning, also specifically related energy transition (Beunen & Patterson, 2019; Genus, 2014, 2016). Moreover, this paper uses novel methodological approaches, particularly related to participatory observation of policy-making, which can be useful for spatial planning methodology and teaching practices, as will be discussed in the conclusion (Chapter 6).

1.5 OBJECTIVE AND RESEARCH QUESTIONS

As explained above, due to the limited amount of space available, both onshore but also offshore, finding physical space for energy transition requires cross-sectoral coordination and cooperation between actors from various sectors, which also requires cross-sectoral institutional harmonization. Therefore, the aim of this study is to examine how actors pursue institutional harmonization for energy transition and which different institutional barriers and opportunities they encounter.

The main research question for this study is: ***How do actors pursue institutional harmonization between renewable energy generation and other sectors in energy transition contexts and what institutional barriers and opportunities do they encounter?*** To answer this question, four sub-questions are formulated. The first two questions mainly focus on the barriers and opportunities encountered by actors, while the latter two questions mainly dive into the process of harmonization.

1 What institutional barriers and opportunities do actors encounter when pursuing spatial integration between renewable energy and other sea- and land-uses?
2 How does marine spatial planning perform in balancing renewable energy against other uses offshore and what are the opportunities and barriers for doing so?
3 Which formal and informal institutional changes are pursued by actors to improve spatial integration between renewable energy and other sea-uses?
4 How do actors work at maintaining, disrupting, defending, or creating institutions they face or need to rely on, and what patterns can be identified as a result of the interplay between these forms of work related to multi-use of offshore wind farms?

1.6 RESEARCH APPROACH

This study adopts a qualitative research approach, which is suitable for "exploring and understanding the meaning individuals or groups ascribe to a social or human problem" (Cresswell, 2014, p. 4) in specific situations (Robson, 2005). Following Cresswell (2014), this section presents the choice for the general research approach by describing the interconnection between the philosophical worldview, research design and research methods. More detailed and specific descriptions of the applied methods are also included in each of the Chapters two to five.

1.6.1 Philosophical approach: critical realism

Critical realism is the dominant philosophical approach adopted in this study. The origins of critical realism (as opposed to more naïve forms of realism) are often attributed to the writings of Roy Bhaskar (Archer, Bhaskar, Collier, Lawson, & Norrie, 2013; Reed, 2005; Sayer, 2000). Critical realism combines the ontological point of departure is that there is one reality (the intransitive dimension), with the epistemological stance (the transitive dimension) that a person can never fully know this reality because knowledge – being a product of social and historical structures – is subjective and situational (Allmendinger, 2009; Archer et al., 2013; Reed, 2005; Robson, 2005). Critical realism recognizes the complexity of reality and the interdependency between individual and institutional 'layers' of reality (Robson, 2005). As a result, this approach combines structure and agency, by positioning actors as active and reflexive agents that are capable of reproducing and transforming (pre-existing) structures (Allmendinger, 2009; Robson, 2005). This matches the dominant theoretical perspective in this study, in which actors are seen as both constrained by and capable of reflecting upon, deliberating, and changing their institutional context.

Although, certain strands within agency-oriented institutionalism – particularly discursive institutionalism – might lean towards a more constructivist philosophical underpinnings and total relativism (S. Bell, 2011), Schmidt (2012) argues that "discursive institutionalism leave[s] open where the wide range of discursive institutionalist scholars fit on a continuum between positivism and constructivism" (p. 708). Moreover, as argued by Robson (2011), "a rapprochement between what might be termed moderate social constructionism and more sophisticated versions of realism appears feasible" (p32) (see also Al-Amoudi and Willmott, 2011). Reed (2005) argues that critical realism encourages engagement with various theoretical perspectives and the accounts they produce of underlying structures and patterns. Hence, the adopted approach to critical realism is compatible with the various theoretical approaches that are used in this study.

A critical realist approach is ideally suited to answering 'how' and 'why' questions, related to specific events in a specific context. It can produce accounts of what works under specific circumstances but also credits accounts of what does not work in a specific context (Robson,

2005). As such, this approach is appropriate for answering the research questions, and shed light on how actors in specific energy transition situations pursue institutional harmonization. As explained by Sayer (2000), critical realism accepts that "the nature of the real objects [either natural or social] present at a given time constrains and enables what can happen but does not predetermine what will happen" (p.12). Therefore, the generalizability of the results from this study is analytical rather than empirical, with results contributing to reflection upon existing theories, as well as exploration of new concepts (Yin, 2014).

1.6.2 **Research design: a case-study design**

This study adopts in-depth case study research as the main process of empirical inquiry, because case studies allow for investigation of "a contemporary phenomenon (the "case") in depth and within its real-world context, especially when the boundaries between phenomenon and context may not be clearly evident" (Yin, 2014, p. 16). Case studies allow for a wealth of information and provide a nuanced view of the different perspectives on reality (Flyvbjerg, 2016). In line with the adopted philosophical worldview of critical realism, a case study can shed light on the process of institutional harmonization in specific contexts (Robson, 2011).

As explained in Section 1.1, this study is based upon two different case studies that deal with the spatial integration of RE with other sea- or land-uses. While these cases might seem widely different, they both show recognition of the need for cooperation and coordination to enable energy transition and actors are currently engaged in processes of institutional change. Therefore, both of these cases are well suited for answering the main questions posed in this study regarding how actors pursue institutional harmonization, as well as the barriers and opportunities encountered while doing so.

1 Integrating solar PV with transport infrastructure: This case relates to developing solar photovoltaics in combination with transport infrastructure, focusing specifically on national transport infrastructure networks managed Rijkswaterstaat (RWS). While the Ministry of Infrastructure acknowledges the potential for developing RE on lands managed by RWS, these projects are very difficult to realize in practice, because there is tradition of sectoral management for infrastructure networks. As a result, if RE development on RWS networks is to become practice, the institutional frameworks that guide both transport infrastructure (re)development and energy transition need to be harmonized. This case was used to collect a cross-sectional account of the institutional barriers encountered when developing PV projects in combination with transport infrastructure, as well as opportunities for institutional harmonization. Thereby insights from this case study contribute to answering the first research question (see Chapter 2).

2 Integrating offshore wind farms (OWF) with other sea-uses: This case relates to offshore wind energy development in the Dutch North Sea in relation to other sea-users and can be split into two parts. This case was used to collect a longitudinal account of policy

development for OWF in relation to other sea-uses in the North Sea. The first part of this case study focuses helps inquire how OWF has been balanced against other existing and new uses in the past, and also contributes to answering the first research question (see Chapter 3). This first part also provides a detailed understanding of the context for the second part of this case study, which focuses on the North Sea Dialogues (NSD), and provides insight in how actors pursue institutional change processes (see Chapter 4) and how actors pursue formal and informal institutional change (see Chapter 5). As such, Chapter 4 and 5 help answer the second research question.

1.6.3 Research methods

This study uses a range of qualitative research methods to enable collection of the different perspectives of involved stakeholders and their actual behavior in specific situations (Yin, 2014), which is necessary to gain insight in the (inter)subjective and situational understanding of the world by actors. While qualitative methods are time-intensive, they are uniquely suited to capturing the social complexities of cases, taking into account the values, interactions, lived experiences and belief systems of actors (O'Leary, 2010; Robson, 2005).

According to Yin (2014), case study research benefits from using different qualitative methods in conjunction. This study uses all three major modes of qualitative data collection as described by Wolcott (1992): (1) *enquiring* through interviews and focus groups, (2) *examining* through document analysis of materials prepared by others, and (3) *experiencing* through participatory observation.

This study used in-depth interviews and a focus group as methods of data collection, which were used primarily for answering sub-questions 1 and 2. Both these methods allow the researcher to enquire about institutional barriers encountered by actors when pursuing integration of RE with other sea- and land-uses, as well as their ideas and opinions on how to achieve institutional harmonization. In-depth semi-structured interviews were mainly held with government representatives at various scales (local, regional, national) since they are responsible for policy development, but also with representatives from the private sector (e.g., companies involved in OWF development and consultancy firms). Interview contacts were mainly approached through snowball sampling. Both of these methods provide retrospective accounts of 'what happened' and are ideally suited to gaging stakeholders' opinions and experiences on these accounts (Yin, 2014). Interviews and the focus group were recorded and transcribed to enable further analysis of the data. Appendices A1.1 and A1.3 provides an overview of the interviews and focus group that were held and Appendix A1.2 provides an example of the interview guides.

Document analysis was primarily used to answer sub-question 2 and to complement findings for each of the other research questions. Chapter 3 relies on examination of a broad range of publicly available policy documents and policy memos regarding OWF and marine spatial

planning in the Netherlands (see Appendices A2.1-A2.5), which was complemented by interviews for triangulation of findings (see Appendix A2.6). Similar to interviews, document analysis also requires a careful selection strategy to ensure saturation, as will be explained in Chapter 3. This method allows for collection of longitudinal data on policies that were developed in the past (Yin, 2014). For example, the analysis in paper 3 goes back to the early 2000s and it becomes increasingly difficult for participants to recall these time-periods during interviews, if they were at all involved at that time. As such, policy documents are capable of providing insight in the political reality at a certain point in time (Bowen, 2009; Robson, 2011)

To capture the more dynamic, interactive processes of institutional change that form the basis for institutional harmonization, Chapter 4 and 5 are based on data collected through participatory observation of the North Sea Dialogues (NSD). Rather than recollected accounts of what actors say they did, observational methods provide insight in what actors actually do in a real-life context (Morgan, Pullon, MacDonald, McKinlay, & Gray, 2017; Robson, 2005). However, this method does require sensitivity to the role of the researcher in the process, because the researcher will still make a choice in what they record (Morgan et al., 2017; Robson, 2005). In this study, a conscious decision was made to focus on the content of the NSD and the interactions between stakeholders regarding this content. However, this method can lead to large amounts of data. To enable further data analysis, this data was organized into a chronological storyline. By using the method of participatory observation, this study also responds to the call for more engagement with real-world actors and real-time studies in sustainability transition research (Köhler et al., 2019; Murto et al., 2020). The value, opportunities, and drawback of such participatory methods for research in the fields of energy transition and spatial planning will be further discussed in the conclusions (Chapter 6).

In this study, the qualitative data analysis software Atlas.ti was used to analyze the transcripts of interviews and focus groups, documents, and the storyline based upon observational data. Each chapter relied upon a mix of inductive and deductive coding that was informed by the theoretical underpinning of the respective chapter, as will be further explained in each specific chapter. These chapters also include tables (see Tables 2.1, 3.1, 4.1 and 5.1) that provide the respective codebooks for each chapter.

1.6.4 **Credibility**

Credibility in qualitative research require the researcher to (1) be rigorous and thorough, and (2) to obtain confirmation and verification (O'Leary, 2010). A number of strategies can be applied to ensure these criteria are met. For rigor and thoroughness, O'Leary (2010) states that researchers should strive for:

- Saturation and crystallization: Collection of interviews, focus group, and documented data for this study only finished when new sources no longer provided new insights or understanding of the specific cases, and a rich and diverse understanding of the case was achieved. For example, the focus groups that took place towards the end of the data

collection process for the case of integrating PV with transport infrastructure showed that saturation and crystallization was achieved. The same was achieved with the interviews that were held in addition to the document analysis for Chapter 3.

- Prolonged engagement: For both cases, time was invested to gain a broad understanding of the case, including the context and culture. This takes different forms in both cases: for Chapter 2 interviews were held over the course of seven months with various involved stakeholders and finished with a focus group in which results were discussed. For Chapter 3, all relevant policy documents that met the criteria for inclusion were analyzed, covering a time span of 16 years. For Chapters 4 and 5, nine months of participatory observation of the entire core process of the design of the North Sea Agreement ensured deep familiarity of the researcher with the content of the case.

- Persistent observation: To ensure that a broad range of possible readings of the results was taken into account, the method of in-depth interviews was used. This allowed the researcher to ask further questions regarding answers and to adapt interview guides to check for new insights based on previous interviews. Moreover, the data analysis for each of the chapters included multiple rounds of coding to check for interrelations and alternative explanations for results.

- Broad representation: This was mainly important with regards to the interview and focus group methods because these methods require conscious consideration of whom to contact as participants. In these cases, an analysis of relevant stakeholders combined with snowballing were used to contact a representative range of participants.

- Peer review: all chapters have undergone peer review in academic journals.

For confirmation and verification, O'Leary (2010) suggests the following techniques:

- Triangulation: triangulation of findings was ensured by using multiple data sources for each chapter. Chapter 2 triangulated data from interviews and the focus groups, Chapter 3 used interviews in addition document analysis, and Chapter 4 and 5 are based upon participatory observation using the researchers notes on each meeting and on the general progress of the agreement, as well as official meeting reports written by a third party.

- Member checking: interpretations of results were checked with 'insiders for both cases. The case of integrating PV with transport infrastructure used the focus group for this purpose. For the case of the NSD, the results were discussed with a key actor that was present throughout the process.

- Full explication of method: each chapter provides additional insight in the methodological choices that were made to ensure that research performed for this study is auditable.

1.6.5 **Ethics and positionality**

Additionally, it is crucial for research to take into account ethical considerations, particularly since the critical realist worldview that underlies this study focuses on actors positions, values, ideas and perceptions (O'Leary, 2010; Robson, 2011). Therefore, prior to interviews and focus groups, respondents were asked for informed consent and permission for the researcher to take audio recordings. Moreover, they were made aware of the option to review interview transcripts or potential citations prior to their use in publications. To ensure confidentiality, interview and focus group data were anonymized.

Particularly with regards to participatory observation of the NSD, it is important to reflect on the position of the researcher. The researcher was hired by the Ministry of Infrastructure and Water Management (Overlegorgaan Fysieke Leefomgeving) through a secondment agreement with the University of Groningen. The researcher was a member of the independent staff upon recommendation by the chairperson of the NSD, because of her in-depth knowledge of the policies and developments surrounding the Dutch North Sea. The staff for the NSD acted independent from the government and from the various stakeholders, and was involved in facilitating the process of the NSD, preparing meetings, and co-drafting the eventual agreement based on the input of stakeholders. The position of the researcher as both staff member and researcher were explained at the first and last meeting of the NSD that were attended by the researcher. Findings from data that were the result of participatory observation were discussed with a key stakeholder to ensure confidentiality prior to publication. This requirement was included as part of the secondment agreement between the University of Groningen and the Ministry of Infrastructure and Water Management that arranged the double role of both researcher and staff member during participatory observation.

Particularly in relation to this double role, it is crucial to discuss the positionality of the researcher. During the data collection process of participatory observation, the researcher clearly took an insider role, where the researcher "works for or is a member of the participant community" (Rowe, 2014, p. 2). There was no conflict between the roles of researcher and staff member. This is due to the independent position of the staff whose primary goal was to try and come to an agreement, while the role of the researcher was focused on collecting information on the position, content, and interactions between stakeholders during this negotiation process.

While the researcher was familiar with the content of policies and the major topics that were discussed, she was unfamiliar with the process of high-level political negotiations. In this context, it was a logical choice to start with relatively low structure to the data collection, which enabled the recording of a broad range of observations both related to content and process. Simultaneously, the immersion in this process as part of the staff quickly allowed for familiarization with these processes. Due to this familiarization and prolonged engagement, the role of employee and responding to day-to-day became more dominant over time. However, contact moments at the university, including reflection on this process,

in addition to consistent note keeping which were required for both research and employee purposes meant that the process and content – which were the focus of the study – were well documented and allowed for both in-depth substantive and tacit knowledge which enabled thick description of the case. Chapter 6 provides additional discussion on the methodology of participatory observation and the drawbacks and opportunities for using participatory methods in spatial planning research and education.

1.7 STUDY OUTLINE

This study can be broadly divided in two parts. The first part, answering sub-questions 2 and 3, mainly focuses on the institutional barriers and opportunities encountered by actors when pursuing spatial integration between RE and other sea- or land-uses. Chapter 2 draws on the case of PV on RWS lands to study these issues, while Chapter 3 explores these issues for the case of the North Sea and set the stage for the following chapters. The second part of this study focuses on answering sub-questions 4 and 5, by examining in-depth how actors pursue institutional harmonization. These chapters draw primarily on the data from participatory observation of the North Sea Dialogues, where Chapter 4 has a more empirical focus, while Chapter 5 has a more theoretical focus. In Chapter 6, the main research question will be answered and the results and methods will be discussed.

2

Institutional harmonization for spatial integration of renewable energy:

Developing an analytical approach

Abstract

This paper develops an analytical approach to explore institutional barriers to spatial integration between renewable energy (RE) and other land-use functions and provides insight into opportunities for institutional harmonization between involved policy domains. Spatial integration of RE with other land-use functions provides opportunities to use limited amounts of space more efficiently, allowing for a more fluent roll-out of renewable technologies. However, such integration requires the involvement of various policy domains that are each guided by specific institutional frameworks, which are often tailored to specific sectoral needs. Therefore, spatial integration of RE and other land-use functions requires institutional harmonization between involved policy domains. However, there is limited guidance in literature on how such harmonization does or could occur. Moreover, while literature on RE recognizes the merits of institutional approaches, it focuses on institutions as the formal rules of the game, often disregarding the agency component (the 'play of the game'). The analytical approach developed in this paper combines the Institutional Analysis and Development framework with insights from Discursive Institutionalism. The approach enables structured assessment of relationships within and between established institutions (the 'rules of the game') and actors' ideas, interpretations and deliberations regarding these institutions (the 'play of the game'), providing insight in processes of institutional harmonization. This analytical approach is applied to the case of spatial integration of photovoltaics with national transport infrastructure networks in the Netherlands. The findings from the case show that (1) insight in interrelations between institutional barriers is crucial for addressing institutional harmonization; (2) institutional harmonization *within* policy domains is a precondition for harmonization *between* policy domains; and (3) the agency component (play of the game) is key to successful harmonization. In conclusion, the analytical approach provides insight into the co-evolution between the rules of the game and the play of the game, which is pivotal to institutional harmonization.

Key Words: Renewable energy; Transport infrastructure; Spatial integration; Institutional analysis; IAD framework; Institutional harmonization

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2.1 INTRODUCTION

The Paris Agreement on climate change, signed in 2015, shows an increased global sense of urgency to shift towards a low fossil carbon society (Suzuki, Kanie, & Iguchi, 2016). This shift involves widespread application of renewable energy (RE) technologies (Mignon & Bergek, 2016). However, RE generation requires extensive amounts of space and is highly visible in the landscape because of the relatively low power density of renewable sources compared to fossil sources (Scheidel & Sorman, 2012; Smil, 2006). Power density (in W/m^2) provides insight into the spatial requirements of various energy sources. Whereas fossil fuel sources such as coal or hydrocarbons have a power density of 10^2 or 10^3 W/m^2 (Smil, 2006), the power density of renewables is approximately 0.5 to 1.5 W/m^2 for wind energy and 4 to 9 W/m^2 for solar photovoltaics (PV) (Scheidel & Sorman, 2012). The concept of power density, however, does not take into account the possibility for combining land-use functions. To illustrate, wind turbines or solar panels can often be placed upon grounds used primarily for other purposes, such as housing, agriculture, or transportation. Such spatial integration of RE production with other land-use functions creates integrated energy landscapes which, especially in densely populated regions, appears to be necessary for making the transition towards low fossil carbon societies (De Boer & Zuidema, 2015).

Transport infrastructure is one of the land-use functions providing opportunities for spatial integration with RE. The most viable options for such integration include placing wind turbines or solar panels on left-over spaces along highways, highway nodes, and sound screens (Frantál et al., 2018; Volpe, 2012; Wadhawan & Pearce, 2017). Areas along infrastructure are suitable for RE production for a number of reasons: (1) these areas are already under environmental pressure due to air and sound pollution and, therefore, offer limited use-value besides the primary function of providing accessibility (van der Horst, 2007); (2) infrastructure networks are usually government-owned, making it easier for governments to develop these areas because they have powers beyond incentivizing development; (3) combinations of RE with infrastructure networks are supported by government ambitions and experimentation, e.g., in the US (Volpe, 2012), the UK (Highways England, 2016; Parker, 2015), Germany (Frantál et al., 2018) and the Netherlands (Ministry of Infrastructure and the Environment, 2016). To illustrate, the Dutch Ministry of Infrastructure and the Environment wrote a letter to parliament in 2016, expressing the ambition to make the national transportation infrastructure networks, managed by its executive organization Rijkswaterstaat, energy neutral by 2030 (Ministry of Infrastructure and the Environment, 2016).

Despite these opportunities and ambitions, few integrated RE and transport infrastructure projects have been implemented so far in the Netherlands and abroad. One of the main challenges appears to be that spatial integration of RE with other land-use functions requires the involvement of various policy domains. These domains are each guided by specific institutional frameworks and related practices, which are often tailored to specific sectoral

needs. Institutional barriers occur because existing frameworks and practices create an overload of rules which can be contradictory (Grotenbreg & van Buuren, 2018; Negro et al., 2012). Moreover, there appears to be a disconnection between existing (sectoral) institutional frameworks and new ideas and practices that are arising related to RE (Lammers & Heldeweg, 2016). Simultaneously, there are few rules aimed specifically at integrated projects (Grotenbreg & van Buuren, 2018). As a consequence, such integrated projects face a high degree of institutional ambiguity, or even an institutional void, which Hajer (2006) describes as "a situation in which there is no single 'constitution' that pre-determines where and how a legitimate decision is to be taken. Actors bring their own assumptions about rules and authority" (p.43).

The above discussion illustrates that the spatial integration of RE and other land-use functions appears to be hampered by uncoordinated and ill-adjusted institutions, as well as a lack of specific institutions accommodating the issue at hand. As Suzuki et al. (2016) argue in a special issue of this journal, "harmonization of existing and new policies and institutions is key" (p. 4) if the world is to move towards low fossil carbon societies. However, existing literature does not address how institutional harmonization does or could occur. Therefore, the aim of this paper is to explore institutional barriers that hamper such harmonization efforts, so as to provide insight into how institutional harmonization can be enhanced to improve spatial integration between RE and other land-use functions, using the case of transport infrastructure.

The focus on institutions stems from the observation that spatial integration between RE and transport infrastructure has been addressed primarily from a technological perspective (e.g., Debije et al., 2018; Vallati et al., 2015; Wadhawan and Pearce, 2017). These observations are in line with Andrews-Speed (2016), who states that in energy transition literature in general, there appear to be few explicit institutional analyses that draw on insights from institutional theory. Nevertheless, the role of institutions in understanding transition dynamics is academically appreciated. For example, Geels et al. (2016) and Turnheim et al. position institutional perspectives as essential parts of the analytical approach applied in socio-technical analysis. They perceive institutions primarily as structuring forces on the meso-level, focusing on the importance of national policies and regulations for constraining or stimulating transitions. In addition, Cherp et al. (2018) emphasize the importance of institutional theory in explaining national energy transitions. However, in line with the observation by Andrews-Speed (2016), neither of these authors explicitly engage with institutional analysis. Instead, they highlight the importance of such analyses in energy transitions literature and emphasize the need to account for the multiple socio-technical sub-systems that co-evolve across spatial and institutional scales. For example, Geels et al. (2016) call for approaches that combine more meso-level socio-technical analysis with insights from micro-level initiatives or practice-based learning. Moreover, while highlighting the energy transition as an encompassing societal transition, these authors focus largely on institutions related to the domain of energy policies. Hence, there is limited attention for policy integration and harmonization between energy policies and other policy domains or land-use functions.

Institutions also receive attention in literature on the diffusion of RE technologies. Within this literature (e.g., Mignon and Bergek, 2016; Negro et al., 2012; Reddy and Painuly, 2004), the focus lies mainly on formal (or hard) institutional barriers, such as a lack of continuity in policies, laws and regulations, the shifting attention of policy makers, misalignment of policies between sectors and government levels, and inadequate support schemes (Negro et al., 2012). Informal (or soft) barriers are mentioned primarily in relation to the active lobby against RE by certain actors and societal resistance against the implementation of RE projects (Negro et al., 2012). Besides barriers categorized as 'institutional', a number of other barriers are mentioned including those related to physical infrastructure, interactions, finances, markets, behavior, and capacities (Mignon & Bergek, 2016; Negro et al., 2012; Reddy & Painuly, 2004). These 'other' barriers appear to be conceptualized as non-institutional. However, institutional theory posits that human behavior and interaction are shaped by institutions (North, 1991; Ostrom, 2005). Hence, a part of these 'other' barriers can be considered institutional themselves. The above argument illustrates a research gap in literature on RE generation: this literature does not appear to recognize institutions as both shaping and being shaped by actor behavior and interactions. Therefore, a shift in perspective is needed away from understanding institutions as merely formal rules and frameworks on the meso-level to an understanding inclusive of informal institutions and actor behavior and interaction.

This paper will contribute to such a new understanding. Specifically, this paper addresses the research gap identified above, by developing an analytical approach that captures the dynamic interplay between various formal and informal rules and how involved actors interpret, shape, and reshape them in processes of institutional harmonization. The approach developed is based on the Institutional Analysis and Development (IAD) framework by Ostrom (2005), which provides insight into formal and informal institutions that actors abide to (called the 'rules of the game' in this paper). The IAD framework is combined with insights from Discursive Institutionalism (DI) as developed by Schmidt (2008, 2010), which applies a more dynamic conceptualization of institutions as simultaneously influencing and being influenced by actors (called the 'play of the game' in this paper). As such, the analytical approach is thoroughly grounded in institutional theory. Moreover, in line with the call by Geels et al.(2016), this paper takes into account the co-evolution between the structuring dynamics of policies and regulations at the meso-level and actors' interpretations, ideas and deliberations at the micro-level. The theoretical background and development of this analytical approach is described in section 2.2.

This paper explicitly addresses the issues of institutional harmonization between policy domains by applying the analytical approach to the case of spatial integration between solar photovoltaics (PV) and transport infrastructure in the Netherlands. This is a specific type of integration between RE and transport infrastructure where PV is placed on leftover spaces along highways, highway nodes, or sound screens. As described above, this is currently one of the most viable options for integrated RE and transport infrastructure projects (Volpe, 2012), but due to institutional barriers there are few projects actually realized. This case

is further described in section 2.3. In section 2.4, the analytical approach is applied to the case. The results first detail the rules of the game that structure the current situation. Second, institutional barriers and opportunities for harmonization are presented, taking into account both the rules and the play of the game. Subsequently, section 2.5 contains the discussion and conclusion.

2.2 THEORETICAL FRAMEWORK

In institutional theory, institutions are commonly referred to as 'rules' (Hodgson, 2006; North, 1990; Ostrom, 2005). North (1990) defines institutions as "the rules of the game in a society or, more formally [...] the humanly devised constraints that shape human interaction" (p.3). Generally, a distinction is made between formal and informal rules (Kingston & Caballero, 2009; North, 1991; Ostrom, 2005). Formal rules are explicit, written down and enforced by actors with specific roles, including constitutions, laws, and policies. Informal rules are implicit, lack clear specification, and are enforced endogenously, including conventions, norms, and codes of conduct (Kingston & Caballero, 2009; North, 1991). Institutional frameworks are formed by interaction between such formal and informal rules (North, 1991) forming multi-layered, nested hierarchies of rules (Ostrom, 2005). Institutional frameworks are often presented as stable, enduring arrangements that structure actors' strategies and actions (North, 1991; Ostrom, 2005).

However, this understanding of institutions is criticized for its static understanding of institutions (Mahoney & Thelen, 2010; Schmidt, 2008, 2010) and the dominance of structure (rules) over agency (action and interaction) (Schmidt, 2008). Discursive institutionalism (DI) emphasizes the importance of acknowledging that institutions encompass both structure and agency (Schmidt, 2008, 2010). The DI perspective on institutions embraces a more dynamic perspective on institutions, in which institutional change is perceived as a constant process in the background, fueled by actors' current behavior. Therefore, this paper develops an analytical approach which allows for institutions to structure actors' behavior through the 'rules of the game', while simultaneously being shaped and changed by this behavior in the 'play of the game'.

This paper applies the Institutional Analysis and Development (IAD) Framework (Ostrom, 1990, 2005, 2011) to systematically analyze the 'rules of the game' that apply to the spatial integration between PV and transport infrastructure. The IAD framework is useful because it is one of the few frameworks that operationalizes institutional analysis in a systematic manner. However, the IAD framework does take a rather static view on institutions as arrangements that structure behavior, and thereby can be subject to the criticism that it focusses primarily on structure, and is "better at explaining continuity than change" (Schmidt, 2010, p. 2). This is problematic, because institutional barriers appear to occur on the boundary

between continuity and change, i.e., the moment that institutional frameworks are focusing on continuity, while institutional change is required to encourage the harmonization that is necessary to improve the spatial integration between RE and other land-use functions.

Ostrom and Basurto (2011) also acknowledge the importance of "analytical tools for analyzing dynamic situations – particularly institutional change" (p. 317). However, the analytical tool they developed to study "the evolution of rules and norms" (Ostrom & Basurto, 2011, p. 317) maintains a rules-following logic. Their aim is to identify changes in rule-configurations over time. Essentially, this tool aims to record processes of change but does not focus on the mechanisms behind these changes. By developing an analytical approach for identifying institutional barriers on the boundary between continuity and change, this paper contributes to the discussion on the mechanisms behind institutional change.

The IAD framework focusses on an 'action situation', which is defined as "the social spaces where individuals interact, exchange goods and services, solve problems, dominate one another, or fight" (Ostrom, 2011, p. 11). The IAD framework identifies seven types of rules that structure an action situation (Ostrom, 2005): (1) *Position rules* relate to actors being in certain positions, (2) *Boundary rules* relate to actors entering or leaving positions, (3) *Choice rules* relate to actors doing certain actions, (4) *Aggregation rules* relate to actors (jointly) affecting control over action-outcome linkages, (5) *Information rules* relate to the sending or receiving of information, (6) *Scope rules* relate to the occurrence of outcomes, and (7) *Payoff rules* relate to paying or receiving costs or benefits.

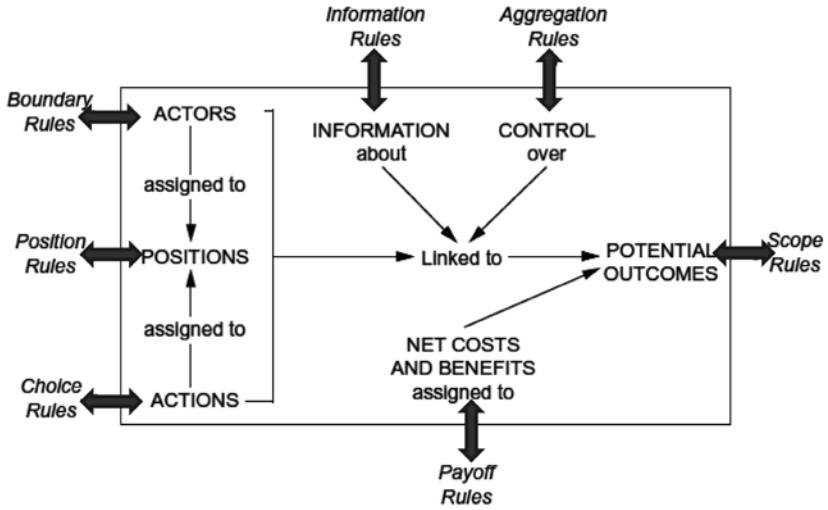

FIGURE 2.1 Interaction between 'rules of the game' and 'the play of the game' through which actors deliberate and change rules, as indicated by the double arrows (adapted from Ostrom, 2011).

TABLE 2.1 Analytical approach for studying both the 'rules of the game' and the 'play of the game'

Variables	Rules	Action verb	Rules of the game based on Ostrom (2005)	Default conditions (Ostrom & Basurto, 2011, p. 324)	Play of the game
Positions	Position rules	Be	Define the positions that can be held by actors.	No formal positions exist	Ideas regarding the roles actors should uptake and how roles relate to each other.
Actors	Boundary rules	Enter or leave	Define who may enter or leave positions and how.	Anyone can enter	Ideas regarding the actors that should be involved, how and when.
Actions	Choice rules	Do	Define what actors in certain positions may, must or must not do under specific conditions or at certain points.	Each player can take any physically possible action	Ideas regarding responsibilities that actors should have and opportunities they perceive.
Decision-making (control)	Aggregation rules	Jointly affect	Define how actors jointly affect decisions regarding proposed actions and activities and how.	Players act independently [...]	Ideas regarding (criteria for) coordination of decision-making among actors.
Information	Information rules	Send or receive	Define what information is to be send and received by which actors, at what moment, and using which channels.	Each player can communicate any information via any channel available to the player	Ideas regarding information that should be shared between actors and how learning should occur.
Outcomes	Scope rules	Occur	Define which outcomes may, must, or must not occur	Each player can affect any state of the world that is physically possible	Ideas regarding outcomes and targets that should be pursued.
Costs and benefits	Payoff rules	Pay or receive	Define costs and benefits to be payed or received by actors	Any player can obtain any outcome that the player can physically obtain and defend	Ideas regarding the distribution of costs and benefits among actors.

The action verbs in these rules (to be, enter or leave, do, jointly affect, send or receive, occur and pay or receive) are important identifiers for the different types of rules. These rules are what Ostrom (2005) calls 'rules-in-use'. Thereby, the IAD framework mainly captures those rules that have been established deliberately and that are applied and enforced in some manner (Kingston & Caballero, 2009). As a consequence, there is no explicit attention to the individual agency of actors in how they interpret, use and also transform these rules through their behavior and interactions. To bring the action situation 'to life', there is a need to present a dynamic action situation in which actors function as agents that are not only rule-following but simultaneously rule-shaping (see Fig. 1). Besides a more traditional

analysis of the 'rules of the game', the analytical approach developed here also includes an analysis of the ideas of actors regarding the rules of the game; i.e., how they interpret, reflect on, deliberate or respond to these rules (see Fig. 2.1). This means that each variable in the IAD framework is operationalized in a manner that allows for an analysis of (1) the 'rules of the game', and (2) actors' ideas, interpretations and deliberations regarding how these rules should be reframed, ignored or abolished in what is called the 'play of the game' (see Table 2.1).

In its original form, the IAD framework provides insight in who may, must or must not do something, how, when and where. Thereby, it can only provide insight in institutional barriers that are a result of conflicting 'rules of the game'. The addition of the DI perspective broadens the range of institutional barriers and opportunities captured by the IAD framework, through including a more dynamic view on institutions which takes into account the 'play of the game': i.e., actors' ideas, interpretations and deliberations regarding how rules *should* be reframed, ignored or abolished. This analytical approach, which also forms the conceptual framework for this paper, is provided in Table 2.1

The analytical approach developed in this paper helps identify institutional barriers as a result of mismatches within and between the 'rules of the game' and the 'play of the game'. For example, two rules of the game can be contradictory, or rules of the game can be challenged by actors in the play of the game. Moreover, the analytical approach helps identify barriers that are a result of actors' deliberations in situations where there is a lack of rules. As explained by Hajer (2006), a lack of rules can create high institutional ambiguity or even an institutional void. Ostrom (2005) defines default conditions for each variable, which reflect the structure of an action situation in which there are no rules (see Table 2.1). High institutional ambiguity or an institutional void can, therefore, be recognized by the approximation of such a default condition. Moreover, by examining relations within and between the 'rules of the game' and the 'play of the game', interrelations between institutional opportunities and barriers can be identified.

2.3 MATERIAL AND METHODS

2.3.1 Empirical case

This paper applies the analytical approach to the case of spatial integration between PV and transport infrastructure, referring to the placement of PV on left-over spaces along highways, highway nodes, or (integrated in) sound screens in the Netherlands. The focus lies on highways as *national-level* transport infrastructure. The asset manager for national infrastructure in the Netherlands is Rijkswaterstaat, which is the executive organization for the Ministry of Infrastructure and the Environment. However, developing PV in combination with transport infrastructure requires cooperation and coordination between Rijkswaterstaat and other organizations across multiple scales. The Netherlands has a unitary governmental

system with various degrees of decentralization depending on the specific policy field. This means that the national government is the locus of power, but that responsibilities are often delegated to provinces and municipalities (EC, 1997). Regarding spatial planning, many responsibilities have been decentralized to provinces and municipalities, including the responsibility to issue environmental permits for PV installations. Thereby, the case incorporates multi-level and multi-interactional complexity, as suggested by De Leeuw and Gössling (2016) for analysis of institutional change processes.

Spatial integration between PV and transport infrastructure is gaining prominence in the Netherlands. As a result, rules are shifting from a reactive role towards a more proactive role for Rijkswaterstaat. Until 2015, citizen initiatives, provinces, or municipalities could approach Rijkswaterstaat with ideas for solar initiatives and after deliberation Rijkswaterstaat could decide to support these initiatives. Very few initiatives were realized in this manner. In 2015 all applications and discussions were put on hold because a new system was going to be developed in which locations must be auctioned. The rules of the game described in this paper are the rules regarding the system as it is being developed. Therefore, this paper presents the rules of the game of the new situation as it is being implemented, as well as the ideas, deliberations, and negotiations of actors regarding these rules in the play of the game.

2.3.2 **Methods of data collection**

This paper is based on qualitative data, gathered using in-depth interviews, and a focus group. A total of 14 in-depth, semi-structured interviews were conducted in the second half of 2016 and early 2017. In the design of the interview guides, questions were organized according to the variables of the IAD framework. Respondents included officials from the Ministry of Infrastructure and the Environment, Rijkswaterstaat, the Central Government Real Estate Agency, the regional department of Rijkswaterstaat in the North of the Netherland, officials from the three Northern provinces, a consultancy firm, an energy company, and an electricity grid operator. A list of interviews is provided in Table A1.1 in the Appendix. To triangulate findings from the interviews (Yin, 2014), a focus group with officials from Rijkswaterstaat, the Central Government Real Estate Agency and the Netherlands Enterprise Organization was held in June 2017.

2.3.3 **Methods of data analysis**

Transcripts of the interviews and focus groups were coded using the software Atlas.ti. Codes followed the structure of Table 2.1, which provides (1) the definitions of the seven variables of the IAD framework to capture the rules of the game, and (2) the adapted definitions of these variables regarding actors' ideas, deliberations, and negotiations about these rules to capture the play of the game. Codes were assigned to interview quotes based on their latent content to capture the underlying meaning of the data. Subsequently, manifest coding was used to identify different rules and ideas within each variable (Babbie, 2010).

A consideration was that the perception of a single interviewee could bias included ideas. In order to overcome this, only ideas that were mentioned on two separate occasions were included in the results.

In the result section, references are made to the Appendix, where the rules of the game are presented in Table A1.4. The ideas related to these rules (the play of the game) are presented in Table A1.5. These tables were structured using the seven types of variables defined in the IAD framework. Each variable is assigned a different letter (e.g., B or Ib for boundary rules) and each rule and idea related to the rules is given a number (e.g., B1 or Ib1 respectively).

2.4 RESULTS OF THE INSTITUTIONAL ANALYSIS

2.4.1 Establishing the action situation: the rules of the game

Before discussing institutional barriers and opportunities, this subsection first describes the action situation for PV on Rijkswaterstaat lands based on the analysis of the rules of the game (Table A1.4). A generalized action situation is presented in Figure 2.2, while acknowledging that the exact composition of action situations also depends on the specific project (B3).

Rijkswaterstaat is the executive organization of the Ministry of Infrastructure and the Environment and responsible for the management of national transport infrastructure (P3). This means that they receive their assignments from the Ministry (P2) and that the Ministry drafts legislation related to Rijkswaterstaat (P1). Rijkswaterstaat may appoint locations for energy generation for their own purpose of becoming energy neutral and for the purpose of energy generation for third parties on their lands (C2). Rijkswaterstaat may not hold the position of the developer and owner of energy installations (P4); as stated in the 'Letter to parliament regarding energy neutral networks managed by Rijkswaterstaat, *"with renewable energy generation for 'own' purposes […], it is meant that Rijkswaterstaat will become the owner of the associated guarantees of origin"* (Ministry of Infrastructure and the Environment, 2016, p. 3). As a result, there is always a third party involved as developer and owner of the installation (P4), while Rijkswaterstaat will become the owner of the guarantee of origin; i.e., the certificates that prove that electricity was produced by renewable sources. Moreover, Rijkswaterstaat is the licensing authority for the permit on the basis of the Public Works Act (P5).

The Central Government Real Estate Agency is the contract holder for state-owned land (P6) and the party who must organize an auction for the locations appointed by Rijkswaterstaat (C4). The Ministry of Internal Affairs drafts legislation related to the Central Government Real Estate Agency (P1). Potential developers, including both market parties and citizen initiatives, can participate in the auction (P4), with the highest bid gaining rights to develop

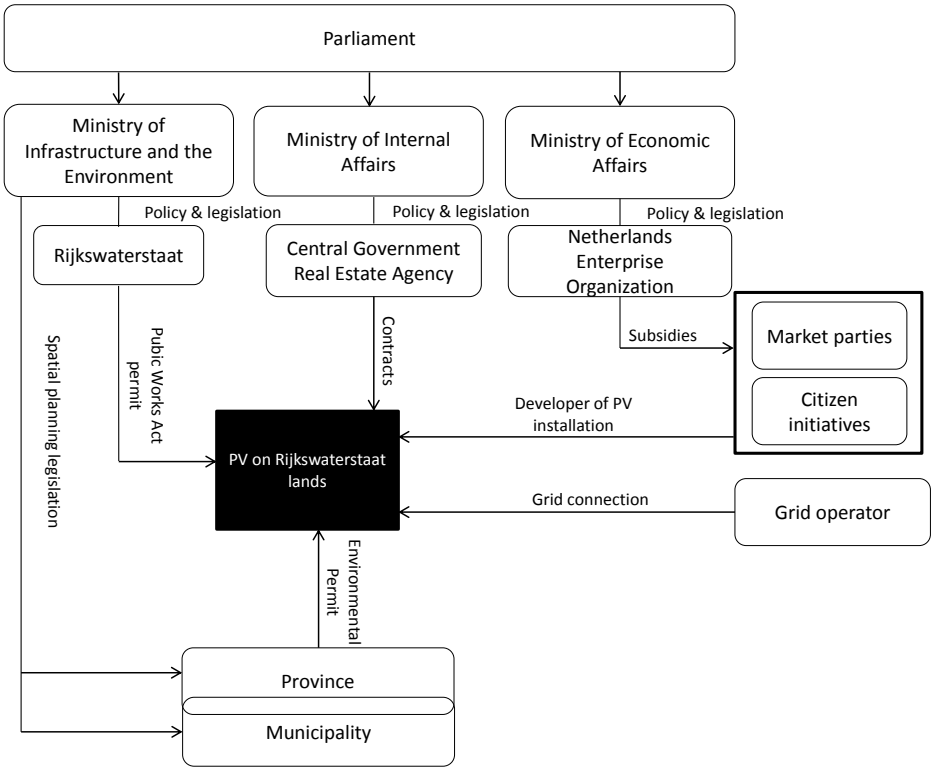

FIGURE 2.2 Action situation for photovoltaics (PV) on Rijkswaterstaat lands. After forming a new cabinet in October 2017 some shifts occurred in the division of responsibilities for the Ministries. The Ministry of Infrastructure and the Environment is now called the Ministry of Infrastructure and Water Management and the Ministry of Economic Affairs has become the Ministry of Economic Affairs and Climate. This figure depicts the situation as it was when the data was gathered.

and operate the PV installation (B4). Subsequently, the developer must apply for an environmental permit with the municipality or the province (C6). Moreover, an agreement must be reached with the local grid operator regarding the grid connection (C9). After receiving the necessary permits, the developer may apply for subsidies with the Netherlands Enterprise Organization (C10), which is part of the Ministry of Economic Affairs (P1). Government organizations are not eligible for subsidies (Y3).

2.4.2 Identifying institutional barriers and opportunities for harmonization

There is a rich variety of institutional barriers and opportunities for institutional harmonization, as Tables A.2 (rules of the game) and A.3 (play of the game) convincingly show. Based on a comparison between the barriers and opportunities mentioned in both tables, it is possible to identify various dominant issues regarding the harmonization between PV and infrastructure policies.

The first of these is the high institutional ambiguity regarding the role and responsibility of Rijkswaterstaat in the broader energy transition. Although Rijkswaterstaat and the Ministry of Infrastructure and the Environment have ambitions related to spatial integration of PV and transport infrastructure for the purpose of making the national infrastructure networks energy neutral (S5), many institutional barriers appear to be the result of a lack of 'ownership' of Rijkswaterstaat regarding the general opportunity of placing PV on its lands (Ip4). The Ministry does recognize such an opportunity, expressed in a letter to parliament stating that *"the lands managed by Rijkswaterstaat offer considerable potential for the production of renewable energy which reaches further than the 'own' use of the organization"* (Ministry of Infrastructure and the Environment, 2016, p. 3). Nevertheless, there are no rules defining the role and responsibility of Rijkswaterstaat regarding the energy transition in general (Ip2). In being an executive agency, Rijkswaterstaat is used to being clearly informed by the Ministry of Infrastructure and the Environment about its responsibilities, which are often expressed in clear targets (P3).

Facing no explicit targets for RE, taking initiative regarding energy projects is open to individual interpretation of formal and informal rules by Rijkswaterstaat's managers and employees (Ia5). When asked why Rijkswaterstaat is working on RE issues, many of the interviewees refer to the targets set in the Dutch Energy Agreement and the Paris agreement as the broader scope for action (S4), as well as the aforementioned letter to parliament for the target of becoming energy neutral (S5). However, many of the interviewees also refer to a lack of scope rules that translate this broad ambition (14% RE by 2020 in the Energy Agreement) into specific targets for Rijkswaterstaat (Is4). As a result, there are a number of conflicting ideas regarding the responsibilities and scope for Rijkswaterstaat. First, there are various ideas regarding the approach for reaching energy neutrality. For example, some interviewees emphasize the need to quickly realize a few large wind parks or solar-fields that together cover the energy use of Rijkswaterstaat. Others emphasize that energy neutrality should be pursued by integrating RE in infrastructure projects, thereby slowly realizing many smaller initiatives. Second, there are various ideas on whether Rijkswaterstaat should just aim for energy neutrality, or whether they should also support third party initiatives and thus contribute to the national energy ambitions (Is4). In March 2017, Rijkswaterstaat created a new position within the organization for a 'managing director (HID) sustainability and environment', expecting that this new director will make choices regarding the translation of abstract goals into a scope for action (Ip4). Simultaneously, during multiple interviews and the focus group, warnings were outed that a narrow scope which is focused solely on achieving Rijkswaterstaat's ambitions, might limit opportunities for the energy transition in the Netherlands as a whole (Is3). Clearly, for pursuing improved harmonization of RE with infrastructure there is also a need for internal harmonization within Rijkswaterstaat on its ambitions and role.

A second dominant issue relates to the fragmentation of responsibilities for PV on Rijkswaterstaat lands. Rijkswaterstaat must cooperate with other parties to realize PV on their own land (Ia4), but there are no procedures for *joint* decision-making regarding PV in combination

with transport infrastructure; the aggregation rules resemble the default condition that "players act independently" (see Table 2.1). Because developers are dependent on a succession of decisions regarding permits and contracts with various parties (C2-C10), the lack of rules causes uncertainties and risks. An example of such a barrier is the position rule that either the province or the municipality is the licensing authority responsible for handing out the environmental permit (P6). This lack of clarity on roles can be illustrated using the following citation: *"The locations that came forth do not fit the provincial policy regarding solar parks. But that is a bit of a discussion point. Whether it is a provincial responsibility. Because [...] the municipality gave the environmental permit for these locations. [...] And it fits their perspective perfectly"* (Interview employees Province of Friesland). Without procedures for joint decision-making, coordination between provinces and municipalities is crucial, let alone the need to also include the Central Government Real Estate Agency as the contract-holder and grid operators for access to the grid (Ib1). Currently, coordination depends on voluntary action (Ii1). With outcomes being open-ended, developers face serious risks of not being granted a permit. In response, many interviewees consider early involvement of municipalities, provinces, grid operators and the surrounding area in area-based conversations as necessary for coordinating decisions (Ic2) and for broader communication of related interests (Ii1). Ideas such as joint map making are presented by Rijkswaterstaat as a manner of communicating interests in such settings (Ic2). However, the main institutional barrier hindering participation of Rijkswaterstaat and the Central Government Real Estate Agency is the lack of resources in both time and money (Iy2). Moreover, it is unclear who needs to take the initiative in organizing these sessions (Ip4), which illustrates the lack of ownership and urgency regarding the broader opportunity for energy generation on Rijkswaterstaat lands.

Thirdly, interrelations between choice and payoff rules also play a large role in deliberations regarding the division of responsibilities. This can be illustrated using the example of citizen involvement. According to Rijkswaterstaat and the Central Government Real Estate Agency, citizen involvement is the responsibility of municipalities and provinces (Ic6). Due to resource constraints (Iy2), Rijkswaterstaat and the Central Government Real Estate Agency want to keep the process as simple and uniform as possible (Ia3). A simple and uniform process for them means reducing the amount of parties involved in the process (Ia1) and limiting the amount of criteria for assessing bids, thus focusing purely on price (Ia3). Therefore, every interested party, including citizen initiatives, is allowed to submit a bid in potential auctions of Rijkswaterstaat land (C5). However, this focus on auctioning lands to the highest bidder (Y6) creates a number of problems for citizen involvement. First, citizen initiatives are bound to one location and often lack knowledge, competences and experience to compete with market parties (Ib2). Second, Rijkswaterstaat and the Central Government Real Estate Agency do not create incentives for developers to embed quality criteria, such as citizen involvement, in their bid (Iy5); contrary, involving such criteria might cost developers the bid because citizen involvement requires resources which might results in lower bid prices. Simultaneously, provinces and municipalities often emphasize the importance of citizen involvement in their environmental plans (Is7). Not involving citizens, therefore might lead to problems for developers with obtaining the environmental permit and possibly to resistance of citizens

regarding PV on Rijkswaterstaat lands. This is largely an issue of institutional harmonization between different Ministries regarding payoff rules and between different levels, including national, provincial, and municipal actors, regarding choice rules.

Barriers are also caused by the interrelation between strict interpretations of position and scope rules in the play of the game, which is related to the lack of clarity on the position of Rijkswaterstaat regarding the energy transition. Since Rijkswaterstaat does not have an explicit task beyond energy generation for its 'own' purposes there appear to be few rules that ensure that employees have an open attitude towards PV initiatives (Ip1). Contrary, employees from both the energy company and the consultancy firm experienced that Rijkswaterstaat staff, particularly specialists and operational staff, often apply strict interpretations of their 'traditional' responsibilities and tasks on PV initiatives, even though the rules of the games do not necessarily prescribe this. Rijkswaterstaat has a 'traditional' focus on safety and accessibility, implying an informal rule encouraging risk-averse attitudes among Rijkswaterstaat staff (Ip1). This can be illustrated using the example of risk-assessment: in the aforementioned letter to parliament, the only condition is that energy facilities must not compromise the safety of infrastructure networks (S2). However, it is unclear when safety is compromised or not (Is2). For example, in the case of transport of hazardous substances, acceptable risk-levels are determined. In the case of PV initiatives, it is unclear what risk-levels are considered acceptable (Is2). Static interpretations of tasks and responsibilities combined with a lack of knowledge often result in inertia and rejection. This illustrates that informal rules guiding individual employees can be very influential for the outcomes of PV initiatives, and that positive attitudes at a strategic level within Rijkswaterstaat need to be communicated to specialists and operational staff (Ia6; Ii3).

Another consequence of the large role of informal rules in guiding individual employees is that information sharing occurs on an ad hoc basis, without clear learning objectives (Ii1; Ii2). Besides standard procedures for auctions and permits, information rules resemble the default condition that "each player can communicate any information via any channel available to the player" (Ostrom & Basurto, 2011, p. 324). As a result, essential information for projects is sometimes shared late, or not at all (Ii5). Moreover, there is no obligation for early consulting with other actors regarding initiatives (Ii1). This is problematic because e.g., the financial feasibility of an initiative depends heavily on the proximity and capacity of network stations, and therefore on early cooperation with grid operators (Ib1). In addition, internal communication about initiatives within Rijkswaterstaat only takes place in loosely structured meetings that do not necessarily focus on energy, or are organized on an ad hoc basis (Ii1). There is no structure for learning from experiences, whether they are successful or not, of past initiatives regarding how to improve coordination between actors (Ii2). This hampers both internal and external harmonization efforts.

Finally, institutional barriers can also be the result of strong political discourses forming an undercurrent in the play of the game. This can be illustrated using the example of the position rule that Rijkswaterstaat is not allowed to be the developer who operates RE installations

(P5). The following quote illustrates that this rule is based on the discourse of the leading political party regarding the relation between the State and the market (Ia8): *"The position of the State and the market is essentially a political choice. With the current coalition [government] the role of Rijkswaterstaat will not be changed, but if other parties came to power there might be opportunities."* (Interview employee Rijkswaterstaat). In the current political context, therefore, these rules are difficult to change. Moreover, the perception of Rijkswaterstaat employees that a rule is difficult to change prevents proactive searches for improved harmonization in this regard, with many parties accepting and following rules without questioning them.

Action at a higher political level, including the Ministry of Infrastructure and the Environment and the parliament, might be crucial in clarifying the responsibilities of Rijkswaterstaat (Ic5; Ia6). However, even at this level some key barriers seem to exist. For example, interviewees indicated that it is unlikely that the minister will set a target for Rijkswaterstaat regarding RE, because the Ministry of Economic Affairs is responsible for RE (Ic4). This illustrates that improving institutional harmonization for spatial integration of PV on Rijkswaterstaat lands also requires a political choice with more pro-active policy on the level of the ministry, including coordination of both internal harmonization within the policy domain of infrastructure (Rijkswaterstaat), and external harmonization between policy domains, specifically, between RE and infrastructure.

2.5 DISCUSSION AND CONCLUSION

This paper develops an analytical approach to explore institutional barriers to spatial integration between renewable energy (RE) and other land-use functions and provides insight into opportunities for institutional harmonization between involved policy domains. Existing literature does recognize the importance of institutional perspectives in research on the energy transition (Andrews-Speed, 2016; Cherp et al., 2018; Geels et al., 2016; Suzuki et al., 2016; Turnheim et al., 2015). In the introduction it was noted that ill-adjusted and uncoordinated policies and regulations are positioned as causes of institutional ambiguity and a lack of institutional harmonization (Grotenbreg & van Buuren, 2018; Lammers & Heldeweg, 2016; Negro et al., 2012). However, these studies rarely apply explicit institutional analyses, understand institutions mainly as formal rules, and do not provide much insight in how harmonization does or could occur. Responding to these research gaps, the analytical approach developed in this paper is thoroughly grounded in institutional theory and focuses on the dynamic interaction between established 'rules of the game' and ideas of actors regarding these rules in the 'play of the game'. As such, the approach moves beyond formal and static aspects of institutions and includes opportunities for analyzing the co-evolution between formal and informal institutions in a more dynamic fashion. Generally, it can be concluded that the approach illustrates the importance of ideas, routines and interpretations (i.e., the play of the game), which largely occur on the micro-level, and how these interact with the more formal, structuring rules on the meso-level.

The application of the analytical approach to the case of integrating PV with transport infrastructure also provides substantive insights in the process of institutional harmonization that add to existing literature. First, the results show that institutional barriers experienced by various actors are often interrelated. It can therefore be concluded that, when pursuing institutional harmonization, it is important to take into account these interrelations because they can help determine the level at which action is required, by whom, and the potential influence of these actions on other experienced barriers and rules for efficient action. Secondly, although spatial integration requires external harmonization between policy domains, this paper shows that internal harmonization within the respective policy domains is a crucial first step. This is related to the third conclusion that the agency component (the play of the game) is key to successful harmonization, because this is the part of the arena where actors are often dealing with a lack of knowledge and experience. Hence, institutional harmonization is more than merely improving the coordination and coherence of formal policies and regulations. Within a context of institutional fragmentation and substantive ambiguity of key actors upon their exact roles and responsibilities, institutional harmonization becomes dependent on organizational cultures and individual characteristics. Whether and how existing and new rules are being applied in practice is dependent on ideas, interpretations, and deliberations of individuals that are embedded in organizational cultures and practices and that are simultaneously shaping these cultures and practices. Therefore, it can be concluded that it is of crucial important to ensure the co-evolution between the rules of the game and the play of the game.

The analytical approach and the conclusions presented here provide interesting avenues for further research. First, it would be interesting to compare and add to these insights by exposing the analytical approach presented in this paper, to cases exploring integration of RE with different sectors or in different contexts. The analytical approach presented can easily be adopted in contexts other than the Dutch. There is much room for application of this approach in other contexts with further possibilities for fine-tuning it, as the spatial integration of renewable energy and the development of more coherent policies surrounding energy transition are at least European if not global issues (Solorio, 2011). Second, this study's approach is a first step in exploring a broader role for institutional approaches that are inclusive of informal institutions and actor behavior and interaction in research on the energy transition. This paper demonstrates that institutional theory offers opportunities for 'bridging' various approaches to studying the energy transition as called for by Geels et al. (2016) and Turnheim et al. (2015). Following the call by (Andrews-Speed, 2016), a recommendation would therefore be to further explore the role of institutional analyses in research regarding the energy transition, including RE generation but also issues of energy efficiency and carbon mitigation. Third, it is important to gain more insight into the agency of key actors, including the roles and activities these actors perform to navigate circumstances of institutional ambiguity and to achieve internal harmonization. Existing theories containing such agency perspectives, such as actor-network theory or boundary spanning, can provide valuable insights here.

This paper illustrates that opportunities for institutional harmonization consist of an interplay of mutually coordinated *creation* of new formal and informal rules, *abandonment* of certain rules, and *adaptation* or re-interpretation of existing rules within and between policy domains. By pursuing institutional harmonization, space can be organized within and among the various institutional frameworks involved to enable the spatial integration of RE with other land-use functions. In in other words, when looking for physical space for RE generation it is important to also consider its institutional counterpart, which can be coined institutional space.

3

The performance of marine spatial planning in coordinating offshore wind energy with other sea-uses:

the case of the Dutch North Sea

Abstract

Governments are searching for institutional designs that enable coordination of sea-uses in a more systematic and integrated manner. Marine Spatial Planning (MSP) is presented as such an approach for improved coordination. However, existing literature is increasingly doubting the ability of MSP to accomplish this, particularly regarding offshore wind farms (OWF). Therefore, this paper evaluates how six key principles of MSP perform in coordinating OWF vis-á-vis other spatial claims in the Dutch North Sea. Where existing literature focuses on the conformance of material outcomes to stated objectives, this paper evaluates performance; i.e., how the six principles are understood in successive manifestations of MSP and subsequently used in decision-making regarding OWF. Based on the conditions of knowledge, legitimacy, and feasibility, four modes of performance are identified. Knowledge of the principles of MSP can be found throughout successive manifestations of MSP. However, the understanding of these principles in the Dutch case is narrowed to creating a robust system to ensure quick and cost-effective roll-out of offshore wind energy to meet (inter)national renewable energy targets. The focus lies on furthering the feasibility of OWF development, resulting in a dominant mode of performance that is termed 'legitimacy misfit'; MSP is used as a tool to implement external sustainability discourses and renewable energy targets, rather than forming a systematic and integrated marine governance approach that balances various interests at sea. Furthermore, it is necessary to develop a more critical approach to the operationalization of the principles of MSP that is sensitive to possible interdependencies and conflicts.

Keywords: marine spatial planning; performance; offshore wind energy; coordination; institutions

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3.1 INTRODUCTION

Many countries are venturing out into the sea in their search for space for generating renewable energy, particularly offshore wind farms (OWF). This results in increased competition for sea-space (Christie, Smyth, Barnes, & Elliott, 2014; Douvere, 2008; Ehler, 2014; Jay, 2010a; Jay, Ellis, & Kidd, 2012; Stelzenmüller, Diekmann, Bastardie, Schulze, & Berkenhagen, 2016; Wever, Krause, & Buck, 2015). In light of this increased competition, the patchwork of existing sectoral policies is criticized for (1) limiting the transparency of decision-making, (2) lacking attention to interrelations between various sea-uses, and (3) disregarding potential cumulative effect of these uses on the environment (Douvere, 2010; Drankier, 2012; Ehler & Douvere, 2009; Jay, 2010b; Andreas Kannen, 2014; Kidd & Ellis, 2012). As a result, governments are searching for institutional designs that enable more systematic and integrated marine governance to guide new sectors such as offshore wind energy in relation to other new and existing sea-uses (Soma, van Tatenhove, & van Leeuwen, 2015; Young et al., 2007).

Marine spatial planning (MSP) is presented and promoted as the main concept for realizing such coordination of sea-uses at national and supra-national levels in both scientific and societal fora (Christie et al., 2014; Collie et al., 2013; Council Directive 2014/89/EU, 2014; Douvere, 2010; Ehler, 2014; Halpern et al., 2012; Jay, 2010a; A. Kannen, Kremer, Gee, & Lange, 2012; Portman, 2011; Scarff, Fitzsimmons, & Gray, 2015; Young et al., 2007). Offshore wind energy was one of the primary drivers for the development of MSP in many western European countries (Douvere & Ehler, 2008; Ehler, 2014, 2018; Jay, 2010b; Qiu & Jones, 2013). As such, MSP often forms the context in which new rules of the game are developed to coordinate new sectors such as offshore wind, in relation to various existing sectors guided by existing institutional frameworks. However, existing literature is increasingly doubting the ability of MSP to coordinate sea uses, particularly in the case of offshore wind energy (Jones et al., 2016; Kidd & Ellis, 2012). According to Kidd and Ellis (2012), powerful sectors such as offshore wind energy are better able to forward their interests in MSP processes. Moreover, Jones, Lieberknecht and Qiu (2016) argue that nationally important sectors such as offshore wind energy are prioritized by governments and conclude that in practice MSP "might better be termed 'strategic sectoral planning" (p.256). As such, there are important doubts about the functioning of MSP as a coordinative framework for planning OWF vis-à-vis other spatial claims at sea.

Existing literature tends to evaluate MSP by focusing on the *conformance* of material outcomes to the goals set in the MSP (see Douvere and Ehler, 2011; Carneiro, 2013; Collie *et al.*, 2013; Ferreira *et al.*, 2018). As such, limited attention has been paid to the manner in which MSP affects decision-making regarding OWF. Contrariwise, this paper applies a *performance* perspective, as it shifts attention to how MSP affects decision-making on OWF, even when outcomes do not conform to expressed goals (Barrett & Fudge, 1981; Faludi, 2000; Mastop & Faludi, 1997; van Dijk & Beunen, 2009). Such a perspective contributes

to existing literature on the planning of OWF and MSP by providing insights into how MSP is used in the coordination of OWF in relation to other sea uses. Moreover, by taking a performance perspective, the critique by Jones and his co-authors (2016) that "attempting to evaluate MSP'ing is challenging as 'effectiveness' depends on your sectoral perspective" (p.260) can be circumvented, because 'effectiveness' is no longer directly related to pre-defined (sectoral) objectives. Therefore, this paper aims to evaluate the performance of MSP in coordinating offshore wind energy with other sea-uses in the Dutch North Sea.

MSP is recognized and defined in existing literature as a *process* (Council Directive 2014/89/EU, 2014; Ehler & Douvere, 2009; Jones et al., 2016). This paper conceptualizes MSP as the process of designing and redesigning the rules of the game at sea with the purpose of coordinating sea-uses within specific sea-areas. Six key principles are distinguished that characterize MSP: (1) area-based; (2) integrated; (3) participative; (4) strategic; (5) adaptive; and (6) ecosystem-based (Ehler, 2014, 2018). MSP as an ongoing process manifests itself in various manners, including marine spatial plans, policy documents, regulation, legislation, policy memos, and administrative decisions. The term 'manifestations of MSP' is used in this paper to refer to this whole range of documents (see Figure 3.1 for the manifestations of MSP for the Dutch case). These manifestations of MSP reflect a certain understanding of the principles of MSP at a specific time and place and can therefore be used to study the performance of MSP in coordinating offshore wind energy over time.

This paper presents a longitudinal study, based on policy document analysis of the manifestations of MSP in the Netherlands from 2004 until 2018 (see Figure 3.1). The findings are triangulated by means of in-depth interviews. The Dutch case is useful for a longitudinal analysis of the development of MSP, because the Dutch North Sea has a history of intensive use for purposes such as shipping, sand extraction, fisheries and defense. Moreover, the Netherlands has a relatively long history of spatial planning at sea with the first marine spatial plan dating from 2004. Rather than evaluating the conformance of outcomes with the objectives of Dutch marine spatial plans, this paper will evaluate how the principles of MSP are understood in the manifestation of MSP in the Netherlands and how they perform regarding decision-making on OWF over time. This study provides an analytical contribution towards evaluating the planning of OWF in relation to MSP. Moreover, the empirical insights from this case provide insight into how MSP performs which can be used to devise strategies for improving the performance of MSP in planning OWF. With the ambition to install 1 GW per year between 2023 and 2030 in the Dutch North Sea (Matthijsen, Dammers, & Elzenga, 2018; WindEurope, 2018) and forecasts predicting a cumulative capacity between 49 and 99 GW offshore wind energy in Europe (WindEurope, 2018), the coordination of offshore wind in relation to other existing and new sea-uses will become even more important in the future.

The second section of this paper elaborates the principles of MSP, and provides a framework for analyzing the performance of MSP in guiding offshore wind energy. The third section discusses the methodology followed by the results in the fourth section. Section 3.5 provides the discussion and conclusion.

3.2 LITERATURE AND THEORY

3.2.1 The principles of MSP

Ehler (2014, 2018) identifies six key principles of MSP that distinguish MSP from the previous sectoral and ad hoc policies. These principles are further elaborated based on a review of international literature on MSP.

1. *Area-based*: MSP parts with the traditional sectoral approach to sea-use management and instead takes into account all the activities that occur within a defined marine area as well as the cumulative effects of these activities (Douvere, 2008; Ehler & Douvere, 2009; Flannery & Ó Cinnéide, 2012; Portman, 2011; Young et al., 2007).

2. *Integrated*: Contrary to the previous uncoordinated patchwork of sectoral policies, programs and actions plans, MSP integrates different uses and organizations across time and space (Douvere, 2008; Kidd, 2013; Kidd & Shaw, 2014; Kyriazi, Maes, & Degraer, 2016; Olsen, Holen, Hoel, Buhl-Mortensen, & Røttingen, 2016; Portman, 2011), thereby bringing "coherence to decision-making and associated social and political processes that relate to particular places" (Kidd & Shaw, 2014, p. 3). However, both Kidd (2013) and Portman (2011) emphasize the importance of including both (1) functional (or cross-sectoral) integration, and (2) organizational integration. Therefore, this paper includes both types of integration in the analysis.

3. *Participative*: Early and continuous stakeholder involvement in MSP is important to encourage 'ownership' of the outcomes of MSP, increase the legitimacy of the process and develop trust, as well as find incompatibilities and synergies between different functions (Flannery & Ó Cinnéide, 2012; Kidd, 2013; Pomeroy & Douvere, 2008; Ritchie & Ellis, 2010).

4. *Ecosystem-based*: Ecosystem-based MSP aims at delivering sustainable development by balancing ecological, economic and social objectives within an ecosystem and maintain ecosystem-services (Agardy, di Sciara, & Christie, 2011; Douvere, 2008; Ehler & Douvere, 2009; Flannery & Ó Cinnéide, 2012; Gilliland & Laffoley, 2008; Halpern, McLeod, Rosenberg, & Crowder, 2008; Maes, 2008; Qiu & Jones, 2013; Young et al., 2007; Zaucha, 2014).

5. *Strategic*: MSP allows for pro-active decision-making on the short term, based on a strategic plan or vision for the future (Agardy et al., 2011; Backer, 2011; Christie et al., 2014; Douvere, 2010; Drankier, 2012; Kidd, 2013).

6. *Adaptive*: MSP needs to remain sufficiently flexible to leave room for learning and innovation, while simultaneously providing a more transparent and stable framework for decision-making, thereby allowing for decision-making in the face of uncertainty and

change (Carneiro, 2013; Christie et al., 2014; Collie et al., 2013; Douvere & Ehler, 2011; Ehler & Douvere, 2009; Flannery & Ó Cinnéide, 2012; A. Kannen et al., 2012; Maes, 2008; Portman, 2015; Rodwell et al., 2014; Young et al., 2007).

It is important to notice that these principles are not mutually exclusive. For example, ecosystem-based approaches sometimes contain area-based considerations, and area-based consideration can be related to spatial integration when considering multi-functional use of specific areas. Despite potential interrelations, their distinct character requires these principles to be treated as separate principles. In the result section of this paper, the understanding of these principles over time is described as well as how they perform in coordinating offshore wind energy in relation to other sea-uses. This means that analysis will focus on how e.g., participation is understood in Dutch MSP relating to offshore wind farms (OWF) and how this understanding of participation has affected decision-making regarding offshore wind energy.

3.2.2 Evaluating the performance of MSP

When evaluating MSP, existing literature and practice tends to focus on the conformance of material outcomes to stated objectives in marine spatial plans (Carneiro, 2013). However, there is a considerable body of literature that disputes a sole focus on *conformance* and instead calls for a *performance* perspective. This paper draws on policy implementation literature (Barrett & Fudge, 1981; Hill & Hupe, 2007), as well as literature on spatial plan performance (Faludi, 2000; Korthals Altes, 2006; Mastop, 1997) to evaluate the performance of MSP in coordinating OWF with other sea-uses in the Dutch North Sea. A performance perspective shifts attention to the way MSP is 'used' in subsequent decisions by various actors; i.e., whether it "plays a role in those decision situations in which it was meant to be used" (Mastop & Faludi, 1997, p. 820). MSP is an ongoing process that manifests itself in various manners, as explained in the introduction. Applying a performance perspective, this paper evaluates how the six principles of MSP are understood and subsequently 'used' in successive manifestations of MSP with a specific focus on decisions related to offshore wind energy.

In evaluating the performance of MSP, it is necessary to go beyond establishing whether there is performance. If principles of MSP are referred to but then discarded in decision-making, there will be a different mode of performance compared to principles that have a central role in decision-making; i.e., principles can be 'used' in various manners. Therefore, this paper also focusses on *how* MSP performs. Although the theory of performance is well established in spatial planning and policy implementation literature, there are few studies that operationalize the performance perspective in a manner that allows for replication, especially when focusing on *how* these principles perform. Simultaneously, existing literature does provide important hints that can be used to develop a framework for evaluating the performance of MSP processes. This paper identifies three conditions that influence whether and how MSP performs: (1) knowledge, (2) legitimacy, and (3) feasibility (see Table 3.1). These principles

can be used to establish whether there is performance, as well as the mode of performance (see Table 3.2). The resulting framework can be used to evaluate how MSP performs in coordinating offshore wind energy in relation to other sea-uses.

The first condition is *knowledge*, which refers to the extent to which actors know of MSP (Barrett & Fudge, 1981; Faludi, 2000; van Dijk & Beunen, 2009). Faludi (2000) calls this a 'necessary condition' for any form of performance, because knowledge of manifestations of MSP is a precondition for using them in decision-making. Knowledge can be established by examining whether certain manifestations are referred to in successive manifestations of MSP and interviews. However, it is also important to include how the principles of MSP are understood in practice. This includes both how this understanding evolves in successive manifestations of MSP in the Dutch context and whether this is in line with literature on MSP.

The second condition is *legitimacy* which refers to the extent to which actors accept MSP as part of the context in which they have to make decisions (Faludi, 2000) and are 'willing' to follow manifestations of MSP (De Boer, Zuidema, Hoorn, & De Roo, 2018; van Dijk & Beunen, 2009). Legitimacy refers to the "acceptance by the governed of the goals and approach for resolving problems" (May & Jochim, 2013, p. 431). However, it is important to realize that there may be differences in the willingness of various actors to follow manifestations of MSP (Zuidema, 2016) and that perceptions of legitimacy can change over time (L. D. Hopkins & Knaap, 2018; Van Buuren, 2006). Therefore, this paper operationalizes legitimacy as the process of legitimization of the understanding of the various principles of MSP in the Dutch context. Legitimization is about the justification of decisions through argumentation, related to a goal or ambition (Reyes, 2011). By evaluating the legitimization of the Dutch understanding of the principles of MSP over time, insights are collected regarding the successive use of similar or diverging justifications and goals, as well as where these goals originate from. Recurring reference to goals and justifications within manifestations of MSP are considered indicators of legitimacy, because this is a sign that principles of MSP are used in decision-making regarding OWF. Faludi (2000) refers to this condition as a 'sufficient condition', because there can still be a mode of performance despite a lack of willingness among actors to participate, for example if there are strong incentives forcing actors to take a certain course of action.

The third condition is *feasibility* which refers to the extent to which it is realistic for actors to follow MSP within the existing institutional context (van Dijk & Beunen, 2009). Actors' ability to comply with the manifestations of MSP is therefore crucial for feasibility (van Dijk & Beunen, 2009; Zuidema, 2016). Indicators of feasibility include (1) resources in terms of staff, finances and knowledge (van Dijk & Beunen, 2009; Zuidema, 2016), and (2) the coherence within and between institutional frameworks (May & Jochim, 2013). The availability of resources and coherency enables or constrains the use of the principles of MSP in decision-making regarding OWF. Feasibility can also be considered a 'sufficient condition', because there might still be a certain mode of performance despite institutional barriers that constrain actors' abilities to implement MSP. For example, in the case that actors are willing to change rules to overcome these barriers.

TABLE 3.1 Framework for studying the performance of MSP

Condition	Status	Description	Indicators	Operationalization
Knowledge	Necessary	The extent to which actors know and understand the principles of MSP	Knowledge and understanding of principles of MSP	Marine spatial plans are referred to in successive manifestations of MSP and interviews Understanding of the six principles of MSP expressed in manifestations of MSP in the Netherlands
Legitimacy	Sufficient	The extent to which actors accept MSP as the context for decision-making and are willing to follow policies	*Justifications* and *goals* used to legitimize the Dutch understanding of the principles of MSP	References to *goals* in successive manifestations of MSP *Justifications* provided for the expressed understanding of the principles of MSP in successive manifestations
Feasibility	Sufficient	The extent to which actors are able to follow MSP within the existing institutional context	Understanding of the principles of MSP is supported by sufficient *resources* and a *coherent* institutional framework	References to resource availability (staff, finances, knowledge) References to coherence within and between institutional frameworks

TABLE 3.2 Modes of performance, after the condition of knowledge is met

	Legitimacy	Feasibility	Modes of performance
1	+	+	*Established practice:* principle is known and actors accept and are able to pursue it
2	+	–	*Feasibility misfit:* principle is known and actors accept it, but their ability to pursue it is constrained
3	–	+	*Legitimacy misfit:* principle is known and actors are able to pursue it, but they do not necessarily accept the principle as a guideline for action
4	–	–	*Passive reception:* principle is known, but actors are neither able nor willing to follow the principle

Without the first and necessary condition of knowledge there cannot be performance (Faludi, 2000). Therefore, determining the mode of performance is only useful if there is knowledge. However, performance can have various modes, depending on how manifestations of MSP are used in decision-making. Applying the conditions of legitimacy and feasibility, four general modes of performance can be identified as shown in Table 3.2. These four modes will each showcase different opportunities and constraints on performance, thereby providing insight into how the various principles of MSP perform in coordinating OWF in the Dutch context.

3.3 METHODOLOGY

This paper employed a qualitative research design based on policy document analysis to obtain longitudinal data regarding the development of MSP and offshore wind energy for the case of the Dutch North Sea over the period 2004 to 2018, which was triangulated by means of in-depth interviews. This section will first describe the case, followed by the methods of data collection and analysis.

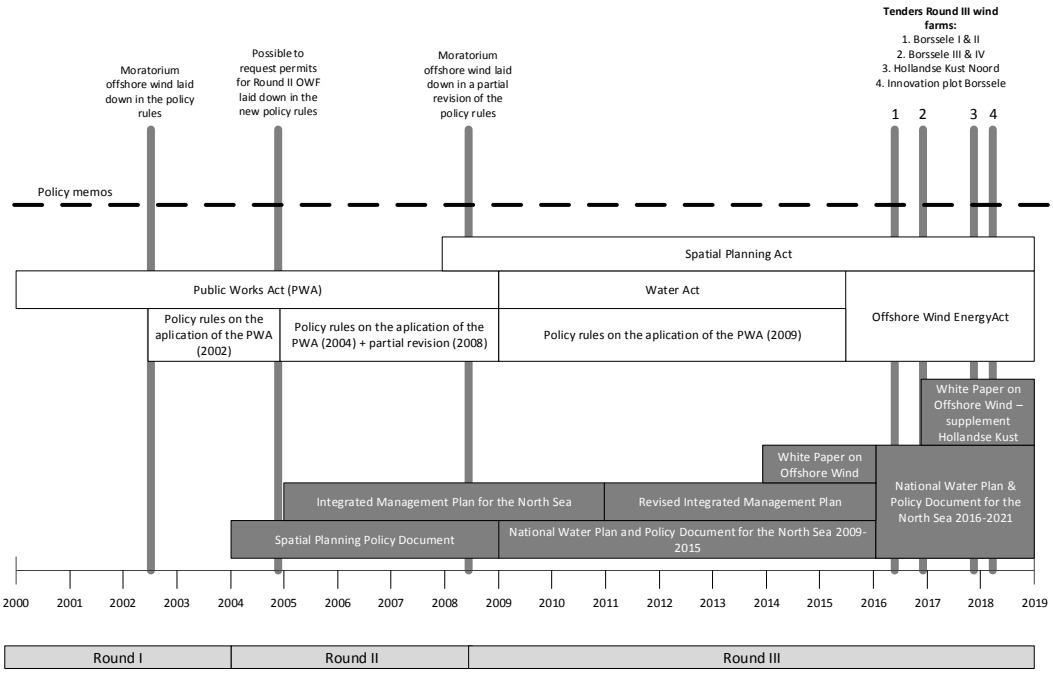

FIGURE 3.1 Manifestations of MSP in the Netherlands over time, including marine spatial plans (grey boxes: see Table A2.1 in the Appendix for the Dutch names and references), regulation and legislation that forms the basis for permit applications for OWF (white boxes) and decisions regarding OWF in the Dutch North Sea (grey lines). The dotted black line indicates the ongoing communication in the form of policy memos (Appendix A2.4) regarding these marine spatial plans, regulation and legislation, and decisions.

3.3.1 The case of the Dutch North Sea

The Dutch case is particularly useful for studying the performance of MSP in coordinating offshore wind energy with other sea uses, because there have been marine spatial plans for the Dutch North Sea from 2004 onwards (see Figure 3.1 and Table A2.1 in the Appendix). The Dutch marine spatial plans have always been published in the form of policy documents that provide a map and set out spatial policy for the North Sea. This paper focuses on the Round II and Round III system of wind development, which are based on these

manifestations of MSP from 2004 onwards. The Round I windfarms are not included in the analysis because they were developed as pilot projects based on sectoral procedures that were developed at the end of the 1990s (IDON, 2005b; TK, 2014).

The *Round II* system provided market parties with the opportunity to apply for permits anywhere in the Dutch Exclusive Economic Zone (EEZ), with some exceptions that were laid down in the *Spatial Planning Policy Document* (e.g., shipping routes, defense areas, safety zones around existing installations and the areas required for maintenance around cables and pipelines) (Ministry of VROM, Ministry of V&W, Ministry of LNV, & Ministry of EZ, 2004). Permit applications were assessed using the 'Integrated Assessment Framework' laid down in the *Integrated Management Plan for the North Sea* (IDON, 2005b). This framework required developers to provide information on, for example, environmental impacts and impacts on other users of the North Sea. Round II permits were issued on the basis of the Public Works Act which was extended to the North Sea in 2000, after the appointment of the Dutch Exclusive Economic Zone a year earlier. In 2008, a moratorium on new OWF initiatives was issued (see Figure 3.1) and the development of the Round III system started.

In the *Round III* system, the government took control of the development of offshore wind energy in space and time. This system only allows OWF development within so-called 'wind energy areas', which are appointed by the national government in the *National Water Plan* (Ministry of Infrastructure and the Environment & Ministry of Economic Affairs, 2015b; Ministry of V&W, Ministry of VROM, & Ministry of LNV, 2009b). The Offshore Wind Energy Act of 2015 (Rijksoverheid, 2015b) introduced the instrument of the plot-decision. In a plot-decision, the government determines the coordinates of plots for OWF within wind energy areas, including provisions to reduce the environmental impact, impact on the coast, and coordination with other users. Examples of such provision include the distance to cables and pipelines, color of the turbines, lighting regime, minimum number of MegaWatts of turbines, the periods in which construction is allowed and the minimum height of the turbines (e.g., Rijksoverheid, 2018). Plots offer space for approximately 350MW and are connected to so-called 'electrical outlets at sea' which are constructed at locations specified by the government. A permit is issued on the basis of the Offshore Wind Energy Act for the specified plot, which is subsequently tendered to the party that requires the least amount of subsidy, respectively the highest bidder in cases without subsidy. A roadmap indicating the timeline for tenders until 2023 was published in 2014 in the form of a policy memo (Ministry of Economic Affairs & Ministry of Infrastructure and the Environment, 2014a). In 2018 the timeline for tenders until 2030 was issued (Ministry of Economic Affairs, 2018).

3.3.2 Data collection and analysis

The Dutch case provided opportunities for a longitudinal analysis, which enabled the evaluation of how the understanding of the principles of MSP regarding OWF developed and how these principles were used (i.e., how they performed) in subsequent decision-making regarding OWF. The contrast between the Round II and Round III system adds

an interesting dimension to this analysis. This paper uses policy document analysis in combination with in-depth interviews to reconstruct the understanding of the principles of MSP and how they affect subsequent decision-making regarding offshore wind energy in the Dutch North Sea. Policy document analysis is suitable for such a longitudinal analysis because a wide range of documents on the MSP process is publicly available. These documents can be considered the manifestations of Dutch MSP processes and can be used to analyze the understanding of the principles of MSP over time, as well as how they performed in coordinating offshore wind energy in relation to other sea-uses.

Different types of policy documents were selected for analysis, including: (1) marine spatial plans (see Table A2.1 in the Appendix); (2) policy memos (see Appendix A2.4); (3) the Offshore Wind Energy Act (Rijksoverheid, 2015b) and parliamentary debate regarding this Act (TK, 2015), as well as various related policy documents and regulations (see Appendices A2.2 and A2.3); and (4) plot decisions (see Appendix A2.5). Figure 3.1 provides an overview and timeline of these documents and related decisions. Three in-depth semi-structured interviews with policy-makers and an independent expert were held in 2015, to triangulate findings from the policy analysis (see Appendices A2.6 and A2.7). The document selection procedure is explained below, followed by the data analysis strategy.

Documents were selected and analyzed because they were referred to as providing spatial policy for the North Sea on the official government website for the North Sea (www.noordzeeloket.nl), or they were referred to as previous spatial policy in their direct revisions. However, many arguments in the debates and decisions are not communicated in these policy documents. Therefore, policy memos (e.g., letters to parliament, policy rules and explanatory memoranda, See Appendix 2.4) and the parliamentary debate regarding the Offshore Wind Energy Act were analysed to gain insights into the debates and decision-making process regarding MSP and offshore wind energy. Policy memos were identified using snowball sampling, starting with policy memo's that were referred to in the marine spatial plans for the Dutch North Sea (see Figure 3.1) or the official government website for the North Sea. The published plot-decisions for the Borssele (I – IV) and Hollandse Kust (I- IV) (see Appendix 2.5) windfarms were also analysed because they explain which decisions are made in practice and why.

Data analysis is based on two rounds of directed coding in Atlas.ti. The first round of coding was based on the six main principles of MSP and focused on the condition of knowledge including both the reference to manifestations of MSP in successive documents and in the interviews, as well as the understanding of the principles of MSP expressed in the analysed documents. The second round of coding focused on the conditions of legitimacy and feasibility, based on both the analysed policy documents and the in-depth interviews.

3.4 RESULTS

During both the Round II and Round III system, the key actors and successive manifestations of MSP refer to earlier documents. Moreover, manifestations of MSP showed an understanding of the relevance and contents of all principles of MSP. Table 3.2 provides a summary of the understanding of each principle of MSP in the two Rounds of OWF in the Netherlands. Since the necessary condition of knowledge is met for each principle, there is performance of MSP in the Netherlands in coordinating OWF. Nevertheless, how the various principles actually perform in practice needs to be understood through the filter of legitimacy and feasibility. Table 3.4 shows the results in terms of the modes of performance. However, the structure of the result section also takes into account the interrelations that can be observed in practice. That is why the principles of area-based MSP and integration are discussed concertedly.

3.4.1 Ecosystem-based MSP: an 'established practice'

Only the ecosystem-based principle is considered to perform as 'established practice' in the Dutch case, because it is considered to be both legitimate and feasible. Throughout the Dutch marine spatial plans, ecosystem interests have been legitimized by reference to (inter)national regulations and norms, e.g., the UN Convention on the Law of the Sea, OSPAR, and the EU Birds- and Habitats-directives. The norms set in these agreements are accepted, but they are in the Dutch context understood as targets rather than threshold values. This can be illustrated by the fact that the Offshore Wind Energy Act incorporates only those aspects of the Dutch Flora and Fauna Act that are obligatory due to European regulation (TK, 2014).

Particularly in the Round III system, the institutional framework has become more coherent, with the Offshore Wind Energy Act which includes relevant aspects of environmental regulation and the government being made responsible for executing the relevant studies in the context of plot-decisions. Moreover, resources have become available in the Round III system for the development of a framework for evaluating the cumulative effects of OWF on ecosystems (Ministry of Infrastructure and the Environment & Ministry of Economic Affairs, 2014c, 2015a). The outcomes of this framework are referred to as the main reason for not including one of the appointed wind energy areas in the timeline for OWF until 2030 (Ministry of Economic Affairs, 2018), demonstrating the feasibility and legitimacy of this approach.

However, the ecosystem-based principle is understood in the Dutch context primarily as the norms stipulated in (inter)national environmental regulations. As such, there appears to be only limited advancement of ecosystem-based interests explicitly due to MSP when planning OWF. Furthermore, it is also important to note that although Dutch MSP follows the room that (inter)national regulations provide for exceptions where effects on protected areas are allowed, the Dutch State has chosen to avoid situations where such exceptions might be needed (e.g., OWF in Natura 2000 areas has been avoided so far). In other words, the

TABLE 3.3 The understanding of the principles of MSP expressed in manifestations of MSP for Round II and III offshore wind energy in the Dutch North Sea

Principles	Round II	Round III
Area-based	• Exclusion policy for OWF in exclusive economic zone	• Designated offshore wind energy areas in exclusive economic zone and territorial sea
Integration: Functional	• OWF as 'use of national importance' • Focus on conflict-avoidance • Permit-level coordination by application of the 'Integrated Assessment Framework'	• OWF as 'use of national importance' • Preference for conflict avoidance • Plan-level coordination in National Water Plan • Permit-level coordination in plot-decisions
Integration: Organizational	• Extension of existing responsibilities results in fragmented responsibilities for locations, permits and subsidies	• Coherence between locations, permits and subsidies by means of a new Offshore Wind Energy Act
Participative	• Statutory participation	• Statutory participation • Participation of wind sector in the design of the Round III system • Public consultation primarily for OWF in territorial sea • Bi-lateral and multi-lateral meetings with other sectors to inform and map interests.
Ecosystem-based	• Safeguarded by international agreements • Developer responsibility for studies	• Safeguarded by international agreements • 'Framework Ecology and Cumulation' for ecological impacts of multiple OWF • Government responsibility for studies • Dedicated research program regarding the impact of wind turbines on the marine environment
Strategic	• Vision until 2020	• Energy agreement until 2023 • Roadmap for OWF until 2030 • Vision until 2050
Adaptive	• Passive adaptive management through revision of the Integrated Management Plan after 10 years	• Passive adaptive management through regular revisions of the National Water Plan every six years • Flexibility in technological options within bandwidth set in plot decisions • 'Innovation plot' for OWF

planning of OWF is intentionally developed to limit conflict with ecosystem interests as much as possible. When comparing this understanding to the debate on ecosystem-based MSP, it can be questioned whether the performance of MSP in safeguarding minimum environmental threshold values in the Dutch case is in line with the intentions of ecosystem-based MSP.

3.4.2 Area-based and integrated MSP: matching feasibility misfit with legitimacy misfit

The *area-based principle*, to start with, is within MSP intended to push for an approach that takes the various interacting interests in a specific area into account and is in its essence cross-sectoral. *Integration* is split into functional and organizational integration. Both aim at coordinating various sea-uses and involved organizations over time and space to bring coherence to decision-making. In MSP literature, the principle of integration is often separated from the area-based principle, but they are in practice closely related. While focusing less on a specific area, integration also targets cross-sectoral coherence and coordination. In the Dutch context, area-based MSP is supported by organizational integration to create a coherent institutional framework with sufficient resources for OWF development. The understanding of the functional integration principle (see Table 3.2) helps legitimize the decisions regarding area-based and organizational integration. When looking at each of these principles individually, there appears to be either a legitimacy misfit or a feasibility misfit. However, these misfits may be partly due to the interrelations between the area-based and integration principle as will be explained at the end of this section.

In Round II, the Dutch approach to area-based MSP was an exclusion policy which stipulated areas where OWF were simply not allowed (Ministry of VROM et al., 2004). Area-based was thus confined to ensuring that the various sectoral interests could *not* interact in a given area. The legitimization of the Round II system was weak, as can be illustrated by the *'Integrated Management Plan'* which stated that "the realization of 6000 MW will probably require a few dozen offshore wind parks. At the moment, this is not perceived as a problem. The development of offshore wind energy is, after all, only in an early stage. If there is a reason to do so, it will be examined whether further spatial planning is necessary" (IDON, 2005a, p. 65). Moreover, the feasibility of the Round II approach to area-based MSP was questioned, because the multitude of sometimes overlapping claims for proposed OWF at various locations throughout the North Sea led to inefficient use of space.

The need for a more coherent institutional framework and efficient use of the resource 'space', are used to legitimize the development of the Round III approach to area-based MSP in the Netherlands. In Round III, the avoidance of conflicts remains dominant in the understanding of the area-based principle. A key difference is that in Round III areas are explicitly appointed for OWF at locations where potential conflicts with other 'interests of national importance' are minimized; i.e., offshore wind energy areas (Ministry of Infrastructure and the Environment & Ministry of Economic Affairs, 2015b; Ministry of V&W et al., 2009b). A slight shift towards a more cross-sectoral approach seems to occur, as especially within the plot decisions which form the basis for permits for OWF, other interests such as fisheries are explicitly considered in a reactive manner. Moreover, there is very limited potential for co-use; e.g., small vessels are under strict conditions allowed to pass through OWF (Ministry of Economic Affairs, 2018). Nevertheless, the Dutch State remains to consider conflict avoidance as the dominant area-based objective, resulting in a feasible system for avoiding and resolving conflicts between OWF and other uses of national importance

in offshore wind energy areas. The legitimacy of this approach is mainly dealt with in the context of functional integration. As such, the Dutch understanding of the principle of area-based MSP resembles the 'legitimacy misfit' mode of performance (see Table 3.4).

The Dutch understanding of *functional integration* is based on a hierarchy of sea-uses, which is grounded in the national priority given to climate change mitigation and renewable energy production at sea. National spatial planning in the Netherlands only directly addresses issues that are designated of 'national importance'. OWF has since 2004 been considered as such an issue. Due to increasing attention and political pressure both in the Netherlands and worldwide, in the course of the Round III system, OWF development has increasingly been framed as contributing to "mitigating climate change, the energy transition, reducing the dependency on energy-exporting countries and improving air quality" (Rijksoverheid, 2018, p. 49). In the Netherlands, the 2013 *'Energy Agreement'* (SER, 2013) was crucial in further emphasizing the national importance of OWF, because the measures in this agreement are backed by a wide variety of governmental, societal and private organizations. The goals for OWF set in this agreement are referred to in all subsequent manifestations of MSP and interviews to legitimize the focus on quick and cost-effective OWF development with a minimum amount of conflict with other uses of national importance. As such, the legitimization of the Dutch approach to functional integration originates primarily from external sources (e.g., international sustainability discourses and renewable energy targets). Moreover, by labelling certain sea-uses as 'use of national importance' and leaving others without this status, an implicit hierarchy of uses is created which legitimizes prioritization of OWF over other uses in appointed wind energy areas, thereby accepting negative impacts on uses that are not of national importance (e.g., fisheries). Contrary to the understanding in MSP literature, there is limited feasibility for cross-sectoral, area-based and thus *functionally integrated* solutions, since it is considered legitimate to prioritize OWF over certain other uses. As such, the 'feasibility misfit' mode of performance is recognizable for the Dutch understanding of the functional integration principle (see Table 3.4).

Organizational integration is within MSP literature considered crucial to support cross-sectoral working, coordination and promote coherent plans and policies. Organizational integration is again very narrowly interpreted with regards to the planning of OWF. The Round II system was mainly an extension of existing responsibilities and legislation to the North Sea, which resulted in fragmentation and created a large administrative burden, causing high degrees of uncertainty for all parties involved (TK, 2014). In the *'Integrated management Plan'* it is already stated that due to the large amount of permit applications for offshore wind energy development at the beginning of 2005, "it is necessary to research how permit-granting procedures and subsidies for wind energy, for both the short and the long-term, can be coordinated in an efficient manner" (IDON, 2005a, p. 42). As such, the burdensome planning of OWF undermined the feasibility of the Round II system.

In response, the approach in the Round III system was legitimized by the need to streamline decision-making procedures. This was done by connecting permits, subsidies and grid-connections and reducing the number of decision moments, thereby minimizing the

occasions at which objections and appeals can be issued (TK, 2014). As such, coherency in policies and decision-making regarding OWF has become a priority in the Round III system. Moreover, the national government takes full responsibility for the OWF planning process. Besides the appointment of the offshore wind energy areas, "the government arranges the prerequisites for realizing an offshore wind farm: the exact location, the permits and the grid connection [...]. The government also performs studies into the structure of the plot, the soil profile, wind speeds, and water flows" (Minister of Economic Affairs, 2016, p. 1). As such, rather than a cross-sectoral alignment of procedures and responsibilities, the Round III system is based on the new Offshore Wind Energy Act (Rijksoverheid, 2015b), which isolates the OWF planning process from MSP with the exception of designating the offshore wind energy areas. In other words, organizational integration has little to do with its original focus on accommodating cross-sectoral coordination. Instead, organizational integration in Dutch OWF planning is used to create more coherency to advance the interests of the offshore wind energy sector. As such, there is a focus on feasibility, resulting in a legitimacy misfit (see Table 3.4). Moreover, this robust framework subsequently limits the feasibility for functional integration, because it sets the procedure for OWF apart from procedures for other users of the sea.

In the case of both the area-based and organizational integration principle, the main legitimization is provided by the need for a feasible Round III system. As such, there appears to be a legitimacy misfit. However, it is the national priority for OWF as described under functional integration that provides legitimacy for the development of this robust institutional framework for the quick and cost-effective OWF development in the Dutch North Sea, which supports an understanding of the area-based principle that is essentially focused on conflict avoidance. Moreover, the decisions made with regards to the area- based and organizational integration principles are backed by an understanding of functional integration that legitimizes an implicit hierarchy between uses. The distinction between these principles is based on MSP literature, but the results indicate that they are closely interrelated. When evaluating these principles concertedly, one could even argue that they resemble the mode of performance that is termed 'established practice' in this paper, because there is both legitimacy and feasibility for the Dutch understanding of these principles. Simultaneously, this Dutch understanding is clearly not in line with the intentions of MSP literature for the area-based and integration principles.

3.4.3 **Participative MSP: legitimacy misfit**

Participation was nothing more than a legal requirement in the Round II system. The fragmented and burdensome planning of OWF in the Round II system urged for increased collaboration between the key stakeholders for OWF planning when developing the Round III system. OWF developers and the Transmission System Operator (TenneT) were involved in developing the Round III system (Ministry of Economic Affairs & Ministry of Infrastructure and the Environment, 2014b). Moreover, other interests of national importance such as shipping were explicitly consulted when appointing offshore wind energy areas (TK, 2014). This participation meant to ensure conflict avoidance with other uses of national importance

while developing policies, regulations, and procedures for the quick and cost-effective advancement of OWF. In other words, the robust institutional framework just mentioned was partly based upon the involvement of these key stakeholders. Public participation was prioritized for OWF within the territorial sea as indicated by the *'Feasibility study offshore wind within the 12-mile zone'* (Ministry of Infrastructure and the Environment & Ministry of Economic Affairs, 2014a), implying that developments outside of 12 miles off the coast are considered of limited interest for participatory trajectories beyond statutory participation. Public participation also played a role in the development of the Strategic Vision for the North Sea, but the performance of this document is marginal as will be explained in the next paragraph. As such, legitimacy for participation is again largely based on the desire to develop a robust institutional framework for quick and cost-effective development of OWF. This has enhanced the feasibility for such quick and cost-effective development, but reduces participation to an instrument to advance sectoral interests. The results show that while consultation and a more participative approach are feasible, legitimacy is constrained to situations in which it is considered beneficial to the feasibility of OWF in the Dutch context. As such, participative MSP resembles the 'legitimacy misfit' mode of performance (see Table 3.4). This potentially undermines trust and legitimacy for the process of OWF for societal stakeholders not explicitly involved and thereby might even undermine the process of MSP as it is largely overtaken by the sectoral interests of energy.

3.4.4 Strategic and adaptive MSP: passive reception

The principles of strategic and adaptive MSP resemble the 'passive reception' mode of performance. With regards to *strategic* MSP, in 2014 a comprehensive and integral *'Strategic Vision for the North Sea 2050'* was developed by the Dutch State (Ministry of Infrastructure and the Environment & Ministry of Economic Affairs, 2014b). Not only did the development of this vision include various sectoral viewpoints, it also included an extensive participative trajectory. Furthermore, the 'Strategic Vision' is explicitly mentioned in the more concrete 'Policy Document for the North Sea 2016-2021'. The condition of knowledge is therefore clearly present. However, its impact on decisions and actions regarding OWF planning is limited. For example, a central element in the Strategic Vision is to promote multifunctional use of the North Sea. The *Policy Document for the North Sea 2016-2021* states that "multifunctional use of the North Sea in 2050 is based on integrated planning in space and time by combining functions. In the vision for 2050, areas will only be […] used by one function if the sensitivity of the marine environment or safety requires this" (Ministry of Infrastructure and the Environment & Ministry of Economic Affairs, 2015a, p. 31). Development of OWF , however, follows the goals laid down in the Energy Agreement and the policy memos that provide a roadmap for offshore wind energy until 2023 (Ministry of Economic Affairs & Ministry of Infrastructure and the Environment, 2014b) and 2030 (Ministry of Economic Affairs, 2018). These documents all prioritize the quick and cost-effective development of OWF. Co-use of areas is not only deliberately avoided, but due to the robustness of the sectoral institutional framework it has also become very difficult to pursue.

Although there is clearly a strategic plan, it is not used to frame short-term policies and decision making regarding OWF. Given the high national priority of OWF, performance of the Strategic Vision for 2050 is also hardly feasible.

Adaptivity is within MSP understood as having sufficiently flexible plans and regulations to allow for learning and innovations and to cope with uncertainty and change. Flexibility is also embraced in discussions surrounding OWF planning in the Netherlands. However, the existence of a robust institutional framework targeting the quick and cost-effective development of OWF narrows the feasibility of being flexible in practice. Hence, it is often limited to simply giving more room to maneuver within a set bandwidth for project developers, as can be illustrated by the following quote: "There is enough flexibility, because developers are allowed to choose from diverse technological options within the set nature- and environmental guidelines" (TK, 2014, p. 3). While this understanding of adaptivity might enhance the capacity to apply innovative technologies, there is little room for true experimentation or for adapting to larger technological or social changes. Possibilities to, for example, include aquaculture or other ocean energy technologies are almost non-existent. It is only in the recent years that such options are beginning to be discussed. However, as explained above, the current institutional framework hardly allows for such options and even discourages them, thus illustrating that both the legitimacy and feasibility of adaptive MSP are constrained.

TABLE 3.4 Performance of the principles of MSP in Round III OWF development in the Netherlands

	Round III			
Principles of MSP	***K***	***L***	***F***	***Performance***
Ecosystem-based	+	+	+	Established practice: ecosystem-based MSP is safeguarded by international norms and standards which set a baseline that is considered both legitimate and feasible
Area-based	+	–	+	Legitimacy misfit: Focus on creating a feasible system which reduces and resolves conflicts between various uses of national importance
Functional integration	+	+	–	Feasibility misfit: International sustainability discourses and renewable energy targets are used to legitimize a hierarchy of uses that forms the basis for the area-based approach and the focus on quick and cost-efficient OWF development
Organizational integration	+	–	+	Legitimacy misfit: Focus on creating a feasible system for OWF development with coordinated locations, permits, and subsidies
Participative	+	–	+	Legitimacy misfit: Participation is used when it is considered beneficial to the process of OWF development, but legitimacy is constrained to situations in which it is considered beneficial to the feasibility of OWF
Strategic	+	–	–	Passive reception: Principle is clearly recognized with a strategic vision for the North Sea, but both the legitimacy and feasibility of using this vision in practice, particularly in the context of OWF, are constrained
Adaptive	+	–	–	Passive reception: Principle is recognized but the focus on a robust institutional framework constrains the legitimacy and feasibility of adaptivity in practice

3.5 DISCUSSION AND CONCLUSION

The Round II system did show knowledge of all principles of MSP with regards to OWF development, but the feasibility and legitimacy of most principles were severely constrained. The performance of this system in shaping decision-making was marginal. Decisions were mainly ad hoc reactions to unforeseen outcomes of this system, in which the manifestations of MSP mostly resembled the 'passive reception' mode of performance. The uncertainty and fragmentation that characterized the Round II system are, together with the increasing (inter)national pressure from sustainability discourses and renewable energy targets, used to legitimize the focus of the Round III system on a quick and cost-efficient roll-out of offshore wind energy, which is prioritized over other uses. As a result, the focus in the Round III system was primarily on designing a feasible system with efficient use of spatial, financial and time resources, as well as a coherent institutional framework to ensure cost-efficient and quick OWF development (see Table 3.4). As such, the most important legitimization for many principles of MSP in the round III system was to increase its feasibility.

The results show that there is a pick and mix of certain principles of MSP (e.g., area-based, integrated, and participative principles) that are used as tools to forward and safeguard the sectoral interests of OWF. In addition, the understanding of these principles is often tailored to this sectoral purpose, with the area-based principle narrowed to merely designating areas and excluding other areas in an attempt at conflict avoidance, while integration targets a hierarchy of uses rather than coexistence or synergies. Therefore, when comparing the Dutch understanding of the six principles to MSP literature, it can be concluded that there is limited performance of the principles of MSP in forming a systematic and integrated marine governance approach that coordinates OWF with various interests at sea in the Dutch case. Particularly, there appears to be a 'legitimacy misfit', because the legitimization of the Dutch understanding of the MSP principles is primarily to create a feasible system to implement external sustainability discourses and renewable energy targets.

The understanding of the principles of MSP in their practical context appears to be crucial in evaluating how MSP performs in coordinating OWF in relation to other sea-uses. The Dutch case shows that, while there is knowledge of all principles, a narrow understanding of these principles in practice can be legitimized. Moreover, it is difficult to align the feasibility and legitimacy of all six principles of MSP simultaneously. For example, the focus on reducing uncertainty in the Dutch case by creating a legitimate and feasible system based on the area-based, participative, and integration principles has limited the legitimacy and feasibility of the strategic and adaptive principles. This is curious, since in existing MSP literature, uncertainty is one of the main reasons for promoting adaptive and strategic MSP (Carneiro, 2013). Another example is the difficulty of aligning organizational integration with functional integration. Early scoping of possibilities for co-location or joint projects, as suggested by Christie et al. (2014) are not a priority when planning OWF in the Dutch North Sea. Instead,

opportunities for joint projects might even be reduced because potential co-users need to go through different procedures based on different legislative frameworks than OWF. As such, the focus on creating a robust framework based on organizational integration limits the feasibility of cross-sectoral functional integration.

Literature on MSP needs to better take into account possible interrelations between the various principles and the fact that they are sometimes very difficult to align, if not mutually exclusive, depending on the understanding of these principles in practice. As discussed above, the understanding of the principles of MSP as observed in practice often does not reflect the description in literature. The operationalization of the various principles in literature is often limited to statements regarding individual principles, while providing limited guidance on practical operationalization and possible interrelations between the various principles. Particularly, the distinction between the principles of area-based and functional integration is in practice limited, because functional integration generally occurs within a certain area. Moreover, the Dutch understanding of the area-based and functional integration principles shows that it is necessary for MSP literature to also explicitly consider which uses should not be integrated within certain areas and the potential justifications for such choices.

Cross-sectional country comparison might provide interesting avenues for research that takes a similar performance-based perspective, including contexts such as the UK, which has designed a dedicated framework for spatial planning at sea (Drankier, 2012). A further operationalization of the principles of MSP that is sensitive to possible interdependencies and conflicts between various principles in practice is necessary for MSP to go beyond a tool for forwarding sectoral interests and towards a systematic and integrated governance system for the sea.

4

The institutional dimension of integration in Marine Spatial Planning:

the case of the Dutch North Sea Dialogues and Agreement

Abstract

Marine spatial planning (MSP) literature identifies various dimensions of integration to deal with fragmented, sectoral, and ad hoc approaches to managing various uses offshore. However, the spatial dimension of MSP has receded into the background, the dimensions of integration remain ill-defined, and there is a lack of appreciation for the institutional changes that these integration efforts induce and require. Moreover, in light of the urgency of energy transition, offshore wind farms (OWF) are often prioritized over other interests in MSP practice. This paper uses the case of the Dutch North Sea Dialogues (NSD) to explore to what extent actors during the NSD pursued formal and informal institutional change to progress the various dimensions of integration in line with the normative principles of MSP to improve spatial integration between OWF and other interests at sea. The NSD provided an, initially temporary, platform that proved key for stakeholders to pursue subsequent formal and informal institutional changes that progressed integration in MSP. While formal institutional changes were achieved during the NSD, informal institutional changes also proved fundamental in progressing various dimensions of integration. The NSD shows that incremental institutional change can be effective in progressing integration, but also shows the limits to this approach. The place-based and temporal dimensions of integration require additional attention because this is where stakeholders most notably rely on existing institutional frameworks and conflicts are most prominent.

Keywords: institutional change, offshore wind farms, integration, maritime spatial planning, participation.

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4.1 INTRODUCTION

The limitations on space for furthering energy transition onshore are creating a push for offshore renewable energy generation, foremost by means of offshore wind farms (OWF) (Bilgili et al., 2011). However, offshore space is also limited, and particularly those areas that are currently being considered feasible for OWF (closer to the coast in more shallow water), are contested (Gusatu et al., 2020). Therefore, coordination and cooperation between various interests and stakeholders offshore is necessary to ensure a timely and balanced energy transition that is well-balanced in relation to the interests of other users of the sea. Marine Spatial Planning (MSP) was developed in many countries as a means of dealing with these spatial claims offshore (Douvere & Ehler, 2008; Ehler, 2018; Ehler, Zaucha, & Gee, 2019; Flannery, Clarke, & McAteer, 2019; Flannery & McAteer, 2020; Qiu & Jones, 2013; Quero García, García Sanabria, & Chica Ruiz, 2019). As such, MSP has been important in the development of the institutional framework – the 'rules of the game' – surrounding OWF and in balancing OWF in relation to other sea uses.

In the past decade, there has been a surge of literature on MSP that attribute a range of normative principles to MSP (Douvere, 2008; Flannery & Ó Cinnéide, 2012; Gee et al., 2019; Jones et al., 2016; Kelly, Ellis, & Flannery, 2019; Kidd, 2013; Kidd, Calado, Gee, Gilek, & Saunders, 2020; Kidd & Shaw, 2014; Klinger, Maria Eikeset, Davíðsdóttir, Winter, & Watson, 2018; Olsen et al., 2016; Portman, 2011; Qiu & Jones, 2013; Saunders et al., 2019; Smythe, 2017; Smythe & McCann, 2019; Spijkerboer, Zuidema, Busscher, & Arts, 2020; Vince & Day, 2020). Ehler (2014, 2018) categorized these principles, stating that MSP should be area-based, integrated, ecosystem-based, participatory, adaptive, and strategic. Recently, however, MSP efforts in many countries are criticized for prioritizing powerful interests, such as OWF, over other interests offshore, with MSP taking the form of 'strategic sectoral planning' (Flannery & McAteer, 2020; Jones et al., 2016; Kidd & Ellis, 2012; Spijkerboer et al., 2020), and being 'post-political'(Clarke & Flannery, 2019; Flannery, Healy, & Luna, 2018; Tafon, 2018). Hence, current MSP efforts appear to have limited success in satisfying these normative principles and dealing with fragmented governance, institutions, and stakeholders.

Integration is a prominent concept in MSP literature for dealing with fragmented governance and policies offshore (Kidd, 2013; Portman, 2011; Saunders et al., 2019; Smythe, 2017; Smythe & McCann, 2019; Vince & Day, 2020). Despite the attention to integration in existing literature, this paper identifies and addresses three research gaps relating to MSP and integration: (1) the spatial dimension of MSP has receded into the background, (2) the various dimensions of integration remain ill-defined, and (3) there is a lack of appreciation for the institutional changes that these integration efforts induce and require.

First, the spatial dimension of integration appears to have receded to the background in many of the more recent publications focusing on integration and MSP. Integration can occur at multiple spatial scales (Kidd, 2007), such as the local level (e.g., within specific OWF), the

national level, or the international/sea-basin level. Integration processes at these various scales affect each other (Healey, 2006). Therefore, it is striking that in existing research, space and scale often only form the context in empirical analyses of governance processes or tools that examine (specific dimensions of) integration processes. When these papers do mention specific (local) knowledge and places, it is usually related to integration of coastal communities and recreation (e.g., Gee et al., 2019; Saunders et al., 2019; Vince and Day, 2020). While these are important considerations, achieving sustainable spatial configurations of various sea-uses – what I call spatial integration – should be a key purpose of integration in MSP processes.

The second research gap is related to the observation that the term integration in the marine context remains poorly defined. As emphasized by Kelly et al. (2019), it often stays unclear what is being integrated. Existing literature that discusses integration processes often refers to various dimensions of integration, such as cross-border, policy/sector, stakeholder, knowledge, and temporal integration (Saunders et al., 2019). Moreover, while various papers dealing with integration usually include similar concepts, the applied terminology differs depending on the specific focus of the paper (e.g., Kidd, 2013; Kidd et al., 2020; Portman, 2011; Saunders et al., 2019; Smythe and McCann, 2019; Vince and Day, 2020). An example is policy/sectoral integration, where definitions often do not go beyond the relatively abstract 'improving coordination between policies and sectors'. Moreover, such policy/sectoral integration is acknowledged to be closely related to, for example, stakeholder and interagency integration (Smythe & McCann, 2018), which further confuses the distinctions between these dimensions. Another example is the integration within and between governments and governmental agencies for which various terms are used (e.g., organizational (Kidd, 2013), administrative (Kidd et al., 2020), inter- and intra-agency (Vince & Day, 2020), inter- and intra-governmental (Smythe & McCann, 2019), or cross-border (Saunders et al., 2019)). Therefore, while being useful for shedding light on integration processes, these various dimensions of integration require further clarification and direction in what should be integrated.

Third, existing MSP literature on integration is criticized for its lack of appreciation for the "complex socio-political and institutional re-ordering" that these integration efforts require (Kelly et al., 2019, p. p3). Institutions are "the rules of the game in a society or, more formally […] the humanly devised constraints that shape human interaction" (North, 1990, p. p3). Generally, a distinction is made between formal institutions such as laws, policies, and regulations, and informal institutions such as conventions, norms, and understandings (Kingston & Caballero, 2009; North, 1991; Ostrom, 2005). This paper adheres to the 'embedded agency' perspective on institutions, in which institutions are seen as the structures to which actors adhere, while also acknowledging actor's capacity to bring about institutional change (Battilana & D'Aunno, 2009; Lawrence & Suddaby, 2006; Seo & Creed, 2002). When applying such an agency-oriented institutional perspective, MSP is also about "the process of designing and redesigning the rules of the game at sea with the purpose of coordinating sea-uses within specific sea-areas" (Spijkerboer et al., 2020, p. 2). Gaining

insight into integration in MSP processes, therefore, requires researchers to explore how actors in their interactions throughout MSP processes pursue formal and informal institutional changes that either progress or hamper integration processes and – by extension – spatial integration.

In response to these research gaps, this paper conceptualizes spatial integration as a key purpose of MSP processes, which brings the spatial dimension back into debates regarding integration in MSP. The various dimensions of integration processes identified in existing MSP literature (e.g., Kidd and Shaw, 2014; Saunders et al., 2019) are considered important components of MSP processes that help improve such spatial integration between OWF and other interests at sea. However, as explained above, these dimensions require further clarification. Therefore, this paper develops an analytical framework for studying spatial integration, in which the normative principles that are attributes to MSP (Ehler, 2018) are used to provide direction to the dimensions of integration. Moreover, in response to the third gap, this framework is specifically attuned to studying both the formal and informal institutional changes that actors pursue when progressing these various dimensions of integration in line with the normative principles of MSP.

This paper is based on participatory observation of the case of the Dutch North Sea Dialogues (NSD). In line with the argument above, the aim is to explore to what extent actors during the NSD pursued formal and informal institutional change to progress the various dimensions of integration in line with the normative principles of MSP to achieve spatial integration between OWF and other interests at sea. The NSD were high-level, political negotiations with the purpose of drafting a North Sea Agreement that improves the balance between various interests in the Dutch North Sea, particularly related to energy, fisheries/food, and nature. The NSD can be seen as part of the Dutch MSP process because relevant parts of the agreement must be included in the current round of revisions of the Dutch marine spatial plans and other relevant plans and regulations. The NSD is a unique case because it was organized as a platform to enable stakeholders – including the government – to explore, reflect upon, and negotiate potential institutional changes. As such, it can be seen as an example of a platform, or 'round table' (Olsen et al., 2014) for 'meaningful participation' (Frazão Santos et al., 2020; Gopnik et al., 2012; Jay et al., 2016; Kidd & Shaw, 2014; Morf, Kull, Piwowarczyk, & Gee, 2019; Olsen et al., 2014; Pomeroy & Douvere, 2008; Quesada-Silva, Iglesias-Campos, Turra, & Suárez-de Vivero, 2019; Ritchie & Ellis, 2010; Vince & Day, 2020), where stakeholders become part of collective decision-making processes. Examples of such platforms for meaningful participation are lacking in practice (Jones et al., 2016; Twomey & O'Mahony, 2019). Therefore, insights from the case of the NSD are also useful for both scientists and practitioners interested in organizing integration processes and 'meaningful participation' in MSP processes. Moreover, this paper responds to calls for more empirical research into the role of integration in MSP (Saunders et al., 2019) and contributes towards understanding the socio-political and institutional dimension of integration, particularly in relation to the debate on radical versus incremental change in marine contexts (Kelly et al., 2019).

Section 2 further explains the main concepts and development of the analytical framework for studying spatial integration in MSP. Section 3 describes and discusses the case and methods, followed by the results in section 4. The paper concludes by using these results to reflect on existing MSP literature and provides policy recommendations.

4.2 INTEGRATION AND INSTITUTIONAL CHANGE

Integration is a recurring theme in spatial planning policies and debates, both onshore (Healey, 2006; Stead & Meijers, 2009; van Geet, Lenferink, et al., 2021) and offshore (Kidd, 2013; Portman, 2011; Saunders et al., 2019; Smythe, 2017; Smythe & McCann, 2019; Vince & Day, 2020). The term integration is often used in MSP literature to describe processes that counteract fragmentation and ad hoc policies and is associated with terms such as coordination and alignment of interests (Kelly, Ellis, & Flannery, 2018; Kelly et al., 2019). Healey (2006) emphasizes that integration from a spatial planning perspective is "not just about coordinating and aligning the spatial aspects of the policies of other sectors", it is also about "qualities of places and principles of spatial organization" (p.71). Specific places provide insight into possibilities and impossibilities for aligning various interests in light of local circumstances and characteristics, but these places must be seen across scales, in relation to the regional, national, and international context (Healey, 2006). Insights in various interests and their spatial distribution and interactions on various scales could provide input for the abovementioned principles of spatial organization, and provide the basis for establishing frameworks for decision-making.

This paper returns an explicitly 'spatial' perspective to MSP, by positioning spatial integration as a substantive goal of MSP processes. Based on the above discussion, spatial integration is understood as a sustainable spatial configuration of sea-uses, based on the presence of frameworks for decision-making that coordinate the spatial impacts of (sectoral) policies and organize structural cooperation between stakeholders at various scales, taking into account the place-based characteristics and opportunities offered by specific locations. Spatial integration, then, does not mean that interests always need to be physically integrated (e.g., in the form of multi-use (Schupp et al., 2019)). Instead, spatial integration means that there is a patchwork of functions and uses that can be physically integrated when beneficial, but that can also lead to conscious separation of functions when necessary, to achieve a sustainable spatial configuration of sea-uses.

In this paper, the various dimensions of integration that are discussed in MSP literature (Jones et al., 2016; Saunders et al., 2019; Vince & Day, 2020) are considered important building blocks for achieving spatial integration. In their analysis of MSP literature regarding integration Saunders et al. (2019) identify the following dimensions of integration: cross-border integration, policy/sector integration, stakeholder integration, knowledge integration, and temporal integration. However, as explained in the introduction, the distinction between

these dimensions remains unclear. Healey (2006) emphasizes that integration is a relational term that can only be understood in terms of "what is to be linked or merged" (p. 68) (see also Kelly et al., 2019). This paper provides such clarification by combining the dimensions of integration with the normative principles that are attributed to MSP. These normative principles distinguish MSP from previous ad hoc and sectoral approaches (Ehler, 2014, 2018; Spijkerboer et al., 2020) and show what MSP should be:

- Area or place-based: MSP should take into account location-specific contexts and cumulative effects of activities in areas and regions (Christie et al., 2014; Douvere, 2008; Ehler & Douvere, 2009; Flannery & Ó Cinnéide, 2012; Kyriazi et al., 2016; Young et al., 2007);

- Integrated: MSP should coordinate across organizational and sectoral boundaries (Douvere, 2008; Gee et al., 2019; Jones et al., 2016; Kidd, 2013; Kidd et al., 2020; Kidd & Shaw, 2014; Klinger et al., 2018; Olsen et al., 2016; Portman, 2011; Qiu & Jones, 2013; Saunders et al., 2019; Smythe, 2017; Smythe & McCann, 2019; Vince & Day, 2020);

- Ecosystem-based: MSP should achieve sustainable use of marine ecosystems by taking into account the (cumulative) effect of various uses on the environment (Agardy et al., 2011; Douvere, 2008; Ehler & Douvere, 2009; Flannery & Ó Cinnéide, 2012; Gilliland & Laffoley, 2008; Karlsson, 2019; Qiu & Jones, 2013; Sander, 2018; Young et al., 2007; Zaucha, 2014);

- Participatory: MSP should create ownership and legitimacy by organizing 'meaningful' stakeholder involvement throughout the MSP process (K. A. Alexander & Haward, 2019; Flannery et al., 2016, 2018; Frazão Santos et al., 2018; Jones et al., 2016; Kidd, 2013; Olsen et al., 2016; Piwowarczyk, Matczak, Rakowski, & Zaucha, 2019; Pomeroy & Douvere, 2008; Ritchie & Ellis, 2010; G. Smith, 2018; Smythe & McCann, 2018; Tafon, 2018);

- Adaptive: MSP should incorporate monitoring and evaluation to ensure learning takes place and new insights are incorporated during the planning cycle (Carneiro, 2013; Christie et al., 2014; Collie et al., 2013; Douvere, 2008; Douvere & Ehler, 2011; Flannery & Ó Cinnéide, 2012; Frazão Santos et al., 2018; Jones et al., 2016; Kelly, Gray, Shucksmith, & Tweddle, 2014; Portman, 2015; Vince & Day, 2020; Young et al., 2007);

- Strategic: MSP should take into account future developments and needs proactively (Agardy et al., 2011; Christie et al., 2014; Gissi, Fraschetti, & Micheli, 2019; Kidd, 2013).

Table 4.1 shows how the normative principles of MSP closely match the dimensions of integration. For example, the normative principle of area-based- or place-based MSP is related to territorial integration. Territorial integration is one of the dimensions of integration referred to in existing literature on integration in MSP to refer to spatial coverage (Kidd et al., 2020) and working across (local) borders (Kelly et al., 2019; Kidd & Shaw, 2014). Existing

literature often focuses solely on the cross-border or multi-scale dimensions (Gee et al., 2019; Saunders et al., 2019). Kidd and Shaw (2014) make a distinction between horizontal (adjacent areas) and vertical (between scales) territorial integration. Therefore, this paper adheres to the term territorial integration (rather than, for example, cross-border integration). Using the normative principle of area-based MSP, direction is provided to this dimension of territorial integration by focusing efforts on specific locations in relation to various scales. To further clarify and relate policy/sectoral integration to the normative principles of MSP, this article uses the distinction by Douvere (2008) between user-user, and user-environment integration. Both are seen as forms of policy/sectoral integration, but user-user integration is related to the normative goal of integrated MSP, while user-environment integration is related to the normative goal of ecosystem-based MSP. Moreover, while knowledge integration is closely related to temporal integration, the former refers to institutional changes pursued by actors that enable them to react and respond to new insights. Temporal integration, on the other hand, refers to institutional conditions that progress proactive behavior in light of uncertain future developments.

TABLE 4.1 Analytical framework for studying spatial integration in MSP by examining formal and informal institutional changes pursued by actors to progress various dimensions of integration in line with the normative principles of MSP.

Normative principles of MSP	Dimensions of integration	Operationalization
Area- or place-based MSP	Territorial integration	Changes in formal or informal institutions that allow actors to consider the place-based characteristics of specific areas and take into account interactions across scales to enable area-based MSP.
Integrated MSP	Organizational integration	Changes in formal or informal institutions that improve cooperation and coordination within and between government and stakeholders to enable integrated MSP.
	Policy/sectoral integration (user-user)	Changes in formal or informal institutions that improve cooperation and coordination between various users of the sea and the policy frameworks that guide them to enable integrated MSP.
Ecosystem-based MSP	Policy/sector integration (users-environment)	Changes in formal or informal institutions that ensure sustainable use of the environment to enable ecosystem-based MSP.
Participatory MSP	Stakeholder integration	Changes in formal or informal institutions that allow for meaningful inclusion of stakeholder and their interests and perceptions and that contribute to creating mutual understanding and trust between stakeholders to enable participatory MSP.
Adaptive MSP	Knowledge integration	Changes in formal or informal institutions that allow actors to develop joint research, share information, and respond to new insights throughout the planning cycle to enable adaptive MSP.
Strategic MSP	Temporal integration	Changes in formal or informal institutions that allow actors to make proactive decisions based on potential future developments to enable strategic MSP.

The institutional dimension of integration is key in the operationalization of the analytical framework for this paper in Table 4.1. Paradoxically, integration efforts are often hampered by the very problems they aim to solve: namely, fragmented formal and informal institutions that guide the various sectors, policy communities, and stakeholders (Jones et al., 2016; Kelly et al., 2018, 2019). Moreover, sometimes there are no existing rules because MSP is still a relatively new endeavor and new ideas for using offshore space continue to emerge (Frazão Santos et al., 2018). Progressing spatial integration, therefore, requires institutional change aimed at "co-aligning the policies of diverse policy communities, each with their own traditions, pressures and innovation dynamics" (Healey, 2006, p. 71).

This paper will focus on the forms of institutional change pursued by actors to progress integration in line with the principles of MSP, using the commonly made distinction between formal and informal institutions (Kingston & Caballero, 2009; North, 1991; Ostrom, 2005). Formal institutional change refers to changes in laws, policies, or regulations, while informal institutional change refers to changes in conventions, norms, and codes of conduct (Kingston & Caballero, 2009; North, 1991; Ostrom, 2005). Using this distinction, the analytical framework in Table 4.1 can be used to explore to what extent the actors, during their interaction in the context of the NSD, pursued formal and informal institutional change to progress the various dimensions of integration in line with the normative principles of MSP.

Moreover, by using the distinction between formal and informal change, this study also contributes to the debate in MSP literature on more radical versus incremental change. Recently, authors have argued for more radical change in formal institutional arrangements to achieve fundamental transformations in marine governance (Clarke & Flannery, 2019; Kelly et al., 2018, 2019). Maintaining and adding to the existing system will result in problems due to path dependency, policy layering, and institutional inertia, which hamper integration efforts (Kelly et al., 2018, 2019) and reinforce the status quo (Clarke & Flannery, 2019). Simultaneously, existing institutional theories pose that consequential shifts can also be brought about through more gradual institutional change, for example by re-interpreting existing formal or informal institutions (Mahoney & Thelen, 2010). By using the distinction between formal and informal change, the analysis allows for discussion of the findings on institutional change in the context of this debate.

4.3 PARTICIPATORY OBSERVATION FOR STUDYING THE NORTH SEA DIALOGUES

4.3.1 The case of OWF development in the Netherlands and the NSD

OWF development in the Netherlands is a highly regulated and efficient, top-down, national government-led affair (Spijkerboer et al., 2020). In the Dutch marine spatial plan, areas are appointed for OWF (Ministry of Infrastructure and the Environment and Ministry

of Economic Affairs, 2015). Letters to parliament are used to explain the timeline for constructing wind farms in these appointed areas (Ministry of Economic Affairs, 2018). The Offshore Wind Energy Act forms the basis for the licensing procedure for OWF (Rijksoverheid, 2015b). The national government prepares the relevant studies such as the Environmental Impact Assessment for these appointed areas, which form the basis for so-called plot-decisions. These plot-decisions provide the exact coordinates for an OWF within appointed offshore wind energy areas, as well as bandwidths and requirements for constructing the OWF. Subsequently, developers can submit a bid (depending on the specific plot this can be with or without subsidy-schemes), and the highest bid, respectively the bid which requires the lowest amount of subsidy, will gain the right to construct the OWF on a specific plot (Spijkerboer et al., 2020).

Signals about a lack of balance between energy transition and other interests at sea, led the government to start a process for a Strategic Agenda 2030 for the North Sea. However, a broad range of stakeholders felt that this process resembled a 'black box', and that it remained unclear what happened to their input (OFL, 2018). These insights were included in a report which recommended the government to organize North Sea Dialogues with the aim of coming to a North Sea Agreement and included a letter by various stakeholders with the request to organize these Dialogues (OFL, 2018).

As a result of these efforts and reports, the government decided to facilitate in the organization of the North Sea Dialogues (NSD). The NSD were led by an independent chairperson and staff. Over the course of 2019, representatives from various sectors, including the domains of energy (both fossil and offshore wind energy), ports, nature (NGOs), fisheries, and the national government (represented by the Ministry of Infrastructure and Water Management, Ministry of Economic Affairs and Climate Policy, Ministry of Agriculture, Nature and Food Quality) met regularly in face-to-face meetings. These dialogues were confidential and resulted in a 'negotiators-agreement for the North Sea' in February 2020 (OFL, 2020c). This negotiators agreement was presented by involved representatives to their constituencies. In June all participating stakeholders except the fisheries sector[2] signed the North Sea Agreement and this version is used when referring to provisions in the agreement in the remainder of this paper (OFL, 2020b). The Dutch House of Representatives accepted the agreement in January 2021. As such, the North Sea Agreement is now an official agreement between the government and various stakeholders that provides one of the pillars for Dutch North Sea policy until 2030.

2 Due to fragmentation among the constituency of the fisheries organizations regarding support for the North Sea Agreement, these organizations have decided against signing the agreement. The parties to the North Sea Agreement are searching for manners to incorporate the fisheries sector in the agreement (Ministry of Infrastructure and Water Management, 2020).

The focus of this paper will mainly lie on the content of the dialogues, rather than the set-up of the dialogues as a participatory approach, or the implementation of the agreement. The NSD is a far-reaching participation effort, going beyond just consultation of stakeholders towards a collective decision-making process on North Sea policy. This means that relevant aspects of the agreement must be included by the government in the new revisions of the Dutch marine spatial plans. Moreover, if the government runs into problems that require changes to the agreement, this will need to be discussed with the stakeholders. While the set-up, drawbacks, and benefits of the NSD would be an interesting topic of research in itself, this goes beyond the scope of this paper, particularly because implementation of the agreement is just starting at the time of writing this paper.

4.3.2 Data collection and analysis

This paper is based on data collected during participatory observation of the NSD process. Observational methods are suited to gaining insight into what actors actually do, rather than what they say they did (Robson, 2011). As such, this method provides unique insight into the negotiation process and how actors in their interactions actually pursued or hampered institutional change during the NSD.

The author of this paper was hired as part of the independent staff of the NSD and, as such, was immersed in the process. The double position of the researcher as observer and staff member was explained at the beginning and end of the NSD process. These two roles did not conflict with each other, because the purpose of the staff was to facilitate the negotiations and come to an agreement. Being a staff member, the researcher was responsible for among others, collecting information from various stakeholders, writing discussion papers to structure debates, and drafting the agreement based on the input of stakeholders. Raw data, therefore, includes notes and experiential knowledge on the NSD meetings up to the presentation of the 'negotiators agreement' in February 2020, internal debates, discussions within the staff and between the staff and members of the NSD, as well as input and debates regarding various draft versions of the agreement. Triangulation occurred by comparing personal notes to official meeting reports constructed by an external party. To ensure the confidentiality of the negotiations were not breached, findings were discussed with a key member who was present throughout the process.

The raw data was organized and categorized into a timeline and, subsequently, condensed into a storyline of 192 pages that describes the process and debates within the NSD. This storyline contains cross-references to raw data for verification purposes. First, deductive coding, based on Table 4.1, was applied to the storyline to explore to what extent the various dimensions of integration and related normative principles of MSP could be observed during the NSD. This was followed by an analysis of the formal and informal institutional changes that were dominant in progressing particular dimensions of integration. The next section presents and discusses the results (see also Table 4.2), organized according to the dimensions of integration and related normative principles of MSP.

4.4 INSTITUTIONAL CHANGE FOR INTEGRATION IN THE DUTCH NORTH SEA DIALOGUES

4.4.1 Territorial integration for area-based MSP

Territorial integration can be progressed through changes in formal and informal institutions that allow actors to consider the place-based characteristics of specific areas and take into account interactions across scales to enable area-based MSP. Prior to the NSD, the area-based principle was understood as a means to avoid conflict by appointing areas to specific uses such as OWF in the Netherlands (Spijkerboer et al., 2020). Conflicts resulting from local circumstances were mainly recognized and dealt with when designing plot-decisions. Interestingly, it could be observed that during the NSD, debates about specific areas were also often avoided because these debates exposed existing sensitivities and conflicts. Such conflict was particularly noticeable when debating protected nature areas in relation to fisheries (this will be further discussed in section 4.3), but also in debates on potential future locations of offshore wind energy areas. As such, a certain level of abstraction in the negotiations proved helpful in coming to the agreement. However, this does not necessarily contribute to solving underlying conflicts. Rather, these conflicts were postponed to a later point in time by means of 'process agreements', which are provisions in the agreement stating that a specific topic will be discussed further in the future. While not leading to any formal institutional change yet, these process agreements do ensure that the government is held publicly accountable for the choices that will be made regarding these topics in the future.

An important factor contributing to this postponement is that, when discussing certain areas, specific knowledge regarding these areas is required. Such knowledge was often not (readily) available. Simultaneously, knowledge gaps regarding specific locations also provided opportunities for stakeholders to oppose certain developments, for example by creating doubts regarding the feasibility of potential locations for OWF. This can be illustrated by the debates in the NSD regarding the option to more quickly start developing OWF in the northern part of the Dutch North Sea. All stakeholders agreed that constructing OWF in the northern part of the Dutch North Sea is inevitable in the long term and that these northern locations may have benefits in terms of higher wind speeds, as well as limiting the impact on other sectors and the environment. The idea was that if the development of OWF areas in the northern part of the Dutch North Sea was prioritized, parts of appointed offshore wind energy areas[3] in the more intensively used Southern part of the Dutch EEZ could remain open. This idea would require both formal and informal changes in the priorities for appointing

3 These (parts) of areas were not included in the existing Roadmap for OWF because they were, for various reasons, considered the least feasible options when the Roadmap was constructed. Reasons that were mentioned included conflicts due to the impact on other sectors and the environment (Ministry of Economic Affairs, 2018).

and developing OWF locations. However, in light of the urgency of renewable energy targets, the government did require a check of the feasibility of these suggested northern areas for OWF. The resulting debates illustrate how a lack of site-specific knowledge can be used to halt or delay institutional change when it is not in line with current core values and rules. For example, calculations regarding costs and benefits for the already appointed OWF areas were readily available, but they were compared against rough assumptions and estimates for suggested new areas. Moreover, the assumptions that were used in these calculations were based upon the existing institutional framework, with the dominant rule in Dutch MSP that OWF needs to be cost-efficient and landing points for electricity cables must be located in the Randstad area close to major users of electricity such as the port of Rotterdam. These assumptions are closely related to the financing structure of OWF in the Netherlands in which cable costs are socialized. Moreover, potential opportunities for reducing costs through e.g., international interconnection and storage are not taken into account (see also paragraph 4.6 on temporal integration). Still, the idea of prioritizing OWF development in the northern North Sea was still included as a process agreement, as well as the terms for further research into this idea. Again, these terms also include many conditions based on the existing institutional framework, for example, related to the costs and speed of the energy transition (see provision 4.9-4.11 of the Agreement). This example shows the importance of site-specific knowledge for territorial integration. A lack of site-specific knowledge can lead to assumptions that are strongly grounded in the current formal and informal institutional frameworks. Nonetheless, the agreement does create opportunities for institutional change in the future because it communicates broad support for this idea and commitment to further research in the form of process agreements.

Stakeholders also agreed upon the need for more area-based approaches that take into account local characteristics of an area. This was particularly the case for discussions regarding multi-use of areas. Paragraph 4.2 on policy/sectoral integration illustrates that in some cases it was possible to devise general rules. However, stakeholders in the NSD agreed that in many cases the local circumstances are key to determining whether certain forms of multi-use are potentially feasible. While all stakeholders supported the idea of area-based approaches during the NSD, representatives from the ministries did caution that uniform approaches create more regulatory clarity and are easier to enforce. Nonetheless, formal institutional change towards more territorial integration was achieved by introducing the instrument of the ‘area-passport’. Provision 4.1 of the Agreement states that before appointing areas at sea for a specific purpose (for example plot-decisions for OWF), and after deliberation with stakeholders, the government will construct an area-passport. The goal of this passport is to explicitly take into account current and potential future uses of this area when designing an OWF. As such, a formal rule is introduced to ensure that various potential co-uses are identified and supported prior to constructing an OWF. This formal rule progresses territorial integration towards improved area-based MSP.

4.4.2 Organizational integration and policy/sectoral integration between users for integrated MSP

Organizational integration can be progressed through changes in formal or informal institutions that improve cooperation and coordination within and between government and stakeholders to enable integrated MSP. During the NSD, it became clear that fragmentation within the government was a major point of frustration for stakeholders prior to the NSD. While literature often speaks of 'the government', significant fragmentation in responsibilities exists between and within various ministries and governmental agencies. This fragmentation caused stakeholders to experience institutional barriers resulting from inconsistencies, shifting priorities, and a lack of communication between various ministries and government agencies. During the NSD, however, the three directly involved Ministries were stakeholders themselves, represented by the director-general of the relevant departments in each ministry. Moreover, there was one director responsible for coordinating information-flows within 'the government' and between the government and the NSD. As a result, the government was challenged to organize coordination of information and expertise within and between all relevant ministries and departments (which was broader than just the three ministries that were directly involved) and the NSD. Government representatives acknowledged during the NSD that this process led to significant improvements in the cooperation and coordination within and between ministries and departments because they needed to speak with 'one voice' during the NSD. While formal responsibilities remained unchanged, the informal communication structure within the government was adapted. Appreciation for this enhanced coordination within the government was also expressed by stakeholders. They appreciated, for example, the clarification of the position of the government regarding various topics, the stable interaction with the government including a clear contact-point, and the increased trust in the government. As such, the NSD progressed organizational integration by improving coordination and cooperation of information flows within the government. Interestingly, this form of organizational integration relied mainly on informal changes in the norms and habits regarding collecting and sharing information within the government, and between the government and other stakeholders within the NSD.

It is important to mention that similar processes of organizational integration could also be observed among other stakeholder groups. For example, the fisheries organizations that were represented in the NSD, which are traditionally competitors, unified behind a joint vision document in which they clarified their view on the issues that were debated in the NSD (VisNed, 2019). Similarly, the various NGOs that were involved coordinated their input into the NSD, despite having different focal points (e.g., the position of NGOs regarding OWF can vary depending on whether they focus on wildlife in general, birds, or environmental pollution). The NGO representatives could often be observed to negotiate among themselves prior to meetings, they coordinated their responses to new information, and they always created joint input-documents to present their view on various issues that were being discussed. The setting of the NSD caused organizations that represented similar interests to form a 'unified front' for their overarching interests, rather than fighting openly

among themselves which could have weakened their position. These examples illustrate that organizational integration within stakeholder groups, while not prominent in existing literature, might also be an important aspect of organizational integration that can be encouraged in MSP processes.

However, there are limits to organizational integration, which can be illustrated using the example of the 'transition fund'. The idea of such a fund was inherently connected to the idea of a North Sea Agreement prior to the start of the NSD (OFL, 2018). The idea behind this transition fund was to enhance coordination in the financial flows for various aspects of North Sea policy. This included financial flows relating to enforcement, research and innovation, but also to fill gaps related to the implementation of the agreement that were not covered by existing (sectoral) funds. All parties agreed that some kind of streamlining in funding was necessary and the idea of this fund was debated extensively during the NSD from the first meetings onwards. Stakeholders were in favor of a fund that would be independent of the NSD and the government. However, this turned out to be unacceptable due to general rules on budgeting and funds within the government. Eventually, agreement was reached in the NSD on a set of financial-procedural rules on how to spend the funds that were made available by the government for the implementation of the agreement. Therefore, while funds were made available for implementing the North Sea Agreement, formal institutional change towards financial-organizational integration during the NSD remained limited.

Policy/sectoral integration can be progressed by changes in formal or informal institutions that improve cooperation and coordination between various users of the sea and the policy frameworks that guide them, to enable integrated MSP. This form of integration refers to general rules for cooperation and coordination, rather than the area-based rules discussed in section 4.1. An example of such policy sectoral integration is the formal institutional change that was achieved regarding cutter fisheries within OWF. While the fisheries sector initially argued for access to wind farms, debates and discussions within the NSD regarding risks and alternatives led to a shift in perspective. In the vision document that the fisheries sector prepared for the NSD, they acknowledged that with the current fisheries techniques and set-up of OWF, it is not (yet) feasible to use cutters for fisheries within OWF (VisNed, 2019). As a result, the agreement includes a provision (4.24) stating that for the near future, cutter fisheries within wind farms will not be allowed. Another example relates to passage for smaller ships through wind farms. Debates focused on whether to allow for free passage through wind farms versus dedicated passageways. Within the NSD, this debate regarding shipping also related to topics such as compatibility with other forms of multi-use (e.g., seaweed farming might not be compatible with free passage for ships), risks to the OWF itself, and issues such as enforcement. Moreover, while at first debates centered around 45 meters as the maximum length for ships to pass through OWF, the NSD provided a platform for the fisheries representatives to mention that many cutters are slightly larger and argue for an extension to 46 meters[4]. The resulting provision (4.23) in the agreement states

4 This provision relates solely to passage through OWF, not the act of fishing.

that as a general rule "the government will strive for appointment of passageways for ships up to 46 meters […]" (OFL, 2020b, p. 21). These examples show that the NSD progressed user-user integration mainly by changing formal institutional rules. Informal institutional change of norms and values for communicating created open debate and an increased understanding of various points of view among stakeholders, which created opportunities for such formal institutional change. It is important to notice that policy/sectoral integration requires the clarification of uses that are considered (potentially) compatible, but also the specification of uses that are considered incompatible. Moreover, the breadth of discussions regarding e.g., the passage for shipping shows that a platform for negotiating and deliberating these issues is crucial for progressing policy/sectoral integration in line with integrated MSP.

4.4.3 Policy/sectoral integration between users and the environment for ecosystem-based MSP

Policy/sectoral integration between users and the environment can be progressed by changes in formal or informal institutions that ensure sustainable use of the environment to enable ecosystem-based MSP. While not explicitly mentioning the ecosystem-based approach, the idea of a 'healthy North Sea' is prominent in the North Sea Agreement, as is the idea that this requires additional efforts compared to the current situation. Debates during the NSD focused on the degree to which the 'good environmental status' as laid down in the Marine Strategy Framework Directive (MSFD) should be explicitly used as a benchmark or whether to use the framing of a 'healthy North Sea', as well as how to measure progress towards these targets. These debates laid bare pre-existing tensions, particularly between the fisheries sector and the NGOs, but also raised questions regarding the use and interpretation of various indicators that can be used to operationalize these concepts in relation to OWF development. Moreover, it became apparent that, despite increasing efforts, there is still a lack of scientific knowledge regarding many aspects of the ecosystem and the impacts of various (cumulative) human users (see also paragraph 4.5 on knowledge integration). These examples illustrate that in progressing user-environment integration, actors initially pursued institutional change primarily through a reinterpretation of existing institutional frameworks.

Even though not all these debates reached a definite conclusion, the NSD and agreement did encourage a shift in the understanding of the position of the ecosystem compared to previous Dutch MSPs and even the government's coalition agreement for the period 2017-2021 (Rutte, van Haersma Buma, Pechtold, & Segers, 2017). Prior to the NSD, EU threshold values for environmental protection and biodiversity were considered "targets rather than threshold values" (Spijkerboer et al., 2020, p. 5). This idea was rejected during the NSD, which prominently supports the idea of 'going additional miles for a healthy North Sea', particularly in light of the increasing intensity of use such as OWF. While the existing formal rule is rejected, it is not yet replaced by a new formal rule but rather by an informal aspiration, the shape of which will depend on future actions of stakeholders. However, the importance of this change should not be underestimated because it required the responsible

minister to acknowledge that this agreement would exceed the governing period of the current administration, thereby allowing for the North Sea Agreement to include provisions that are not in line with the perspective of the coalition government at that time.

Although stakeholders had different opinions on how to operationalize the new aspiration of 'a healthy North Sea', the fact that there was a shift in this aspiration can be illustrated by the debates between representatives from the fisheries sector and NGOs. For example, despite the fisheries sector not signing the agreement as explained in Chapter 3, this sector was open to discussing a significantly higher percentage of the Dutch North Sea being closed to sea-bed fisheries than in any previous negotiations on this topic. During these debates, percentages that were seriously discussed ranged between 10 and 15%, compared to the existing 5.1% that was proposed for implementation prior to the start of the NSD. The debates regarding these percentages were strongly influenced by the definition of 'sea-bed fisheries' and what is considered sea-bed disturbance. This was already the case prior to the NSD. For example, the government initially claimed that proposed measures amounted to a higher percentage than 5.1%, because they used a definition focusing on 'significant sea-bed disturbance', which allowed certain types of fisheries within the closed areas because of their relatively limited impact on the sea-bed (Vrooman, van Sluis, & van Hest, 2018). An important aspect of these debates was also whether to include windfarms (which are closed to fisheries) in these percentages or not. Provision 4.38 of the Agreement eventually states that 13.7% of the Dutch North Sea will be closed to any form of sea-bed disturbance by fisheries in 2023, with a rise to 15% in 2030. These percentages are to be appointed within recognized ecologically valuable areas, such as areas appointed on the basis of the European Bird- and Habitat Directives or the European Marine Strategy Framework Directive. However, this provision is conditioned by the availability of funds for the transition of the fisheries sector[5]. This is an, albeit still disputed, change in the formal rules regarding protected areas in the Dutch North Sea.

This formal rule change is also supported by a different way of rationalizing the choice for protected areas, focusing more on the quality of protected areas over just quantity. Based on suggestions from the scientific advisory committee that assisted during the NSD, the idea of considering the 'relative ecological value' of areas (but also wind turbines and gas platforms) was included in considerations regarding protected areas. Using this concept, identified ecologically valuable areas could be ranked according to their relative ecological value for the Dutch North Sea. Following this idea, improving the protection of the highest-ranked areas will then provide the highest overall ecological benefits to the system. This concept was used to rationalize the choices for additional protection in certain areas, while still weighing this

5 Early on during the NSD, a parallel trajectory was started to develop a vision for the transition of the cutter fisheries sector. This parallel trajectory focused on issues that were internal to the fisheries sector and not directly related to balancing the fisheries sector and other interests at sea. However, from the start of the NSD processes, it was acknowledged that this transition would require funds and that these funds were part of the NSD process.

against other interests in these areas. While this change in rationalization hints at informal institutional change, it is important to mention that there is no provision in the agreement that guarantees the use of this concept of relative ecological value in the future. Whether this will be a lasting informal or formal institutional change, therefore, remains to be seen.

The aspiration of a healthy North Sea is also supported by some formal changes in rules, for example by including provisions regarding the use of 'best available techniques' for the construction of installations, nature enhancing construction, and mitigating the impact on the ecosystem. As such, the NSD progressed integration between users and the environment through a rejection of the existing interpretation of the institutional framework (deinstitutionalization), through changes in formal rules to mitigate impacts and enhance protection, as well as new more informal changes in rationalizing these choices and measures. While a new understanding of ecosystem-based MSP is starting to take shape in the North Sea Agreement, this new understanding is not yet fully formed and remains somewhat disputed.

Examples of remaining disputes include the rejection of the agreement by part of the fisheries sector, but also a list of topics that remain unresolved. One topic on this list is, for example, the debate regarding the potential strengthening of the norms for underwater noise during construction. NGOs, the government, and the offshore wind sector could not agree upon the interpretation of relevant data and norms. These disputes over the interpretation of indicators remain. Nonetheless, the examples above do show the willingness of various economic sectors to debate and agree to enhanced efforts to protect and improve the ecosystem, within certain boundaries[6]. Particularly for the offshore wind sector and the oil- and gas sector, this willingness involved agreeing to a partly unknown costs increase (related to e.g., using best available techniques and nature enhanced construction), which could be a threat to their business case. Moreover, process agreements on these topics ensure future communication and debate on the use and interpretation of indicators and norms, thereby opening pathways for future institutional change.

4.4.4 Stakeholder integration for participatory MSP

Stakeholder integration can be progressed by changes in formal or informal institutions that allow for meaningful stakeholder inclusion and that contribute to creating mutual understanding and trust between stakeholders to enable participatory MSP. It is important to recognize the NSD itself as an important, initially temporary, and more informal institutional change to progress stakeholder integration. As a temporary platform, the NSD did not require changes in formal responsibilities. However, it did require political willingness and funds to assign a chairperson and staff to lead the negotiations, as well as the commitment of all parties including the government. Over the course of the NSD, this

6 For example, provisions regarding best available techniques include safeguards to prevent developers from excessive costs that would bring only limited ecological gains

chairperson and staff proved key in protecting the position of the NSD in the broader context of policy and law-making. For example, the NSD chairman was essential in emphasizing and ensuring the recognition of the role of the NSD and the North Sea Agreement as an agreement between the government and stakeholders, rather than an advisory report or council. Moreover, the chairperson and staff confronted stakeholders when the rules regarding the functioning of the NSD – which were agreed upon by all parties at the start of the NSD – were breached. This happened, for example, when the NSD was excluded from relevant ongoing processes within government. Another example is when public statements of certain stakeholder groups (often unrelated to the NSD process) were disrespectful to other parties in the NSD. As such, the NSD illustrates the importance of a platform for open deliberation and building mutual trust between stakeholders, even when it is through a temporary arrangement. This platform proved key to creating the conditions under which opportunities for institutional change arose and could be acted upon.

During the NSD, it became increasingly clear that stakeholders, including the governmental delegation, did not want to return to the situation prior to the NSD. Stakeholders agreed that a form of 'permanent NSD' was necessary to ensure open communication between stakeholders, but also to deal with changes that potentially affect the agreement and new knowledge (see also 4.5 on knowledge integration). While much debate centered around the form and legal basis of this 'permanent NSD', the fact that there will be a permanent NSD (as laid down in chapter 8 of the Agreement) is a substantial formal institutional change that progresses stakeholder integration in line with participatory MSP. This permanent NSD reinforces meaningful stakeholder participation in the future, by ensuring that policies that potentially contradict the North Sea Agreement cannot be made without renegotiation in the context of the NSD. As such, the permanent NSD provides a strong platform for stakeholders to hold each other and the government accountable for potential breaches of the agreement. The permanent NSD is a major formal institutional change in the governance of the Dutch North Sea that is achieved by adding a new 'layer', rather than changing existing formal responsibilities.

It is important to mention that enhancing meaningful participation in this manner can also pose difficulties for the government and stakeholders. For the government, responsibilities with regards to the NSD and agreement need to be balanced against the responsibilities that derive from existing statutory consultation as required in existing laws. These statutory processes and political debates in parliament can lead to amendments in policy documents and laws that can potentially contradict the agreement. This example illustrates that a range of questions arise with regards to legitimacy and good governance as a result of more direct participation processes like the NSD, also because it is always a choice who is included in such participation efforts. Simultaneously, while signing the North Sea Agreement does not limit any formal rights for stakeholders, they did accept that before they object and appeal future decisions, they will try to reach consensus in the permanent NSD. This example illustrates some more informal changes brought about by the NSD that affect future interactions between and among stakeholders and the government.

Literature on stakeholder integration in MSP generally argues for broad involvement of stakeholders (Flannery et al., 2018; Grimmel, Calado, Fonseca, & Suárez-de Vivero, 2019; Morf et al., 2019; Quesada-Silva et al., 2019; Reay & Jones, 2016). However, some authors question whether smaller, more focused inclusion efforts might be more successful (Smythe & McCann, 2018; Vince & Day, 2020). During the NSD, the question regarding the inclusion of a broader range of stakeholders caused much debate, particularly at the start when many parties requested to join the NSD. It was a conscious decision not to broaden the range of included stakeholders because of practical reasons such as available meeting space and being able to maintain structure during meetings, which would be much more difficult with a larger group of representatives. Stakeholders did use their ties to the various parties that requested to participate in an attempt to cover their interests by representation. For the permanent NSD, this issue is addressed and laid out in a separate governance agreement for the North Sea (OFL, 2020a). The experience from the NSD would point towards the inclusion of a broad range of stakeholders to enable inclusion and consideration of a broad range of interests but by a limited number of representatives.

4.4.5 Knowledge integration for adaptive MSP

Knowledge integration can be progressed by changes in formal or informal institutions that allow actors to develop joint research, share information, and respond to new insights throughout the planning cycle to enable adaptive MSP. The formal institutional change in the form of the permanent NSD allowed for issues that could not be resolved in the time set for the NSD (e.g., due to knowledge gaps or conflict) to be placed on the agenda for future deliberation (the so-called 'process agreements'). Moreover, the continuation of the NSD allowed for the agreement to include provisions that require periodical revision. Examples of such provisions include the definition of best available techniques for a specific period and the development of a two-yearly 'state of the North Sea' report that provides transparency regarding the progress towards a healthy North Sea. The agreement also includes provisions that require the NSD to be involved in any changes in response to new insights, conflicts, and developments that infringe upon the agreement. These examples show how during the NSD, stakeholders pursued formal institutional changes that support information sharing and provide opportunities to respond to new insights. Thereby, stakeholders progressed knowledge integration in line with adaptive MSP.

Moreover, the significant fragmentation and gaps in knowledge regarding a broad range of topics concerning the North Sea, led actors to push for a joint research agenda that is tied to and, when necessary, financed by funds allocated to the implementation of the North Sea Agreement. There was a relatively high amount of agreement between stakeholders regarding the content of the research agenda. However, the coordination and distribution of responsibilities and funds for this research agenda was highly disputed between government and stakeholders. This shows that in progressing knowledge integration, formal institutional changes regarding finances and responsibilities are most difficult to achieve. Nevertheless, the development of a dedicated joint research agenda with associated funds for the North

Sea is an important additional formal institutional change that progresses knowledge integration and learning in MSP, while also counteracting fragmentation of knowledge and pushing for results to be made publicly available.

The NSD also helped create mutual understanding between stakeholders for their respective points of view and proved helpful in resolving pre-existing and rising conflicts. The fact that the content of the negotiations was confidential contributed to creating this understanding between stakeholders, because it allowed for open debates on issues that were highly disputed between the same stakeholders in public. An example of creating understanding between stakeholders is related to the fisheries sector. Before the NSD and during the first months of the NSD, many stakeholders had difficulties in understanding why it was almost impossible for the fisheries representatives to present maps that show areas that are most important to them. The months of debates, explanations, and presentations in the NSD - including presentations by fishermen using the maps they use while fishing - slowly created an understanding among other stakeholders of the reasons behind the difficulties for the fisheries sector in creating these maps. While this does not resolve problems necessarily, stakeholders slowly developed a mutual understanding of the reasons behind each other's actions and perceptions. Examples of resolving rising conflicts can be found in the fact that stakeholders would address issues that affected mutual relations in the first NSD after incidents occurred. On multiple occasions, disputed statements that were published in media, or breaches of other prior agreements would be discussed in the NSD. This also includes, when necessary, apologies and debates regarding potential solutions. These examples show how the NSD also created informal institutional change towards knowledge integration, by changing the norms for how stakeholders treated and addressed each other in both every-day situations, as well as in situations of conflict. While the immediate effects of these changes might be more limited, the understanding and trust that was created might contribute to creating opportunities for future institutional change.

4.4.6 Temporal integration for strategic MSP

Temporal integration can be progressed by changes in formal or informal institutions that allow actors to make proactive decisions based on potential future developments to enable strategic MSP. As such, this dimension of integration is also about the capacity of actors to behave strategically and act pro-actively in light of potential future developments. Again, the permanent NSD as a formal institutional change is an important platform that enables stakeholders to act proactively in light of projections regarding uncertain future development. However, the NSD also illustrates that changes that progress temporal integration towards more strategic MSP remains extremely difficult in practice. Stakeholders appear to be able to assess the potential consequences of changes such as an area-passport, or using best available techniques for construction. However, it appears to be very difficult for stakeholders to reflect upon the feasibility of changes that would take effect in the long term (e.g., in ten or more years). In these cases, stakeholders, including the government, could be observed to rely heavily on current institutional frameworks in assessing the feasibility of

these future developments. This can be illustrated using the earlier example of speeding up the construction of OWF in the northern North Sea and leaving some appointed areas in the southern North Sea open. To enable the development of OWF in the Northern North Sea after 2030, decisions on these ideas would have to be made within the next few years. Many of the foreseen benefits of this solution are connected to technological developments such as larger wind turbines that would generate more electricity, but also international interconnectors to distribute electricity, or hydrogen solutions. The speed, costs and, innovation trajectories of these developments are uncertain. The government could be observed to apply today's context and institutional framework to calculations (e.g., the current costs of high voltage direct current cables to user hotspots like the Port of Rotterdam, without taking into account the potential cost reduction opportunities offered by international interconnections or hydrogen solutions). As a result, the costs of this solution were presented as being extremely high which undermined the feasibility of this idea. Nonetheless, stakeholders managed to include this idea in the agreement as a process agreement that will require further research, referring it to the permanent NSD. This example illustrates that is it is difficult for stakeholders, the government particularly, to progress temporal integration in line with strategic MSP, because the current formal and informal institutional framework is applied as a frame of reference to assess the feasibility of ideas for the future. Simultaneously, the permanent NSD does provide stakeholders with the opportunity to progress temporal integration, because it creates a platform where stakeholders can place these issues on the agenda for further deliberation and negotiation.

4.5 CONCLUSION: THE INSTITUTIONAL DIMENSION OF INTEGRATION IN MARINE SPATIAL PLANNING

This paper set out to explore the formal and informal institutional changes that were pursued by actors during the NSD to progress the various dimensions of integration in line with the normative principles that are attributed to MSP. These dimensions of integration and normative principles are important components of MSP processes that aim to improve spatial integration between OWF and other interests at sea. A first important conclusion is that the – initially only temporary – institutional arrangement of the NSD itself proved key because it provided a platform for actors to pursue formal and informal institutional change. This platform helped create mutual understanding and open deliberation on issues that were sometimes highly disputed. Thereby, the results from this study support the calls for 'round tables' or platforms for structural cooperation between sectors (Olsen et al., 2014; Saunders et al., 2019), and indicate that such a platform should allow for actors to interact and deliberate on various ideas in an open manner. Moreover, the results show that besides formal institutional changes, the platform offered by the NSD caused actors to pursue informal institutional changes that were extremely important in progressing specific dimensions of integration. For example, organizational integration towards more integrated

MSP was to a large extent progressed by changes in informal institutions such as the norms and customs for communicating and sharing information within the government or between stakeholders within one sector.

TABLE 4.2 Examples of formal and informal institutional changes that were used to progress the various dimensions of integration in line with the normative principles of MSP

Dimensions of integration	Examples of informal institutional changes	Examples of formal institutional change
Territorial integration in line with area-based MSP	Changes in the form of a process agreement to communicate support and commitment for the idea of developing OWF in the northern part of the Dutch North Sea	Changes in rules on the establishment of area-passports for offshore wind energy areas to enable multi-use
Organizational integration in line with integrated MSP	Changes in norms for sharing and communicating information within stakeholder groups and within the government	Changes in financial procedural rules on spending funds related to the agreement
Policy/sectoral integration between users in line with integrated MSP	Changes in norms for open communication and deliberation between stakeholders to explore compatibilities	Changes in rules on limiting cutter fisheries within OWF and on creating passageways for shipping
Policy/sectoral integration between users and the environments in line with ecosystem-based MSP	Reinterpretation of existing rules and frameworks and prioritization of values related to a 'healthy North Sea'	Changes in rules regarding an increase in % of areas closed to sea-bed fisheries and regarding the use of best-available techniques
Stakeholder integration in line with participatory MSP	Norms and values related to inter-action between stakeholders and the government	Changes in rules to establish a permanent NSD for direct and regular interaction between the government and stakeholders
Knowledge integration in line with adaptive MSP	Changes in norms for exchanging information and knowledge between stakeholders to help create a mutual understanding.	Changes in rules regarding establishing best available techniques and a joint research agenda
Temporal integration in line with strategic MSP	Changes in the form of a process agreement to communicate support and commitment for the idea of developing OWF in the northern part of the Dutch North Sea	Changes in rules to establish a permanent NSD which can result in proactive action by actors in response to new developments.

The formal institutional changes that were pursued by actors usually filled a policy gap or extended existing regulation by adding additional institutions to the existing system in a form of policy layering (e.g., the area-passport or passageways for shipping), rather than abolishing existing institutions or major shifts in responsibilities. Sometimes, the changes pursued by actors also took the form of planting seeds for ideas, and it remains to be seen whether these will grow or die down (e.g., the relative ecological value). Moreover, informal institutional changes in the form of reinterpretation of existing rules also played

an important role (e.g., the rejection of the old understanding of ecosystem-based MSP and new aspirations surrounding a healthy North Sea). The permanent NSD itself is also a good example of the institutional changes that were pursued during the NSD: the permanent NSD does not require abolishment of existing institutional frameworks regarding who is responsible for what, but it does add important formal and informal institutions to the existing system. While these institutional changes might not address all persistent problems in marine governance (cf. Kelly et al., 2019), the case of the NSD shows that more incremental forms of institutional change should not be discredited, as they can be effective in progressing the various dimensions of integration and improving spatial integration in the Dutch North Sea.

It can be concluded that the institutional changes achieved during the NSD do progress all dimensions of integration (see Table 4.2), albeit to various degrees. As such, the NSD contributed to spatial integration, mainly by means of more incremental institutional changes. The results indicate that a range of subsequent incremental changes might lead to a more radical change in participatory governance of the North Sea in the form of the establishment of a permanent NSD, but this will require further research into the effectiveness of the NSD on the long-term. However, the case of the NSD also illustrates the most important difficulties with this more incremental approach. Particularly when considering longer time periods (temporal integration), or when considering specific locations (territorial integration on the local scale), actors heavily rely on existing formal and informal institutional frameworks. This was illustrated using the examples of developing OWF in the northern North Sea, as well as the debates surrounding additional protection regimes for ecologically valuable areas. In these cases, stakeholders refer to existing formal and informal institutional frameworks, while their capacity to reflect on these frameworks appears to be limited. Table 4.2 shows that in these cases informal institutional changes were mainly assisted by the platform of the NSD, which created the option of process agreements. These process agreements can be seen as informal institutional changes that communicate support for new ideas and understandings. As a result, the institutional space for finding solutions in these specific cases also appears to be more limited and more radical forms of change might be necessary to enable spatial integration.

This paper shows that it is important to not only take into account formal institutional changes, but also informal institutional changes. This paper used a broad definition of informal institutional change as changes in the unwritten conventions, norms and codes of conduct (Kingston & Caballero, 2009). This broad definition was used to explore the informal changes that could be observed in a general sense. In light of the importance of informal institutional changes in the results from this study and the lack of attention to such informal changes in existing research, it is recommended that future research will further explore and explain informal institutional change and how these informal changes are interrelated with the formal changes that are either progressed or hindered in practice. Existing theories on informal institutional change in planning could provide fruitful starting points for such research, including, for example, theories on institutional capacity building in collaborative planning

(Healey, 1999), theories on frame reflection (Schön & Rein, 1994) and 'living institutions' (Hajer, 2006). Another option is to explore the use of actor-oriented institutional theories such as discursive institutionalism (Schmidt, 2008) and institutional work (Beunen & Patterson, 2019; Lawrence & Suddaby, 2006), which can provide more detailed insight in the agency of actors in organizing institutional change on the micro-level.

The NSD also shows some drawbacks and boundaries to participatory approaches within MSP. It was very difficult to keep all stakeholders and their constituencies on board during the NSD process. This is illustrated most clearly by the difficulties related to the fisheries sector, but it was an issue that representatives from the wind sector, the oil- and gas sector, the NGOs, and the government mentioned during the NSD. The negotiations, and the understanding that is created between stakeholders throughout these negotiations, is only experienced by the representatives. However, the implementation and effects of changes in formal and informal institutions will weigh on their constituencies who do not necessarily share these experiences. Therefore, it will be interesting for future research to look into the implementation and effects of the North Sea Agreement and processes of stakeholder negotiation in other countries. Moreover, it will be important to study whether and how in arrangements that organize participation through the representation of sectors, the connections to the constituencies of these representatives can be maintained, particularly when a degree of confidentiality is beneficial to the negotiations themselves.

The insights from the NSD show that meaningful participation can only be achieved when both stakeholders and the government contribute to the process: the government needs to offer space that enables actors to pursue and implement institutional change, but stakeholders also need to take responsibility and look beyond their own interests. The presence of the NSD chairman and staff was key in this struggle, as they constantly had to remind both government and other stakeholders of their contributions to this process. As illustrated most clearly by the example of the transition fund, the NSD was also a struggle by and for stakeholders to claim institutional space which was not always willingly offered, particularly when it related to changing formal responsibilities.

Based on these insights regarding the NSD processes, it would be interesting for future research to study the possibility of temporary or 'soft' institutional arrangements in improving spatial integration offshore. Based on these insights, recommendations for policymakers and scientists alike would be to examine the use of quasi soft spaces (cf. Jay, 2018; Walsh, 2021), that help create a platform for stakeholders to pursue institutional change. Simultaneously, experiences from the NSD would suggest that even such temporary and more soft arrangements do require financial backing, an independent chairperson and staff, as well as commitment from all parties including the government to implement changes that are agreed upon. These spaces can create the required institutional conditions under which actors can pursue further institutional changes. How these spaces can be connected to the trans-national domain will be an important topic of study as well.

Discussions in existing MSP literature on integration provide highly relevant insights in various dimensions of integration processes on a more abstract, governance level. However, in essence, MSP is about integrating various users and interests in space. As such, it becomes even more important for MSP literature to return to a focus on spatial integration, including the interrelations and cooperation between interests and users at various scales from local to international. The analysis in this paper shows that the 'spatial dimension' of MSP, in the form of spatial integration, can be progressed by actors pursuing the various dimensions of integration, but that it is important to take into account the interrelations between these dimensions. For example, territorial integration aimed at area-based MSP can ensure that specific area-based characteristics are incorporated into decision-making procedures, and related to the patchwork of users that occupy an area or sea-basin to progress spatial integration. However, progressing spatial integration also requires that actors simultaneously pursue, for example, user-user integration to understand the needs and interests of these other users, user-environment integration to ensure that this patchwork of uses fits within the environment, and knowledge integration to test new ideas and develop mechanisms to respond to potential issues that are encountered. As such, spatial integration in MSP requires not only attention to all the dimensions of integration, but also to their interrelations.

Additional research is needed to further develop the concept of spatial integration in MSP. Future research could explore specific cases to examine the reasons behind choices for the establishment of multi-use sites or specific single-use sites (cf. Schupp et al., 2019) to provides insight into opportunities and barriers for spatial integration that are experienced by actors in practice. Moreover, future research could examine the manners in which stakeholders can be enticed to broaden their perceptions of institutional possibilities when, for example, exploring areas for OWF development in the future that benefit from decision-making today. The institutional dimension of integration can then be seen as a learning process in which actors search for institutional space that allows them to find physical space to achieve such spatial integration.

5

Unraveling institutional work patterns:

Planning offshore wind farms in contested space

Abstract

Offshore wind farms (OWF) are considered important for a timely energy transition. However, offshore space is governed by sector-specific institutional frameworks representing various and sometimes conflicting interests. Therefore, institutional change towards improved cooperation and coordination between various stakeholders, their interests, and alternative institutional frameworks is necessary. Institutional work is used as an analytical lens to explore patterns resulting from the interplay between different forms of institutional work by actors over time. Data was collected through participatory observation of the Dutch North Sea Dialogues (NSD) and focused on balancing interest in the context of multi-use of OFW. Institutional change in this case relied mostly on a highly subtle interplay between forms of creating and maintaining work that result in incremental changes to existing practices. Sustainability transitions could benefit from institutional harmonization as a pathway to institutional change for improved cross-sectoral coordination and cooperation.

Keywords: Institutional change; institutional harmonization; marine spatial planning; energy transition; offshore wind farms; institutional work.

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5.1 INTRODUCTION

In light of alarming climate change forecasts, there is much pressure on different levels of government to ensure a timely energy transition (Bridge et al., 2013; Jehling et al., 2019; Mignon & Bergek, 2016). Due to its large spatial implications, pursuing energy transition can result in conflicts with alternative users of space and related sectoral and stakeholder interests (Fischhendler et al., 2016; Månsson, 2015; Wüstenhagen et al., 2007). Such conflicts are most pronounced onshore, resulting in many countries venturing out into the sea in search for space for furthering energy transition, particularly through the development of offshore wind farms (OWF) (Bilgili et al., 2011). However, offshore space is also contested with increasing conflicts among users and between users and the environment (Douvere & Ehler, 2009). Planning OWF, therefore, requires coordination and cooperation between policy sectors and stakeholder interests.

Marine spatial planning has recently emerged as an approach for coordinating the planning of competing and sometimes conflicting offshore claims and activities (Ehler, 2018; Kidd & Ellis, 2012; Spijkerboer et al., 2020). However, marine spatial planning emerges in an institutional context with a tradition of sectoral governance for different policy sectors (Douvere, 2008; Ehler, 2018). Moreover, to accommodate energy transition, existing institutional frameworks are adjusted and new (sectoral) frameworks are created (Fuenfschilling & Truffer, 2014; Jehling et al., 2019). For example, countries have been developing institutional frameworks to accommodate OWF development in the past decade (Fitch-Roy, 2016; Kern, Verhees, Raven, & Smith, 2015; Spijkerboer et al., 2020), thereby reinforcing differences between the energy sector and other policy sectors with distinct institutional frameworks that are often tailored to the sector-specific needs of OWF (Spijkerboer et al., 2020). This multitude of existing and new institutional frameworks causes conflicts and contradictions between various institutions – both formal and informal – and related actors and can hamper the harmonization efforts of cooperation and coordination (Köhler et al., 2019; Seo & Creed, 2002). Therefore, institutional change is necessary for furthering energy transition, particularly offshore.

A growing body of literature presents actors as central to realizing institutional change processes (Battilana, 2006; Dimaggio, 1988; Hargrave & Van De Ven, 2009; Lawrence & Suddaby, 2006; Schmidt, 2008; Seo & Creed, 2002; Zietsma & Lawrence, 2010). Actors' experiences of contradictory and conflicting institutions are often considered to be the roots of such change, since such experiences raise awareness among these actors and triggers their capacity to reflect upon existing institutional frameworks (Seo and Creed, 2002; Battilana & d'Aunno, 2009). However, actors usually operate within a broader field, including other institutional frameworks and actors that can resist proposed changes. As a result, institutional change is often presented as an ongoing struggle between actors who aim to change or disrupt the 'rules of the game' (challengers) and those who benefit from the current constellation (incumbents) (Dimaggio, 1988; Hargrave and Van De Ven, 2009; Lawrence and Suddaby, 2006; Seo and Creed, 2002; Zietsma and Lawrence, 2010).

An increasing number of studies apply institutional theory to the study of energy transitions. This is in line with the call for research into the "evolving rules and norms to address collective energy problems" (Sovacool, 2014a, p. 530), and the focus on the role of institutions in sustainability transitions at various levels of analysis (Fuenfschilling & Truffer, 2014; Köhler et al., 2019; Sovacool, 2014b). However, existing studies that apply institutional theory to energy transition present institutions primarily as structures that enable or constrain certain courses of action by actors. Examples include the role of decentralized and local energy initiatives within institutional contexts (Hess & Lee, 2020; Jehling et al., 2019; Judson et al., 2020), or the macro-level institutional changes that have occurred over long periods (Genus, 2016; Kuzemko et al., 2016; Lockwood et al., 2017). While sometimes mentioning how actors respond to or deal with existing institutional contexts, the results of these studies show broad patterns of past change and current institutional barriers. However, what actors (can) do to effect institutional change and overcome barriers remains understudied, both in energy transition and other sustainability transitions contexts. Moreover, existing research focusses mainly on developments within the energy sector itself and not on (the need for) cross-sectoral harmonization between institutional frameworks aimed at energy and other sectoral frameworks.

We address these gaps by using theory on institutional work as an analytical lens. Institutional work is defined as "the practices of individual and collective actors aimed at creating, maintaining and disrupting institutions" (Lawrence et al., 2011, p52). Specifically, we apply the framework by Zietsma and Lawrence (2010), which distinguishes institutional work aimed at practices (rules and routines) and boundaries (divisions between actors). Each actor individually might use institutional work to further their specific interests, but these seldomly translate directly into institutional change. Rather, it is in the interaction between the institutional work of various involved actors that attempts at institutional change are forwarded or blocked. We add to existing theoretical debates by analyzing patterns formed by the interplay between different forms of institutional work.

This paper aims to explore how actors work at maintaining, disrupting, defending, or creating institutions they face or need to rely on, and the patterns that can be identified as a result of the interplay between these forms of work related to multi-use of OWF in the Dutch North Sea. This case was chosen because the North Sea is a prime area for offshore energy transition in Europe, particularly by means of OWF (WindEurope, 2017). However, unoccupied space is becoming increasingly scarce (Gusatu et al., 2020; Schupp et al., 2019). Multi-use is "the joint use of marine resources in close geographic proximity" (Schupp et al, 2019, p. 165), which can mean both multiple uses in the same space, or multiple uses in close geographic proximity. As such, multi-use can help in achieving more efficient use of offshore resources and space. Examples include combinations of OWF with other forms of ocean energy, marine conservation, fisheries and aquaculture (Schupp et al., 2019). However, despite broad agreement in both practice and literature upon the need for multi-use in OWF, the application of such concepts in practice remains limited. This lack of practical application of multi-use in OWF is related to, among others, formal and informal institutional barriers that hamper

cross-sectoral cooperation and coordination between actors in practice (Christie et al., 2014; Onyango et al., 2020; Schupp et al., 2019). Therefore, the case of multi-use of OWF provides an opportunity for reflecting upon cross-sectoral harmonization between the various institutional frameworks aimed at OWF and other sectors.

Data was collected through participatory observation of the Dutch North Sea Dialogues (NSD) from February until October 2019, during which the 'Negotiators Agreement for the North Sea' was drafted (OFL, 2020c). The NSD were high-level political negotiations between the representatives from various ministries involved in North Sea policy and representatives from various private sector organizations and NGOs that resulted in the presentation of a 'Negotiators Agreement for the North Sea' in February 2020. The final agreement was adopted by the Dutch parliament in January 2021 and will now be implemented through, among others, the Dutch Marine Spatial Plan (Rijksoverheid, 2021). Participatory observation of the NSD provides a unique opportunity to study institutional work in real-time, rather than through retrospective accounts. As Sovacool et al. (2018) highlight, access to the highest levels of politics and policymaking is often restricted, while these insights would be crucial to "revealing the motivations and actions behind policy formation and adoption" (p20). The empirical relevance lies in increasing the understanding of the interplay between various forms of institutional work employed by the actors involved in these high-level political negotiations and how this affects multi-use in OWF. The case and methodology will be further explained in section 5.3, after explaining the theory in the next section.

5.2 THEORY

Energy transition and, more generally, sustainability transition research, traditionally draws on frameworks such as the multi-level perspective and the technological innovation systems approach, which originate from innovation studies and science and technology studies (Köhler et al., 2019; Kungl & Hess, 2021). In the past decade, this literature has been expanded by a range of studies drawing on, among others, institutional theories and policy studies to specifically target the governance of sustainability transitions, with specific attention to the role of power and strategy (Avelino, Grin, Pel, & Jhagroe, 2016; Köhler et al., 2019; Kungl & Hess, 2021). A central theme throughout these sustainability transitions studies is the tension between changes necessary to forward sustainability transitions (often on the niche-level), and forces of stability and resistance to change (often on the regime level) (Avelino et al., 2016; Fuenfschilling & Truffer, 2014; Geels, 2014; Köhler et al., 2019). The focus on power and politics has led to insights into the struggle between actors that are at the heart of sustainability transitions (Avelino et al., 2016; Avelino & Rotmans, 2009). However, the agency of actors in organizing and hindering institutional change across sectors and levels has received relatively little attention. Notable exceptions do exist, which contribute important insights into the role of actors in bringing about or resisting change. However, these studies often focus on a limited group of actors, such as

incumbent actors (Geels, 2014) or institutional entrepreneurs (van Doren, Runhaar, Raven, Giezen, & Driessen, 2020), or they focus on specific institutional fields, such as the urban water sector (Fuenfschilling & Truffer, 2016) or the solar industry (Bohnsack et al., 2016). Within transition studies there is a call for more engagement with institutional theories in general, and institutional work specifically, to further unravel the influence of actors in organizing institutional change and stability in the complex multi-actor settings surrounding sustainability transitions (Fuenfschilling & Truffer, 2014; Köhler et al., 2019). Theories on institutional work can provide a more fine-grained analysis of the tension between actors pursuing institutional change and stability. Thus, by using institutional work, we add valuable insights on how actors in their interactions can affect institutional change in sustainability transitions.

A commonly used definition of institutions is "the rules of the game in a society or, more formally [...] the humanly devised constraints that shape human interaction" (North, 1990, p3). This paper adheres to the perspective of 'embedded agency' in institutional theory: i.e., while actors are being shaped by their institutional context, institutional change can be brought about by more or less deliberate actions of these actors (Battilana & D'Aunno, 2009; Dimaggio, 1988; Dorado, 2005; Giddens, 1984; Klijn & Koppenjan, 2015; Lawrence & Suddaby, 2006; Seo & Creed, 2002; Thornton, Ocasio, & Lounsbury, 2012a).

Within institutional theory, many authors have worked to better grasp the role of actors in institutional change processes (e.g., Battilana & D'Aunno, 2009; Dimaggio, 1988; Lawrence & Suddaby, 2006; Seo & Creed, 2002; Thornton et al., 2012a). This paper draws on the notion of 'institutional work', which is a strand of institutional theory focusing on the work done by actors aimed at creating, maintaining, or disrupting institutions. Institutional work by various actors can result in (multiple) proto-institutions, which are the "not (yet) widely diffused rules with the potential to become institutionalized" (Helfen and Sydow, 2013, p1079). As such, the analytical lens offered by theories on institutional work can help provide insight into the work done by various actors and the patterns formed by interaction between actors and their work in institutional change processes.

Lawrence and Suddaby (2006) identify three main categories of institutional work: creating, maintaining, and disrupting. *Institutional creation work* refers to the practices applied by actors in forming new institutions or adapting existing ones (Lawrence and Suddaby, 2006). *Maintaining work* refers to the ongoing activities of actors that support, repair, or recreate existing institutions (Lawrence et al., 2009). Maintenance is a continuous process and crucial for upholding existing institutions (Lawrence & Suddaby, 2006). *Disrupting institutional work* relates to actors "attacking or undermining the mechanisms that lead members to comply with institutions" (Lawrence and Suddaby, 2006, p235). Additionally, Maguire and Hardy (2009) distinguish *defending institutional work,* which they define as "the purposive action of individuals and organizations aimed at countering disruptive institutional work" (Maguire and Hardy, 2009, p169). Defending work is different from maintaining work in that it is a direct response to disrupting or creating work, while maintaining work is focused on reproducing and explaining existing routines (Maguire & Hardy, 2009).

Existing research focuses mainly on institutional creation work as performed by institutional entrepreneurs (Lawrence, Leca, & Zilber, 2013). This is also the case for the studies that do examine sustainability transitions in combination with institutional work (see Bohnsack et al., 2016; van Doren et al., 2020). These studies contribute important insights into how institutional entrepreneurs are important in pursuing institutional change and the strategies they apply in doing so, thereby contributing empirical and theoretical insights to institutional work literature (Bohnsack et al., 2016; Hardy & Maguire, 2008; van Doren et al., 2020). However, this perspective is being criticized for focusing too much on the 'heroic actions' of a few actors to effect institutional change and the conditions required to accommodate them, rather than the continuous work of many actors in many directions (Hardy & Maguire, 2008; Lawrence et al., 2011). This is in line with Beunen and Patterson (2019), who argue that "rather than looking at individual change agents, one has […] to study the interplay between the many actors involved in institutional work" (p24). Zietsma and McKnight (2009) illustrate the importance of examining patterns of institutional work by many actors, but they focus solely on creating work. We will therefore expand on these existing studies, by focusing on the interaction between the maintaining, disrupting, defending, and creating work done by many actors from various policy sectors and the patterns that result from the interaction between their work.

This paper builds upon the conceptualization by Zietsma and Lawrence (2010) of institutional work as an interplay between practice work and boundary work. Practices are 'shared routines' and practice work refers to "actors' efforts to affect the recognition and acceptance of sets of routines" (Zietsma and Lawrence, 2010, p190) towards maintaining, disrupting, defending, or creating practices. Boundaries are the "distinctions among people and groups" (p190) that result in "unequal access to and unequal distribution of resources (material and nonmaterial) and social opportunities" (Lamont and Molnár, 2002 in Zietsma and Lawrence, 2010, p192). Boundary work, therefore, refers to actors working towards maintaining, disrupting, defending, or creating these boundaries. Zietsma and Lawrence (2010) emphasize the recursive relationship between boundaries and practices, with "boundaries delimiting sets of legitimate practices, and practices supporting particular group boundaries" (p193). Table 5.1 provides an overview of types of boundary and practice work related to actors' efforts at maintaining, disrupting and defending, and creating institutions.

The concept of power has received increasing attention in sustainability transition studies over the past decade (Avelino et al., 2016; Köhler et al., 2019; Meadowcroft, 2011). Avelino and Wittmayer (2016) call for increased attention to shifting power dimensions in the context of institutional change. While the importance of power has been acknowledged in institutional work literature, there is a lack of empirical research on how this relationship plays out in practice (Beunen & Patterson, 2019; Lawrence et al., 2013). Zietsma and Lawrence (2010) do not explicitly include the role of power in the recursive relationship between boundary and practice work, but the distinction between boundary and practice work does allow for increased sensitivity to such power relations. Battilana (2006) argues that actors' access to financial, legal, and intellectual resources is affected by power relations and social

positions. Moreover, the "relative influence of institutional pressures on different types of actors" (Lawrence and Suddaby, 2006, p238) varies due to their access to such resources. For example, actors with control over key decision-processes may experience less influence of institutional pressure compared to actors who have no control over such processes (Battilana, 2006; Dorado, 2005; Lawrence & Suddaby, 2006). By also including boundary work, the (shift in) access of actors to resources and opportunities is explicitly taken into account in our analysis.

TABLE 5.1 Forms of boundary and practice work based on Zietsma and Lawrence (2010) and Lawrence and Suddaby (2006). Variables marked with 1 were added by the authors of this paper during the analysis.

Form of institutional work	Boundary work	Practice work
Maintaining	Maintaining boundaries • Controlling membership • Co-opting potential boundary challengers • Protect autonomy	Maintaining practices • Strong regulatory framework and discipline • Educating • Maintaining solidarity • Deterring
Disrupting	Disrupting boundaries • Challenging the boundary • Mobilizing connected actors • Forming networks of outsiders	Disrupting practices • Reframing practices as illegitimate • Reframing insiders as illegitimate • Questioning existing practices[1] • Questioning solutions[1]
Defending	Defending boundaries • Mobilizing co-opted actors • Activating boundary enforcement • Making symbolic incursions	Defending practices • Delegitimizing challengers and their framing • Directly defending the practice • Curbing expectations[1]
Creating	Creating boundaries • Bounding spaces for experimentation • Establishing cross-boundary connections • Assigning responsibilities[1] • Connecting with potential adopters and critics • Constructing identities	Creating new practices • Agenda-setting[1] • Defining • Constructing possible solutions • Creating narratives • Theorizing practices • Removing barriers to adoption • Conditioning solutions[1] • Promoting legitimacy of new practices

5.3 METHODOLOGY

5.3.1 Research design

Given the exploratory nature of this study, we have applied a single case study approach (Yin, 2014) focused on acquiring in-depth insights into forms of institutional work used by actors and the patterns that result from their interaction in the case of the Dutch North Sea Dialogues (NSD, *Noordzeeoverleg*). The primary source of data collection is nine months of participatory observation of the NSD by the first author, resulting in longitudinal data regarding the process of coming to a 'Negotiators Agreement for the North Sea' (OFL, 2020c). The NSD is a unique case, providing an opportunity for longitudinal data collection on the institutional work of high-level public and private sector actors, in a context where they are directly interacting with each other. The NSD can be seen as a consciously created collaborative transition arena, with an independent chair and supporting staff, as well as a mandate to try and come to an agreement. As such, this research also fits with the call for more engagement with real-world actors and real-time studies in sustainability transition research (Köhler et al., 2019; Murto, Hyysalo, Juntunen, & Jalas, 2020). The case will be explained below, followed by specification of the methods of data collection and analysis.

5.3.2 The case of the NSD

In the years prior to the NSD, the Dutch government focused strongly on developing the offshore wind energy sector and accompanying policies. This is comparable to many European countries that have focused on developing formal institutions regarding the allocation of the seabed, permit procedures, grid connection and procedures for financial settlement for OWF in the past decade (Fitch-Roy, 2016). The NSD started in February 2019 with the goal of better balancing various interests at sea in response to the high OWF targets laid down in the Dutch National Climate Agreement (Klimaatakkoord, 2019). NSD corresponds with the Dutch tradition of consensus-building, in which various public and private stakeholders participate in negotiations, often resulting in 'deals' or 'agreements' (Smink, Hekkert, & Negro, 2015). The NSD included representatives from sector branch organizations for the domains of energy (both fossil and offshore wind energy), electricity grids, fisheries, nature, and ports, as well various responsible ministries (Ministry of Infrastructure and Water Management, Ministry of Economic Affairs and Climate Policy, Ministry of Agriculture, Nature and Food Quality). These sector branch organizations kept in contact with their diverse members within the sector and were always aware of the fact that their members needed to consent to the North Sea Agreement as well before they could sign on behalf of their sector. As such, in our study the term actor can be considers representative of and refers to sectors such as energy, fisheries, nature, or governmental ministries that were represented by these organizations during the negotiations[7].

7 Energy (EBN, NOGEPA, TenneT, NWEA), fisheries (Visserbond, VisNed), NGOs (Stichting de Noordzee, WWF, Greenpeace, Natuur & Milieu, Vogelbescherming) and ports (Port of Rotterdam) (OFL, 2020c)

The main negotiation process took place between February 2019 and October 2019. During this period representatives from all involved parties met on a regular basis, face-to-face on twenty separate occasions to draft a 'Negotiators Agreement for the North Sea' (OFL, 2020a). Meetings usually lasted between 3 and 6 hours, but also included a two-day conference. The Negotiators Agreement was presented in February 2020. Following this presentation, in the period until June 2020 the agreement was finalized with minor changes to the content (OFL, 2020b)[8]. In this paper, the provisions in the agreement are presented as a set of proto-institutions because, at the time of writing in 2020, implementation of the agreement was only just starting.

Despite discussions covering a broader range of topics, this paper explores institutional work done by actors as they were trying to create, maintain, disrupt, or defend rules regarding multi-use of OWF during the NSD. It is important to remark that it is *not* the rules that structured the NSD that are of interest in this paper or how actors were involved in establishing the NSD.

5.3.3 Data collection and analysis

Data was collected through participatory observation of the main negotiation process from February 2019 until October 2019. Observational methods are uniquely suited to gaining insight into what actors actually do in a real-life context, rather than what they say they did (Morgan et al., 2017; Robson, 2005). Observational methods limit bias arising from deficiencies in memory and social desirability in answers when compared to retrospective methods such as interviews (Morgan et al., 2017; Robson, 2005). Simultaneously, participatory observation requires increased sensitivity to the role of the researcher in the process, since observations are influenced by the presence of the researcher and what the researcher chooses to record (Morgan et al., 2017; Robson, 2005).

During the first and last meeting of the NSD attended by the researcher, the position of the researcher as both observer and staff-member for the NSD was explained. The first author was one of the five members of the NSD staff, responsible for preparing the meetings, drafting discussion documents, and drafting the agreement itself and, as such, was immersed in the process taking an active role in the preparation of the agreement. There was no conflict between the role of staff member and researcher, because the prime interest of the NSD staff was to facilitate the negotiation process and potential drafting of an agreement. The prime interest of the researcher was to study the content and process of the negotiations in coming to such an agreement. As a staff member, the researcher was involved in working

8 All representatives agreed upon the negotiator's agreement in February 2020. All involved parties except the fisheries sector signed the agreement in July 2020 (OFL, 2020b). The fisheries sector did not sign the agreement because of opposition in part of their constituency. The agreement was adopted by Dutch parliament in January 2021. At the moment of writing, parties are looking for ways to incorporate the fisheries sector in the follow-up trajectory.

the input of the various parties into an agreement in a manner that was thought to be viable for all involved parties. The manners in which responses by parties were dealt with by the staff may have influenced subsequent responses of parties and must be taken into account in the analysis. Therefore, the raw data also includes notes from staff meetings and informal communication with other staff members, as well as their reflections on the process. Throughout data collection and analysis, peer debriefing was used, where regular discussions within the author team were held to reflect on experiences and findings. This has contributed to limiting potential 'insider's bias' where normalization of the context may limit the capacity of the insider-researcher to critically reflect upon the process (Greene, 2014).

The level of pre-structure to the observation was low, thereby allowing for a complete account that reflects the complexity of the process and that is sensitive to the context (Robson, 2005). Raw data were collected in the form of field notes and observations that were jotted down during each NSD meeting, as well as the general running of affairs in between meetings in the period between February 2019 and October 2019. This also includes informal communication between the staff and stakeholders that were part of the NSD, external stakeholders, and internal communication within the staff team. Thereby, both empirical evidence and experiential understanding of relevant topics were collected (Robson, 2005). The raw data cover the discussion of various topics and progress on the agreement over time, including input and discussions regarding proposed changes by various actors. This data is complemented by documents including meeting agendas, and minutes of the NSD meetings that were created by a third party, which function as a secondary source of data used for triangulation (Robson, 2005). Additionally, the researcher also observed an additional meeting in December and the presentation of the agreement in February and maintained regular contact with a key stakeholder regarding the general running of affairs in the meantime. This data was synthesized and organized into a chronological storyline of the process that allowed for subsequent analysis (Robson, 2005). Throughout the storyline, cross-references to the raw data were included as an audit trail for verification purposes (Greene, 2014).

The storyline formed the basis for multiple rounds of coding in the qualitative data analysis software Atlas.ti. The first round was more inductive, focusing on the main topics related to OWF that were discussed throughout the process. Subsequently, the sections related to multi-use were coded using a second round of directed coding based on Table 5.1. The main categories of e.g., 'maintaining practices', or 'creating boundaries' functioned as code families in Atlast.ti, and included codes such as 'educating', respectively 'assigning responsibilities'. A pattern was identified when there is an interplay of various forms of institutional work, various actors, or various topics over time. Co-occurrence tables and the query tool were used to identify and analyze combinations of actors and forms of institutional work they employed regarding various topics concerning multi-use. Lists of quotes were exported to Excel and color-coded to further explore and validate these patterns over time.

5.4 RESULTS

This section presents the results regarding institutional work performed by various actors to effect institutional change multi-use of OWF. First, the dominant patterns in practice work will be discussed, followed by boundary work, and mixed forms of practice and boundary work.

5.4.1 Practice work

With regards to practice work, the results show that during the NSD actors focused primarily on maintaining and creating practices, while disrupting and defending work were less prominent. There is one important pattern related solely to maintaining practices which will be discussed first, followed by an elaboration of the patterns that result from the interplay of maintaining and creating practices.

5.4.2 Maintaining practices

Incumbents used active maintaining work to ensure key practices were continued. This was mainly done by routinely referring to existing practices such as plot-decisions and tenders as laid down in the Dutch Offshore Wind Energy Act, and targets set in the Paris Agreement and Dutch Climate Agreement. References to these existing frameworks were also used to educate other parties on certain core values of the current system (e.g., the need for fast and affordable development of OWF). Additionally, maintaining work was also a subtle consequence of all actors, including challengers, being susceptible to this maintaining work, as they had previously been involved or had accepted the outcomes of recently developed frameworks for OWF. As a consequence, there were no attempts to actively disrupt these frameworks. As such, both active maintaining work by incumbents and the acceptance of such maintaining work by challengers together created a pattern reinforcing the status of these existing practices. For example, the Dutch Climate Agreement includes provisions regarding cost-reductions to be achieved by the offshore wind energy sector. These provisions are often referred to by incumbents in a routine manner as well as in educating other parties. Thereby, core values of the current system such as cost-effective OWF development are maintained, while simultaneously limiting creating work that would infringe upon these values. Moreover, existing frameworks were strengthened by the fact that both incumbents and challengers frame the development of proto-institutions in relation to these maintained practices. For example, new practices such as the area-passport which will be discussed below are framed in relation to the existing and actively maintain instrument of plot-decisions. This pattern of maintaining work by incumbents and the acceptance of these maintained practices by other actors is termed *collaborative stage-setting*.

5.4.3 Interplay between creating and maintaining practices

Creating work in the case of the NSD cannot be seen in isolation from maintaining work, because the maintained practices discussed above form the benchmark for other forms of institutional work. Most notably, during the NSD there was an interplay between maintaining and creating practices. One pattern of creating and maintaining work that can be observed in the NSD is termed *collaborative coercion*. This pattern is characterized by the creation of new proto-institutions that also include conditions that safeguard core values of existing maintained practices. Collaborative coercion can be observed in cases where both incumbents and challengers support a general principle but have conflicting ideas regarding the operationalization of this principle. During the NSD, both incumbents and challengers supported the general principle of multi-use, and both used 'creating work: agenda-setting' to ensure that multi-use was discussed during the NSD. However, as soon as the consequences of these ideas for proto-institutions became clearer, incumbents could be observed to use maintaining work with a focus on educating other parties on core values of the existing system. For example, incumbents started referring to the target of keeping the societal cost of energy transition low, as well as referring to cost-reduction targets set for the offshore wind energy sector in the climate agreement. However, in light of the agreement upon the general principle of multi-use and continuous creating work by challengers, incumbents were to a certain degree coerced into accepting the development of proto-institutions to further multi-use. As a result, incumbents could be observed to shift from maintaining towards a subtle form of creating work, with the aim of conditioning proto-institutions to ensure that developing proto-institutions were in line with certain core values of the current system.

A good example of this pattern of collaborative coercion is the proto-institution of the 'area-passport'. The North Sea Agreement includes a provision stating that the government will make an inventory of characteristics of current and potential future uses of an area prior to plot-decisions, and that these characteristics need to be considered when designing future plot-decisions for OWFs. This so-called 'area-passport' is a proto-institution that forms a basis for multi-use by ensuring that various existing and potential future interests are taken into account. In line with the concerns of incumbents, the area-passport also ensures that potential multi-use options are known prior to the tender, which allows the developers of offshore wind farms to include associated risks and costs in their bids. Moreover, the same chapter in the agreement also includes provisions with additional conditions, by stating that choices related to different forms of multi-use will always have to be balanced against their effects on the electricity supply of the OWF and the cost-reduction targets set in the Dutch climate agreement. As such, incumbents are coerced into accepting proto-institutions that forms a basis for multi-use, despite disagreement upon the operationalization of these principles. The fact that coercion is successful in this case appears to be related to the incumbent's initial support for the general principle of multi-use. However, through continuous creating work by both challengers and incumbents, this proto-institution has been collaboratively adapted to ensure that certain core-values of existing institutional practices are maintained.

Another good example of collaborative coercion is the development of proto-institutions that prohibit bottom-trawling fisheries. Initially, the fisheries sector applied creating work to develop institutions that would allow this type of fisheries in OWF. The NGOs and wind sector increasingly worked to maintain and strengthen the current framework that bottom trawling within OWF is not allowed. The argument of risks and associated costs of this activity for OWF was prominent in this discussion. Eventually, the fisheries sector also began to express doubts related to the risks for fisherman when using the currents techniques for bottom trawling within the boundaries of OWF as they are currently designed. This led to the provision that in the short term, with the use of current techniques bottom trawling within windfarms is not an option, but that technical innovation may lead to changes in this regard. As such, coercion by other parties led the fisheries to reconsider their position on this issue, and opt for including conditions to ensure that the prohibition for bottom trawling in OWF can be reconsidered in the future.

A second pattern that can be identified as a result of the interplay between maintaining and creating work is termed *'abstracting new practices'*. This pattern is characterized by proto-institutions that are much more abstract than the initial ideas that were suggested for operationalizing multi-use and is primarily used by incumbents. This pattern can be observed when incumbents do not agree with a suggested proto-institution but do not want to use power to force their will. An example is the idea by challengers to prescribe so-called 'beauty contests' in tenders to incentivize innovation with regards to multi-use (e.g., the most fisheries-friendly or nature-friendly windfarm). As this would limit incumbents in how to interpret the existing general institutional frameworks such as the Offshore Wind Energy Act, they initially started using maintaining work (primarily educating and deterring). However, under the pressure of creating work by challengers, they shifted to a subtle form of 'creating work: theorizing', thereby endorsing some form of change while simultaneously limiting the effect of these changes on existing practices. Incumbents suggested small adjustments to statements regarding this beauty contest on multiple occasions over time – such as a broader formulation of the purpose (integrated development, rather than nature or fisheries friendly), or the suggestion to leave out the word 'tender'. This leaves the provision much more abstract in the eventual agreement, which now reads that the government will study which (tender) instruments can be used to improve integrated development of OWF. In this manner, incumbents often succeeded in moving these ideas in a more abstract, process-oriented direction that offers much room for interpretation in the future. Rather than a proto-institution that provides a mechanism for incentivizing multi-use, a more ambiguous statement is created that encourages a process that might lead to mechanisms for incentivizing multi-use in the future.

A third pattern focusing primarily on creating and maintaining work is called *'convergence by coalition'* and refers to a strategy where parties use creating work to connect their ideas to other proto-institutions that were being developed. This strategy was applied by both challengers and incumbents. For example, multi-use in the form of nature development in OWF might limit other, often more intensive, forms of multi-use like fisheries. Therefore, the

idea of nature development which was promoted primarily by NGOs, was also supported by the OWF developers who perceive more intensive forms of multi-use as a greater risk to their unhindered operationalization of OWFs compared to nature development. This support further strengthened the ideas surrounding proto-institutions related to nature development. Another example is that NGOs in some cases supported incumbents' narratives regarding cost-efficiency because this argument appeared to be effective in limiting more intensive forms of multi-use such as bottom-trawling fisheries. As such, convergence occurred by coalition forming on ideas that could be vehicles that also benefit different actors' interests; i.e., various actors showed convergence over proto-institutions as these could unite their respective interests.

A fourth pattern is called *convergence by compromise*. This pattern occurred mainly between two challengers that used creation work for opposite purposes, while incumbents did not have a strong opinion on the matter. For example, NGOs worked at creating rules that limited fisheries with specific types of passive gear, while the fisheries sector worked at creating rules that would explicitly allow this same type of fisheries. While there was some disruption work involved, both these actors mainly used creating work, by suggesting adaptations to paragraphs that would favor their perspective. Incumbents in the meantime kept a relatively neutral position; i.e., they mostly refrained from taking positions or making decisions, unless the negotiating actors would come to some kind of compromise. Convergence, therefore, was allowed if a compromise was reached. In the agreement, this resulted in neither explicit allowance nor explicit prohibition of this type of fisheries; rather it was decided that it should depend on the local circumstances as part of the analysis for area-passports.

5.4.4 Boundary work

Parties were more involved in practice work compared to boundary work when looking at the issue of multi-use. Only two clear examples of boundary work were identified, the first focusing on maintaining boundaries and the second on creating boundaries. It is important to mention that the NSD itself is a result of boundary disruption in the preceding period. An example of this disrupted boundary is that in reports leading up to the NSD, actors were quoted who presented government decision making after consultation phases as a 'black box' and actors requested the government to form the NSD in a joint letter (OFL, 2018). Another example is that the Dutch parliament seriously discussed the option of installing a so-called 'North Sea Commissioner'. Such a commissioner would be an independent public figure responsible for the governance of the North Sea and execution of North Sea policy; i.e., overseeing and coordinating policy development across actors and governmental departments (House of Representatives of The Netherlands, 2018). As such, at the start of the NSD the boundaries surrounding North Sea governance and the role of actors therein were already challenged. The NSD itself can be seen as the result of boundary work allowing for challengers to enter into a governing arena with incumbents to discuss current and future policies. However, in the negotiations during the NSD, boundary work did not seem to be the priority with two notable exceptions which will be discussed below.

5.4.5 **Maintaining boundaries**

Maintaining boundaries was solely performed by incumbents and primarily took the form of 'protecting autonomy' and 'controlling membership' in a pattern termed *protectionism*. First, incumbents sometimes delayed the sharing of information because they first had to consult in line with existing bureaucratic rules and routines. This resulted in a subtle form of maintaining boundaries because it implicitly illustrated the position of the NSD relative to these existing bureaucratic systems and essentially reinforced the position of incumbents (in this case governmental organizations). A second form of maintaining boundaries is done by incumbents protecting their sole influence over specific aspects of the process of OWF development. For example, the wind sector worked to maintain sole responsibility for the design of OWFs after the tender is won, without infringement by other parties and interests. The third manner in which incumbents maintain boundaries is by deterring responsibility for other aspects of multi-use, for example by clarifying that they are not responsible for the space in between turbines where potential multi-use needs to take place. While challengers occasionally could be observed to attempt creating boundaries through assigning responsibilities, incumbents implied that multi-use is the responsibility of 'other parties'. The pattern of protectionism is a result of reoccurring maintaining of boundaries by incumbents aimed at the policy level (positioning the NSD in relation to existing bureaucratic systems), and the project level (maintain responsibilities for OWF projects while deterring responsibilities for multi-use). The pattern of protectionism could be observed particularly for those boundaries that were in line with the values that were maintained in the pattern of collaborative stage-setting, such as cost- and risk-reduction or achieving the targets for OWF set in the climate agreement.

5.4.6 **Creating boundaries**

Both incumbents and challengers jointly redefined their future relationship regarding the governance of the North Sea, in a pattern which is termed *collaborative boundary creation*. There was a high level of agreement between parties that a new manner of cooperation and participation was necessary regarding North Sea policy. While there was much discussion regarding the exact form this was to take, the boundary creation work resulted in the rule that there will be a form of 'permanent NSD' that will discuss developments that infringe upon the North Sea Agreement. The fact that some actors, particularly incumbents, were not necessarily in favor of the idea of a North Sea Commissioner as they considered this a too strong infringement on existing boundaries helped to create support for the idea of a permanent NSD as a more favorable option. While the discussion regarding the permanent NSD was broader than just multi-use, the permanent NSD did provide a solution for issues related to multi-use particularly in the interplay between boundary and practice work, which will be discussed in the next section. While boundary work was relatively limited during the NSD in many regards, the creation of the proto-institution of a permanent NSD can be considered an important institutional change regarding boundaries, which departs from traditional ways of governing the sea.

5.4.7 Interplay of practice and boundary work

This section discusses four patterns related to combinations of boundary and practice work. The first pattern is called *'confronting practice work with boundary work'* and follows from the interplay between creating work by challengers and boundary work by other actors. Challengers feared that more general (abstract) statements that covered their interests would not receive follow-up in policy-development regarding multi-use and it would be outside of their influence in the future. In essence, these challengers were concerned about future boundaries and their ability in the future to create leverage. However, rather than working on boundaries, they strove for a detailed representation of their interests by working to include statements related to their interests throughout the agreement; i.e., they refrained to a form of precautionary creating of practices. For example, NGOs suggested including specifications related to nature protection and development in almost every general rule regarding multi-use. To some extent, this work resulted in additional safeguards, such as the provision regarding the ecological capacity of the North Sea in paragraphs about new activities such as marine energy and mariculture. Simultaneously, incumbents and the NSD staff used boundary work to limit such precautionary practice work, by referring to the proto-institution of a permanent NSD, which provides parties with the opportunities to be involved in the future interpretation of the agreement.

Second, a pattern can be identified where primarily the government used both maintaining boundaries and maintaining practices to block ideas for institutional change, which can be called *powerplay*. A prime example where the government succeeded in blocking change was related to an ongoing revision of the offshore wind energy act at the start of the NSD. Multiple parties, including challengers but even some incumbents (albeit for different reasons), whished for this revision to be halted to enable the incorporation of relevant aspects of the agreement in this revision. For the challengers, this was mainly related to incentivizing multi-use (e.g., nature development in OWF or fisheries-friendly windfarms). The topic was discussed in the NSD multiple times, with parties using work particularly aimed at practices (e.g., explicitly including mechanisms for encouraging innovation with regards to multi-use in the revision of the Offshore Wind Energy Act), but also at boundaries with the chairman of the NSD sending a letter to the minister of Economic Affairs to request the revision to be halted. The government responded by focusing on maintaining work, including 'educating' and 'protecting autonomy' (e.g., referring to the need for this Act to achieve targets set in the Climate Agreement), but also some boundary defending work (stating that this is not a discussion for the NSD). In this case, the government used institutional work aimed at maintaining both boundaries and practices to block ideas that encouraged multi-use using this Act. It is important to notice in the above example, that the government also held the power to use this pattern effectively.

A third pattern is called *'abstracting solutions in time'* and is the result of an interplay between maintaining work by incumbents and creating work in the form of agenda-setting by challengers. An example is the difficulty in gaining (affordable) insurance for co-users

that want to operate within windfarms, such as the fisheries sector. Incumbents applied maintaining and defending strategies with regards to this topic throughout the NSD, for example stating that these insurance issues are negligible compared to insurance of the OWF themselves, as well as stating that it is not a collective responsibility but rather the individual responsibility of the co-user. Through creation work in the form of agenda-setting the issue kept returning in debates, but mostly as a side-note. There were some instances where ideas for solutions were debated (e.g., options for collective insurance). However, since the insurance issue was marginal compared to other issues that were debated in the NSD it would not 'make or break' the agreement. As a result, the issue was moved in time, with the agreement including a provision that states that "the question whether multi-use and passage through OWFs can be facilitated by a form of collective insurance will be debated in the [permanent] NSD". Noticeable was the consistent use of deterring by incumbents, while challengers did not push the issue beyond agenda setting. As a result, issues were pushed back in time and eventually were shifted to the permanent NSD.

A fourth pattern that was identified is called *'boundary dodging'*, and is characterized by the fact that discussions in the NSD kept focusing on practices, often disregarding boundary issues. This can primarily be observed for topics where there were problems related to boundaries, but debates in the NSD constantly returned to extending (details of) practices. For example, debates kept returning to extending the passage for larger ships in OWF and whether there should be free passage or passage through specific areas, or how to optimize nature-enhanced building in windfarms. While defining these practices was important, the practices were often less disputed than the boundary. Returning to the example of passage for ships through OWF, there was already a pilot in place at the start of the NSD and the fact that there would be an extension of practices in this regard was relatively clear. However, who is responsible for executing and paying for these changes was a major issue, but this was barely discussed in the NSD. Some challengers were trying to create boundaries and assign such responsibilities, but this never went beyond agenda setting. These boundary-issues were often ignored and, at best, were shifted to the future by means of referring them to the permanent NSD, which illustrates that these boundary issues were dodged during the NSD.

5.5 CONCLUSION AND DISCUSSION

Using the analytical lens of institutional work, various patterns were uncovered in actors' work to effect institutional change for multi-use OWF. As also mentioned in Table 5.2, the interaction between creating and maintaining work was dominant in the patterns that could be found in the case of the NSD. The maintained practices and boundaries, and the core values they represent, provide a fallback for incumbents in conditioning or abstracting creating work by other actors that would infringe upon these core values. This corroborates insights by Van Doren et al. (2020) on institutional creating work by market-based institutional entrepreneurs that maintain conventional paradigms. The importance of maintaining

work as the benchmark for creating work indicates that institutional change is more incremental rather than wholesale during the NSD. In the case of the NSD, institutional change barely occurred on the level of broader institutional frameworks. Instead, the work of actors was focused primarily on the level of practices that could be used or adapted within the context of these broader frameworks. This is also reflected in the relative lack of boundary work.

TABLE 5.2 Patterns of institutional work related to multi-use OWF

	Pattern	Dominant type(s) of institutional work	Description
Practice work	Collaborative stage-setting	Maintaining	Active maintaining of existing frameworks by incumbents and acceptance thereof by challengers.
	Collaborative coercion	Creating and maintaining	Agreement upon general principle but disputes over operationalization, which results in the development of proto-institutions that contain conditions safeguarding core values of the existing framework
	Abstracting new practices	Creating and maintaining	Abstracted and more process-oriented proto-institutions as a result of multiple instances of subtle 'creating work' by incumbents over time aimed at increasing the ambiguity of the proto-institution.
	Convergence by coalition	Creating and maintaining	Strengthening of ideas for proto-institutions because this idea supports different actors' interests – albeit for different reasons – thereby leading to convergence.
	Convergence by compromise	Creating and maintaining	Incumbents providing challengers with the opportunity to find a compromise or do nothing.
Boundary work	Protectionism	Maintaining work	Incumbents using various form of maintaining boundaries to ensure challengers do not gain influence over 'their' domain, while holding off responsibilities for other interests.
	Collaborative boundary creation	Creating work	Joint search for solutions regarding future cooperation and coordination between actors.
Interplay of practice and boundary work	Confronting practice work with boundary work	Creating	Actors responding to precautionary practice work by ensuring influence through extended boundaries.
	Powerplay	Maintaining	Incumbents using power over practices and boundaries to block changes.
	Abstracting solutions in time	Creating	Incumbents deter creating work by challengers after which the only solution is to use boundary work to keep the issue on the agenda in the future
	Boundary dodging	Creating	Constant return to creating practices to avoid debates regarding associated boundaries.

The relative lack of boundary work does not mean boundaries were not disputed per sé. Instead, they were mostly avoided (see e.g., the pattern of *'boundary dodging'*). A notable exception is the pattern of *'collaborative boundary creating'* which led to the proto-institution

of the 'permanent NSD'. This change in the governance arrangement for the North Sea is the most prominent result of boundary creating work during the NSD. The permanent NSD potentially makes boundaries more permeable in the future, by creating joint responsibility for the development and implementation of rules related to multi-use, OWF, and broader North Sea policy. However, to some degree, the permanent NSD can also be seen as a way of shifting discussions on boundary work towards a moment in the future. As the NSD itself was the result of the disruption of existing (sectoral) boundaries by creating an arena in which to discuss conflicting perspectives, we can conclude that the argument of Zietsma and Lawrence (2010) that disputed practices but intact boundaries are the starting point for cycles of institutional change need not apply. In the case of the NSD the practices were largely intact at the start and some were even strengthened by maintaining work throughout the NSD. Therefore, this paper suggests that breached boundaries can also be a starting point for institutional change.

The relative lack of boundary work resonates with the subtle role of power as influencing institutional work by various actors within the NSD. The reluctance to demarcate new boundaries related to specific issues (as opposed to the more general creating of the permanent NSD at a higher level of abstraction) appears to be related to how parties perceived the role of the NSD. While the challengers perceived the NSD as a possibility to come to agreement on specific issues and policies for the future, incumbents perceived the NSD more as an instrument for participation. Previously established agreements and existing power relations allowed incumbents to rely heavily on maintaining work, also when pursuing creating work. Existing power relations, thereby, influenced the patterns of institutional work that emerged. While power is considered a contextual factor in institutional work, the results from this paper suggest that power needs more explicit consideration as a variable in institutional work (also Beunen and Patterson, 2019; Lawrence et al., 2013).

The lack of boundary work also relates to our finding that outright conflict was less prominent than some existing studies would suggest (e.g., Seo and Creed, 2002; Zietsma and Lawrence, 2010). Disrupting and defending work play only a marginal role and even when actors' attempts disrupted other actors creating work, this did not manifest in the form of conflict. Instead, forms of maintaining work, abstracting issues, or shifting discussions to the future were more popular strategies. This lack of outright conflict is also reflected in the variables that were added to the framework in Table 5.1 during the analysis, which are generally used to capture more subtle attempts at disrupting and defending work (e.g., questioning solutions rather than presenting them as illegitimate).

Two important discussion points stand out when reflecting on this study. First, among the likely consequences for a lack of conflict and boundary work was the set-up of the NSD. The NSD provided an arena for core stakeholders to jointly search for solutions to issues such as multi-use and to come to some form of agreement. Outright conflict can prevent such a joint search and hence, coming to any form of agreement. The case of the NSD shows that it was of pivotal importance to create an environment that supported mutual trust and a shared

sense of responsibility for coming to an agreement. This highlights the role of more informal aspects of institutional work that come forward in an in-depth exploration of the interplay between institutional work of various actors. Whereas the existing framework of Zietsma and Lawrence (2010) is largely focused on work aimed at formal rules, our study shows that it is important to also take into account the informal 'play of the game'. This 'play of the game' is related to creating trust between parties where disagreement on content and the interpretation of certain practices is allowed, but in a context that allows for further debate about these issues in the future. Following this line of argumentation, it can be concluded that the informal aspects of institutional work were also crucial to institutional change in the NSD case. Based on these insights, we call for institutional research in sustainability transitions, and energy transitions specifically, to explicitly focus on the informal 'play of the game', because such approaches can, for example, add to existing studies on the struggles and opportunities for decentralized and local energy initiatives (e.g., Hess and Lee, 2020; Jehling et al., 2019; Judson et al., 2020).

A second discussion point involves the unique character of the NSD as an arena in which to discuss issues that are largely novel and remain subject to a certain degree of pioneering. The development of institutional frameworks to guide energy transition, and sustainability transitions more generally, constitute an ongoing process that is, at least to a degree, subject to a process of learning-by-doing (Van Poeck, Östman, & Block, 2020). Our study shows that pursuing multi-use is a process of pioneering within a context of formal institutions not designed for such a pursuit (e.g., sectoral institutions for OWF). Incumbents realize some form of coordination is needed if they are to swiftly pursue the deployment of OFW. Challengers realize that outright resistance to OFW is futile and thus also embrace this need. None of these actors, however, currently has a clear picture of the potential shape of the formal institutional framework that needs to be developed for multi-use. Our results suggest that actors are exploring possibilities for advancing their interests in relation to other actors, rather than knowing exactly how they would like these interests to be represented in formal rules. In this context, it is hardly surprising to conclude that processes of institutional change are not driven by outright conflict or center on disruption. Instead, the uncertainty the actors are faced with calls for more incremental, subtle, and prudent applications and patterns of institutional work in energy transition contexts. As such, the NSD currently manifests itself mostly as adjusting and formulating practices within the context of the institutional frameworks that are there. Essentially, actors seek 'institutional space' that exists within the frameworks through small adjustments, new interpretations, and novel practices, while simultaneously creating the space for such discussions to continue in the future.

The NSD is arguably a case that is distinct from the type of cases previously targeted in literature on institutional work. Nevertheless, the NSD might not be completely unique, since the wide societal quest for sustainability shows more examples where novel technologies and practices need to be integrated into space and society. Energy transition serves as a clear example, with many novel institutional designs and frameworks emerging surrounding e.g., local energy initiatives (Judson et al., 2020) or the transition to low-carbon housing

(van Doren et al., 2020). Other examples, such as the transition of our food system (A. Smith, 2006), the pursuit of a circular economy (Schulz, Hjaltadóttir, & Hild, 2019), or climate adaptation (Tompkins et al., 2010) are similarly showing a need for institutional change. The kind of pioneering processes in which institutional change is pursued in highly uncertain contexts that we encountered in the case of the NSD, therefore, might be of broader relevance to sustainability transitions.

We suggest developing institutional work theory from a perspective of pursuing cross-sectoral institutional harmonization, particularly when applying it as an analytical lens for studying institutional change processes in the context of sustainability transitions. An important point for consideration is how uncertainty, complexity, and the multitude of issues and actors that are involved in sustainability transitions might significantly reduce a clear distinction between challengers and incumbents. Moreover, we follow Beunen and Patterson (2019) in their suggestion that intentionality in institutional work is not as articulated as often suggested, particularly when using it for studying complex environmental governance issues. In highly uncertain environments, the explorative and incremental process of learning-by-doing might ask for a more nuanced perspective on why and how actors apply certain forms of institutional work (see van Doren et al., 2020). While institutional work theory can be beneficial to understanding institutional change processes that are needed for sustainability transitions, the case of the NSD also challenges us to rethink its current scope.

While participatory observation of the NSD provides useful insights into real-time patterns of interaction between actors pursuing institutional change, the NSD is a clearly demarcated process with a set group of actors that interacted over a longer time-period. While this provides a clear scope for the research, it also leads to limitations. Developments that occurred in related arenas that were not discussed in the NSD were not taken into account in our analysis. Nor were we able, as of yet, to gain insight into actual institutional changes as a result of this process. When looking at sustainability transitions frameworks such as the multi-level perspective, it will be interesting to further explore how the NSD continues to shape policy discussion regarding the North Sea at various levels and in various related fields in the future. Moreover, while participatory observation provides unique insights into real-time interaction and the content of debates between actors, retrospective methods such as interviews could provide additional insights regarding how actors reflect upon and experience a process such as the NSD. We recommend further application of institutional work, particularly using the distinction between boundary and practice work, to other sustainability transition cases in different country settings to further explore and expand the patterns we identify in this paper.

In line with these observations, rather than taking conflict as the basis for institutional change, this paper calls for research into processes of institutional harmonization (see also Spijkerboer et al., 2019). Institutional harmonization can be conceptualized as the process through which actors improve cooperation and coordination between competing or alternative institutional frameworks, taking into account both the formal boundaries and

practices and the informal ‘play of the game’. As such, the term institutional harmonization can be useful in searching for pathways towards cross-sectoral institutional change in sustainability transitions. This could be particularly beneficial to the various sustainability transitions that the world is currently facing, with the complex web of interrelated actors and interests that lie at their heart.

6

Conclusions and recommendations:

Finding physical space for energy transition – an institutional perspective

6.1 INTRODUCTION

Generation of renewable energy (RE) typically requires much space and is much more visible in the landscape compared to fossil fuels. Due to the limited amount of space available, both onshore but also offshore, finding physical space for energy transition requires cross-sectoral cooperation and coordination between RE and various other sea- and land-uses to ensure efficient use of spatial resources. However, the actors from various sectors that are currently using onshore and offshore space are often guided by institutional frameworks that are tailored to sector-specific needs and that tend to be ill equipped at recognizing and acting upon requests and opportunities related to energy transition. Simultaneously, specific institutional frameworks are being created and adapted in relation to energy transition. This results in institutional fragmentation, both regarding various sectoral frameworks and between existing and new frameworks. Such fragmentation can form important constraints for cooperation and coordination and pose institutional barriers that limit opportunities for the finding of physical space for energy transition. Addressing these barriers requires alignment and harmonization between various sectoral, existing and new institutional frameworks. In response, the aim of this study was to examine how actors pursue institutional harmonization for energy transition and which different institutional barriers and opportunities they encounter. To achieve this aim, this study posed the following research question: *How do actors pursue institutional harmonization between renewable energy generation and other sectors in energy transition contexts and what institutional barriers and opportunities do they encounter?*

To answer this question, four sub-questions were posed that explore the two sides of this research problem. The first two questions explored the institutional barriers and opportunities encountered by actors when pursuing spatial integration between RE and other sea- or land-uses that require harmonization. Answering these questions set the stage for questions three and four, which explored how actors engage with the process of cross-sectoral institutional harmonization itself. Two case studies formed the empirical basis for this study, both of which show actors breaking with sectoral traditions and pursuing cross-sectoral cooperation and coordination in energy transition contexts. The first case focused on the development of solar photovoltaics (PV) in combination with national transport infrastructure, such as highways, in the Netherlands (see Chapter 2). The dominant actor in this case was Rijkswaterstaat (RWS, the executive organization of the Ministry of Infrastructure and Water Management), which is the organization responsible for the management of national transport infrastructure. Therefore, this study often refers to this case as 'the case of Rijkswaterstaat'. The second case examined offshore wind farm (OWF) development in the Dutch North Sea, which is closely related to development of Marine Spatial Planning (MSP) as a comprehensive system for governing offshore spaces. Chapter 3 focused on the performance of MSP in balancing OWF against other sea-uses, while Chapters 4 and 5 focused on the North Sea Dialogues (NSD), which were negotiations between a wide group of actors (representing various sectors) to improve the balance between various users of the Dutch

North Sea. In this study, the term 'actor' is generally used to refer to organizations, such as RWS or the sector-organizations in the NSD. In line with Hodgson (2006) (see Section 1.3), this is an analytical abstraction to enable analysis of cross-sectoral interactions, while also acknowledging that these organizations are comprised of institutional rule-sets themselves.

This chapter is structured as follows: first, the research questions will be answered in Section 6.2, followed by a discussion of the findings in relation to three important concepts in 6.3. Section 6.4 reflects on the theory and methods used in this study and provides a research agenda. Finally, Section 6.5 contains recommendations for future research and for practice.

6.2 ANSWERING THE RESEARCH QUESTIONS: INSIGHTS IN INSTITUTIONAL HARMONIZATION IN ENERGY TRANSITION CONTEXTS

1. ***What institutional barriers and opportunities do actors encounter when pursuing spatial integration between renewable energy and other sea- and land-uses?***

Chapter 2 of this study focused specifically on this question for the case of integration between renewable energy (RE) and transport infrastructure, but these insights were strengthened by findings from other chapters. The findings from this study reinforced the research problem by illustrating that the existing formal and informal institutions often prove ill equipped at resolving complex challenges brought about by energy transition. For example, Chapter 2 showed that it is difficult for actors to pursue solar PV along highways within the context of the existing formal and informal rules. Therefore, instead of analyzing how actors try to align their interests in the context of existing 'rules of the game', this study focused on the alignment and harmonization between various formal and informal institutional frameworks themselves. This section will provide three important conclusions regarding the barriers and opportunities encountered by actors when pursuing spatial integration between RE and other sea- and land-uses.

First, this study showed that various institutional barriers are interrelated and that insights into these interrelations are necessary to effectively address barriers and enable actors to pursue spatial integration between RE and other land-use functions. In some occasions, institutional barriers can be addressed by relatively straightforward establishment or adaptation of formal rules and procedures. For example, in Chapter 2, the observed ambiguity regarding which government body is responsible for granting the environmental permit for PV installations could be resolved through formal rules, and Chapter 4 illustrated the establishment of formal rules regarding the use of passageways for shipping in offshore wind farms. In most cases, however, it is key to also take into account and address informal institutions, which are often unwritten and include conventions, norms, and codes of

conduct at the societal, organizational, and individual level. For example, in the case of Rijkswaterstaat, this study observed that in the absence of formal rules about the role and responsibilities of Rijkswaterstaat regarding RE, the risk-averse organizational culture and accompanying institutional rules of the organization became dominant in how employees assessed opportunities for solar PV along highway infrastructure. Similarly, Chapter 3 showed how a mixture of formal and informal rules affected the understanding of various principles of MSP in the Dutch case and, by extension, its performance as a tool for forwarding the sectoral interests of OWF, rather than a comprehensive system for balancing various interests at sea. It can be concluded that when pursuing spatial integration between RE and other sea- and land-uses, institutional barriers appear to be the result of more nuanced interrelations between formal and informal 'rules of the game'.

The analytical approach in Chapter 2 helped analyze these interrelated institutional barriers, taking into account both formal and informal institutions. This framework not only analyzed the 'rules of the game', but also ideas, interpretation and deliberations of interacting actors regarding these 'rules of the game' in what is called the 'play of the game' (see Section 6.3 for further discussion of this concept). This study illustrated that, sometimes, harmonization can even be achieved through changing and aligning the understanding of certain rules among various actors, as illustrated, for example, by the joint definition of what counts as 'sea-bed fisheries' and 'sea-bed disturbance' in Section 4.4.3. In other words, barriers and opportunities are not constrained tot the actual rules, whether formal or informal, but also embedded in more nuanced processes of sense making, deliberation and interpretation that may alter their practical meaning and impact.

Second, besides interrelations between formal and informal institutions, Chapter 2 showed that institutional barriers and opportunities encountered by actors are also affected by interrelations across scales and across sectors. Important interrelations exist between (inter)national, regional, and local scales. Across scales, interrelations exist as provinces and municipalities are also involved in the development of institutions for RE development in the Netherlands, and Chapter 2 showed that spatial integration of RE with transport infrastructure was dependent on their support. However, the conditions they aimed to adhere to in order to give their support were sometimes difficult to align with the conditions set at higher (ministerial) levels. For example, the national-level focus on developing simple and uniform procedures for auctioning lands to the highest bidder was difficult to align with the focus in many provinces and municipalities on community involvement and area-based approaches for RE projects. Important interrelations across sectors can be illustrated by the fact that three different ministries were involved in developing solar PV along national transport infrastructure networks, as illustrated in Figure 2.2. Changes to the formal role and responsibilities of Rijkswaterstaat regarding RE, therefore, would also require adjoining changes in formal and informal rules guiding the various involved ministries. These examples showed that enabling spatial integration between RE and other sea- and land-uses required adaptation of related rule sets, rather than only an adaptation of single rules. As such, understanding the political and institutional context related to a variety of rule sets

is important to understanding institutional barriers and opportunities. This can also be illustrated by the fact that the set of adjoining changes in the rules guiding the ministries was perceived to be unlikely because these changes also touched upon the dominant political frames regarding the position and role of the state versus the market.

A third conclusion is that cross-sectoral cooperation and coordination helps build sensitivity among actors regarding how various formal and informal institutions are interrelated, including interrelations across scales and across sectors. Organizing such cross-sectoral cooperation and coordination was observed to benefit from platforms where various involved actors could interact, exchange ideas and interpretations, and deliberate on the rules of the game: i.e., an arena that accommodates the 'play the game'. This conclusion is also supported by the findings in Chapter 4, where the platform offered by the North Sea Dialogues (NSD) proved key in forwarding institutional change towards improved spatial integration between offshore wind farms and other sea-uses. However, organizing such platforms required involved organizations, such as infrastructure managers and the actors involved in the NSD, to allocate resources (e.g., time, money, manpower) to these processes. Moreover, cross-sectoral cooperation and coordination required some clarity *within* the relevant sectors regarding their aims, ambitions, and responsibilities. Cross-sectoral harmonization, therefore, also required *internal* harmonization within the involved sectors. For example, Section 2.4.2 showed that 'internal harmonization' within the government organizations responsible for managing the transport infrastructure sector in the Netherlands (including RWS and the Ministry of Infrastructure and Water management) regarding their aims, ambitions and responsibilities is necessary for cross-sectoral cooperation and coordination. Section 4.4.2 also supports this insight, by arguing that during the NSD, coordination within sectors was also pursued (e.g., within the fisheries sector and NGOs). Therefore, there seems to be a 'cooperation paradox' where cross-sectoral cooperation and coordination is hampered by institutional barriers, while such cooperation and coordination both within and across sectors is also necessary to solve these barriers (see Section 6.4.3 on recommendations for future research).

While existing literature tends to focus on institutional barriers as a result of formal 'rules of the game', this study indicated that institutional barriers in energy transition context can, first of all, only be truly understood and addressed when taking into account the interrelations between formal and informal institutions. Secondly, grasping opportunities for spatial integration requires co-evolution of the formal and the informal 'rules of the game' across sectors and scales as they are being (re)shaped by ideas, interpretations, and interactions between actors in the 'play of the game'. Rather than focusing on single rules, this 'play of the game' will need to address the rule-sets that in their interaction shape the opportunities for spatial integration between RE and other sea- and land-uses. As such, the 'play of the game' not only involves the (re)shaping of both formal and informal rules, but through interpretation and deliberation among actors, also the (reshaping) of the meanings and practical influence of such rules.

2. How does marine spatial planning perform in balancing renewable energy against other uses offshore and what are the opportunities and barriers for doing so?

The second research question was mainly addressed in Chapter 3, which focused on balancing Offshore Wind Farm (OWF) development in relation to other sea-uses. Similar to energy transition onshore, renewable energy (RE) generation offshore also requires well-balanced spatial planning which takes into account the interests of other users of offshore space. Previously, marine management was mainly organized on an ad-hoc and sectoral basis, and the development of comprehensive spatial planning frameworks in the form of marine spatial planning (MSP) is a relatively recent occurrence. Existing literature provides various core normative principles of MSP (area-based, integrated, participative, ecosystem-based, adaptive, and strategic), thereby providing an idealized understanding of MSP and how it is supposed to balance various sea-uses. OWF development was one of the main reasons for establishing comprehensive MSP in Europe. This strong focus on OWF seems to have led to a sectoral focus in MSP in the Netherlands. As such, this study corroborated existing literature that criticizes MSP for focusing too much on sectoral development of RE interests at the expense of other uses offshore. However, this study went beyond diagnosing this problem and extended the analysis to exploring the barriers and opportunities to the performance of MSP in balancing OWF against other sea-uses. As explained in Section 3.2.3, performance was understood as the manner in which the principles of MSP are understood and used by actors in subsequent decisions regarding OWF.

The dominance of RE interests strongly influenced the understanding of the various principles of MSP in practice and – by extension – their performance in balancing OWF against other sea-uses. It was found that OWF was supported by technical and economic discourses that were derived from (inter)national renewable energy targets, creating a very narrow understanding of many principles of MSP that was not in line with the idealized image offered in MSP literature. For example, in the Netherlands, an institutional framework for OWF was developed, which was supported by MSP, to ensure a quick and cost-effective rollout of OWF to meet national and international RE targets (e.g., targets set in the EU Renewables Directive, the Paris Climate Agreement, the Dutch Energy Agreement, and the Dutch Climate Agreement). While meeting these RE targets is important in forwarding energy transition, the strong focus on developing a feasible system for OWF on the short term could increase tensions between key use functions and related actors, resulting in increased resistance against OWF. The clear dominance of RE targets during the maturing of MSP in the Netherlands even seemed to have eclipsed the core principles MSP theoretically aimed to pursue; i.e., participation and notably integration were simply reduced to ensuring no alternative claims for sea space would hamper OWF development. While these RE targets have created a strong sense of urgency, the narrow focus on meeting these targets was also an important institutional barrier identified in this study that hampered the balancing of RE with other sea-uses in MSP. The case of the NSD, as discussed in Chapters 4 and 5, showed that the government also recognized this barrier and attempted to remediate this over the course of 2019.

Performance of MSP could mainly be observed for those principles that were already protected to some serious degree previous to MSP development. For example, the ecosystem-based principle was safeguarded by (inter)national norms that provided a baseline for environmental protection, and that were referred to in the Dutch marine spatial plans (see Section 3.4.1). This indicates that pre-existing statutory requirements are also important for providing insight in the performance of certain principles of MSP. Despite the clear importance of the MSP principle of ecosystem-based development in both theory and practice, in the Dutch case, the core focus on advancing OFW resulted in a distinct interpretation of this prinicple. Rather than targeting ecosystem development as a core ambition to be advanced with and through MSP in itself, the avoidance of conflict was the core focus in the Dutch understanding of the ecosystem-based principle. Consequently, there was limited attention for OWF to address potential synergies such as 'building with nature'. The institutional barrier related to the narrow focus on OWF development, as such, influenced the creation of additional barriers by affecting the understanding, and performance of other principles of MSP. It can be concluded that in line with the answer to the first sub-question, it is not only the rules of the game that matter, but also how these rules are interpreted and deliberated by interacting actors in the 'play of the game'.

This study also showed that there is mutual dependence between the performance of various core principles of MSP. A narrow understanding of some principles of MSP might limit the opportunities for other principles to perform. For example, Chapter 3 found a narrow understanding of area-based, integration and participation principles, focused on creating a robust and streamlined system for OWF that enhanced certainty and reduced conflict with other uses when possible. This system was used to establish strong and fixed spatial claims, rather than instigating a search for where, how and when various functions can or cannot be aligned, which would be more in line with the principles of strategic and adaptive MSP. The case of the NSD in Chapter 5 supported this finding, with maintaining work by incumbents focusing on the same technological and economic discourses that have been encased in the existing institutional framework surrounding OWF. However, Chapter 4 also indicated how platforms, such as of the NSD, can be used within MSP processes to pursue a better balance between RE and other sea-uses, or at the very least, make sure that these topics are safeguarded in ongoing discussions. Increased focus on integration and participation could improve the performance of MSP in balancing OWF against other sea-uses, if actors are willing to jointly search for solutions and make strategic choices in light of various interests. These insights are of a broader relevance, since the core principles of MSP mirror the general trends in spatial planning towards more area-based, integrated, ecosystem-based, participatory, adaptive, and strategic approaches. The mutual interdependence of these principles is of relevance to addressing energy transition and other large-scale societal transitions more widely, because these transitions require a strategy that is supported by various actors, rather than simple zoning on the local level.

3. Which formal and informal institutional changes are pursued by actors to improve spatial integration between renewable energy and other sea-uses?

Chapter 4 focused on this question and provided insight into the formal and informal institutional changes pursued by actors during coordination processes such as the North Sea Dialogues (NSD). Formal institutional changes in the form of adapting existing regulations, laws and responsibilities were hardly seen. Rather, formal change took the form of policy layering where new institutions were added to the system in response to perceived policy gaps or insufficient existing regulation. In the case of the NSD, examples included the provisions related to the extension of rules for the passage of shipping through offshore wind farms (OWF) (see Section 4.4.2) and the introduction of the area-passport (see Section 4.4.1). These formal institutional changes contributed to spatial integration because they imposed rules that clarified how OWF relates to various uses offshore and how decisions on OWF in the future need to take into account these uses.

Informal institutional changes played a key role in enabling spatial integration. For example, informal changes were made in the norms for sharing and communicating information within the government, between the government and stakeholders, and between various stakeholder groups. These changes in the norms for interaction increased trust and understanding among actors and enabled the exchange of information. As such, these informal changes also provided a basis for many of the formal changes that occurred. These insights support the findings from Chapters 2 and 3 regarding the importance of examining the interrelations between formal and informal institutions for addressing institutional barriers. For example, the increased focus on integration and participation during the NSD, first led to informal changes in norms for sharing and communicating information, and subsequently to the idea of the permanent NSD. This permanent NSD was a formal change that formalized participation of stakeholders in the implementation of the Agreement in the future. Informal institutional changes in the – initially temporary – context of the NSD, thereby, helped to further 'institutionalize' the idea of the NSD in a more permanent manner. Thus, the NSD may have changed the nature of participation in the governance of the Dutch North Sea. However, whether these changes are sustainable also depends on the extent to which the permanent NSD will manage to claim its formal and informal position in the governance of the Dutch North Sea and establishes itself as a 'rule of the game'; that is, as a new institution in the minds and routines of the variety of stakeholders, both government and private. These insights showed that informal and formal institutional changes are closely interrelated and both are necessary for spatial integration of RE and other sea- or land-uses: informal institutional changes (e.g., norms for communicating and sharing information and participation) enabled formal institutional changes (e.g., the formal establishment of the permanent NSD), the implementation of which will also require informal changes (e.g., norms for routinely exchanging information on plans and developments with the permanent NSD). This reinforced the earlier conclusions regarding the importance of the 'play of the game'; understanding institutional change in energy transition contexts also requires insight in the ideas, deliberation, and understanding of interacting actors regarding the formal and informal rules of the game.

While many existing studies call for radical or transformative change, this study showed that actors can also achieve important progress towards spatial integration between RE and other sea- or land-uses through incremental institutional changes. This study indicated that the combination of formal and informal institutional changes that were pursued by actors did progress spatial integration while also maintaining some core values of the existing system, suggesting that this is a prudent trajectory in progressing sustainability transitions. Simultaneously, Chapter 4 and 5 also found that the incremental institutional changes pursued during coordination processes, such as the NSD, benefit from a certain level of abstraction. Particularly when dilemmas were very explicit (e.g., appointing new offshore wind energy areas in Section 4.4.1) or when they were very abstract (e.g., the role of hydrogen in offshore energy transition in Section 4.4.6), actors tended to refer to existing institutional frameworks in their assessment of these issues. This was exacerbated by the fact that knowledge regarding these issues or locations was scarce and disputed. As such, actors were primarily successful in pursuing formal and informal changes with a slightly higher degree of abstraction (such as the area-passport or the permanent NSD). Open discussion of explicit dilemmas (e.g., appointing areas for OWF or nature protection, or discussing norms for construction noise in Section 4.4.3) was certainly fruitful to develop an understanding of the limits and opportunities surrounding these dilemmas, but resolving these dilemmas proved very difficult. However, actors did succeed in maintaining these topics on the agenda for the future (in the context of the permanent NSD). Thereby, the fact that there were still disputes was formalized, which reinforces the legitimacy for actors to develop new proto-institutions surrounding these disputed topics in the future. In the discussion, it will be further debated how such formalization of disputes can be seen as a manner in which actors create 'institutional space' for progressing spatial integration in the future.

4. ***How do actors work at maintaining, disrupting, defending, or creating institutions they face or need to rely on, and what patterns can be identified as a result of the interplay between these forms of work related to multi-use of offshore wind farms?***

Chapter 5 provided in-depth insight in interactions between different forms of institutional work of actors in cooperation and coordination processes, such as the NSD. As such, this question focused on the character of institutional change pursued by actors and on observing how the 'play of the game' enfolded in the context of the NSD. Multi-use of offshore wind farms requires institutional change and rules on (establishing) potential compatibilities and incompatibilities between uses. Chapter 5 showed a nuanced process of institutional change as the result of interactions between institutional work done by various actors. Actors mainly used maintaining and creating work during the NSD, while disrupting and defending work only played a marginal role. This appears to be related to the nature of cross-sectoral coordination and cooperation processes, which are also dependent on the building of trust and understanding among parties (see also the answer to sub-question 3). As such, outright conflict between actors was often avoided.

This study revealed that maintaining work was used by actors to create a benchmark for certain core values of the existing system (e.g., cost-efficiency, reducing uncertainty for OWF – see also Chapter 3). These core values were subsequently used to condition or abstract new ideas and practices to ensure adherence to the maintained values. For example, active maintaining work by incumbents of key instruments and targets of the broader institutional frameworks (e.g., the Dutch Offshore Wind Energy Act and the targets for OWF set in the Dutch Climate Agreement) was also accepted by challengers at the start of the NSD in a pattern that was termed 'collaborative stage setting' (see Section 5.4.2). This also helped maintain the core values of cost-efficiency and reducing uncertainty for OWF that were engrained in these instruments and targets. Examples where these core values were used by incumbents to set conditions were found, for example, in relation to the area-passport, and in the abstraction of ideas surrounding 'beauty contests' for innovative designs for OWF in a pattern that was termed 'collaborative coercion' (see Section 5.4.3). As a result, creating work that could be observed mainly focused on practices that could be added or adapted within the context of these broader maintained frameworks. Thereby, this chapter also provided an explanation for the more incremental institutional changes that were observed (see the answer to sub-question 3).

Chapter 5 also showed that actors mainly aimed institutional work at practices, while boundaries were kept relatively intact. Formal roles and responsibilities of incumbents were barely changed during the NSD. This can be illustrated by the pattern of boundary dodging in Section 5.4.7 in which actors avoided and redirected debates regarding boundaries. The notable exception is the establishment of the permanent NSD as a platform for future deliberation. However, while the permanent NSD might prove to be a shift in the roles of various non-governmental actors in North Sea governance, it does not change the formal roles and responsibilities regarding the North Sea; rather it is an additional body. This also supports the answer to sub-question three that changes took the form of policy layering, which reinforced insights regarding the incremental nature of the institutional changes that could be observed. Simultaneously, the permanent NSD may have created more permeable boundaries that enable actors to address issues in the future, by reducing the barriers for sharing and communicating information. In addition to the answer to sub-question three, this can be seen as another way for actors to create 'institutional space' for spatial integration in the future.

It can also be concluded that institutional work in cross-sectoral coordination and cooperation processes is to some extent a process of learning-by-doing and experimentation within certain boundaries. As argued in Chapter 5, actors may have overarching goals and ideas regarding institutional changes that might contribute towards achieving this goal, but they often also react to each other in the spur of the moment. The 'play of the game' is not a fully planned, strategic endeavor, it is also a joint search for common ground which is sometimes affected by stakeholders' emotions and past experiences (cf. institutional detritus). This observation has implications for the role of intentionality that will be further discussed in the reflection on theory (Section 6.3). Simultaneously, Chapter 5 found that

there are boundaries to this 'play of the game' that are to some extent pre-determined (e.g., the scope of the NSD) and to some extent established and reinforced through maintaining work. Moreover, Chapter 5 indicated that the 'play of the game' is affected by a subtle role and use of power (e.g., the hesitancy of actors to actually use the pattern of 'powerplay' in Section 5.4.7.), which will be further addressed in the reflection (Section 6.4).

Answering the main question: How do actors pursue institutional harmonization between renewable energy generation and other sectors in energy transition contexts and what institutional barriers and opportunities do they encounter?

This study provided insight in important institutional barriers and opportunities for cross sectoral cooperation and coordination and how actors pursue institutional harmonization so as to achieve spatial integration between RE and other sectors, looking at both onshore and offshore contexts. This study provided three main contributions to existing literature: (1) this study gave insight in the complex and nuanced nature of institutional barriers and opportunities for *cross-sectoral* cooperation and coordination; (2) this study conceptualized institutional harmonization as an incremental processes of institutional change that requires attention to both formal and informal institutions, and to interrelations between actors and (3) this study advanced the use of agency-oriented perspectives on institutional change in literature on energy transition and spatial planning.

Institutional barriers in energy transition contexts are often the result of complex and nuanced interrelations between formal and informal institutions, both within individual sectors and in guiding the interactions between them. In response to these barriers, this study developed the concept of institutional harmonization as an approach, which focuses on cross-sectoral institutional change towards better alignment and coordination between the institutional frameworks used by actors from various sectors in energy transition contexts. Such harmonization is considered key to finding physical space for energy transition and ensuring a sustainable spatial configuration of RE in relation to other interests and users of space, across sectors and scales. Institutional harmonization was is this study considered to go beyond the mere adaptation and alignment of the 'rules of the game'. By highlighting the importance of the interplay between formal and informal rules of the game, this study shows that institutional barriers and opportunities are manifested and dealt with in a complex and nuanced process of interaction between actors. Therefore, truly understanding such a complex and nuanced process of interaction urges us to also shift attention to the 'play of the game' where the deliberations, interpretations and ideas of interacting actors regarding the 'rules of the game' can be studied. Consequently, agency-oriented approaches may provide important contributions to studying energy transition, particularly when focusing on interactions between actors and the patterns that result from these interactions in institutional change processes. Below, the main insights are presented that were derived from using and advancing these agency-oriented institutional theories in analyzing institutional harmonization processes in energy transition contexts.

A key finding of this study is that progressing institutional harmonization requires attention to both formal and informal institutions, as well as the 'play of the game'. Both formal and informal institutions and the interrelations between these various institutions can contribute to exacerbating or alleviating conflicts and contradictions between institutional frameworks across sectors, and should therefore be taken into account when pursuing institutional harmonization. Informal institutional changes were, for example, key in creating the settings (e.g., trust, changes in norms, procedures, agreements, and values regarding communication and interaction between parties) under which various actors also became more accepting of formal institutional changes. It was even observed that in some cases, creating a mutual understanding of rules might reduce the need for formal change. Therefore, interaction and open communication among sectors also proved necessary to establish which institutional changes were necessary or required. As such, institutional harmonization benefits from platforms that help establish norms for mutual interaction, communication and sharing of information; platforms that encourage an open and transparent 'play of the game'.

The understanding, deliberation, and ideas of interacting actors regarding 'rules of the game' in 'the play of the game' also need explicit recognition when pursing institutional harmonization. Institutional harmonization is more than just adapting formal or informal 'rules of the game', it clearly depends on, and is affected by, organizational cultures, routines, interpretations and ideas of actors, as well as their mutual interactions. The goal of institutional harmonization is to make the institutional complexity that is the result of various institutional frameworks more navigable for actors. This ability for navigation by various actors is not only affected by the formal and informal frameworks themselves, but also by the interaction between various actors and the meanings and interpretations they exchange and share. This observation requires a dynamic understanding of institutional change: such change is not only about transforming 'rules of the game' to different rules states, but also about a joint search by actors for ideas and mutual understanding of rule-sets, while taking into account how they relate to the broader institutional context. By taking into account both formal and informal institutions and the 'play of the game', institutional harmonization can provide a more dynamic and agency-oriented account of institutional change processes in energy transition and broader sustainability transition contexts.

Building on this dynamic perspective on institutional change, institutional harmonization processes prove to be of an incremental nature. Especially Chapter 4 and 5 indicated that institutional harmonization between RE and other sectors in practice was primarily pursued by actors through incremental institutional changes that took the form of policy layering. Formal institutional changes appeared to be important in forwarding institutional harmonization primarily by addressing policy gaps or adapting existing rules, as illustrated during the NSD by the development of new institutions such as the area-passport or rules surrounding passageways for shipping through wind farms. Simultaneously, examples of changes to formal roles and responsibilities remained very limited throughout the cases that were examined in this study. However, some boundaries seem to have become slightly more permeable. For example, the establishment of the permanent North Sea Dialogues seems to have provided potential opportunities for further institutional harmonization in the future.

This study also contributed initial insights into enabling conditions for actors to engage in institutional harmonization across sectors, although this does require further research (see Section 6.5). For example, this study argued that 'internal harmonization' regarding aims, ambitions, and responsibilities within sectors is necessary to enable cross-sectoral institutional harmonization. In one of the interviews for this study, it was stated that in energy transition contexts many actors 'only have one hand on the steering wheel', which indicated dependence on other parties. However, the direction in which to steer often remains unclear within sectors and organizations (see Chapter 2). This was corroborated by insights from the other chapters, which showed that internal harmonization occurred in various sectors throughout the NSD, such as the fisheries sector and NGOs (see Chapter 4). Moreover, a focus on internal harmonization within the offshore wind energy sector may well have been a cause for the sectoral focus of marine spatial planning efforts (see Chapter 3). Simultaneously, this strong focus on internal harmonization prior to institutional harmonization efforts might result in a dominance of certain values over others during cross-sectoral institutional harmonization. For example, the most important institutional frameworks (e.g., the Offshore Wind Energy Act) and core values that lay at the heart of this system were clearly maintained throughout later efforts at pursuing institutional harmonization in the NSD (see Chapter 5). This indicates that the distinction between the meta-level 'play of the game' regarding the 'rules of the game' and the operational game is not always clear. It seems that actors need to coordinate between the 'play of the game' on multiple interrelated boards, both within sectors, and between sectors. It is important to realize that organizations are comprised of institutions, and therefore, in themselves also have to deal with problems of institutional fragmentation. As such, while using the analytical abstraction of organizations as actors (see introduction) in the cross-sectoral meta-level 'play of the game', this study clearly acknowledges and encourages future studies to take into account the interrelations between the meta-level 'play of the game' and the operational-level 'play of the game'.

A final contribution of this study is the advancement of the concept of institutional space as the institutional counterpart of physical space for energy transition (see also Section 6.3.2). This concept emerges throughout this study and is informed by, among others, the observation that actors seemed better capable of pursuing institutional harmonization when discussions focused on a higher level of abstraction. Very concrete cases, particularly when issues were already disputed, caused actors to immediately refer to existing institutional frameworks and limit their capacity to reflect upon these frameworks: they started to 'play the game' on an operational level within the context of existing 'rules of the game', rather than the meta-game of changing these rules. Similarly, too high a level of abstraction brought too much uncertainty for parties, which created difficulties for them to oversee potential consequences of institutional changes. Therefore, it appears that, in the cases analyzed for this study, institutional space first increased with the level of abstraction in discussions, but later decreased (this will be further discussed in Section 6.3.2). Actors seem to be better able to navigate the complexity of various institutional frameworks on a more strategic level where they can agree on rules that ensure that certain processes and interests are taken into account and on how they interact with each other in the future.

6.3 DISCUSSION: FINDING PHYSICAL SPACE FOR ENERGY TRANSITION STARTS WITH CREATING INSTITUTIONAL SPACE

This study aimed to examine how actors pursue institutional harmonization for energy transition and the different institutional barriers and opportunities they encounter. Throughout this study, a number of concepts are developed that contribute to understanding the physical and institutional change processes in energy transition contexts. These concepts are (1) spatial integration, (2) institutional space, and (3) institutional harmonization.

6.3.1 Spatial integration of RE with other sea- and land-uses

The concept of spatial integration is used in this study to describe the substantive goal of spatial planning processes in relation to energy transition; i.e., the need to make renewable energy (RE) generation part of sustainable spatial configurations of sea- and land-uses. As elaborated in Chapter 4, spatial integration of RE and other sea- and land-uses should create a patchwork of functions and uses that can be physically integrated when beneficial, but that can also lead to conscious separation of functions when necessary. This concept focuses attention on the spatial outcome of energy transition across scales and sectors.

As explained in the introduction, spatial planning studies that address energy transition tend to take a local or regional perspective (Cajot et al., 2017; Hoppe & Miedema, 2020; Wiehe et al., 2020), which coincides with decentralization of spatial planning responsibilities. Simultaneously, in practice, many regions or cities are pursuing energy transition related questions and are profiling themselves – as well as competing among each other – for being the first and foremost 'hydrogen valley' (New Energy Coalition, 2020), 'solar highway' (Rijkswaterstaat, 2021), or 'becoming energy neutral' (E&E Advies, 2021; Universitätsstadt Tübingen, 2021). This study does not dispute that these local and regional scales are key to progressing energy transition and spatial planning, for example by creating integrated energy landscapes that focus on "the integration of smaller and larger sustainable energy production projects into the highly diversified physical and socio-economic landscapes" (De Boer & Zuidema, 2015, p. 7) (see also Kempenaar et al., 2021; Noorman and De Roo, 2011; Spijkerboer et al., 2016; Stoeglehner et al., 2016). However, these local and regional plans and actions need to be placed in a broader perspective on energy transition across scales. As explained by Cajot et al. (2017), the local and regional scale often do not coincide with the scales at which the energy system and other natural resource systems function. As such, it is necessary to explore how these local and regional initiatives can be guided by national and international frameworks, that take into account how these various projects and regions interact on a larger scale, including consequences, compatibilities and incompatibilities across sectors (also Wiehe et al., 2020). Institutional harmonization (see Section 6.3.3) is presented as an approach for improving these interconnections across scales.

This study proposed the concept of spatial integration to focus on the cross-sectoral and cross-scale consequences and demands of energy transition. Rather than arguing for broad policy integration at each scale, spatial integration manifests differently at various scales. At the local level, for example, spatial integration can manifest as combination or separation of functions that are the result of area-based approaches. However, enabling these local level area-based solutions often requires clear regional and national level frameworks that guide local level action. Simultaneously, these higher-level frameworks must offer institutional space (see section 6.3.2) for area-based approaches on local levels. This can be illustrated using the case of Rijkswaterstaat, discussed in Chapter 2, which showed that integration of PV with transport infrastructure networks at the local level also required national level harmonization between a number of relevant ministries. Simultaneously, this case also illustrated how strict frameworks at the national level might limit opportunities for area-based approaches because priorities at the national level can be incompatible with priorities at the local- and provincial level (e.g., uniform procedures versus room for citizen involvement). As such, Chapter 2 demonstrated in a bottom-up manner that spatial integration of RE with other sea- and land-uses manifests differently across scales.

Subsequently, Chapters 3, 4 and 5 illustrated that spatial integration is also about creating and harmonizing national frameworks to enable spatial integration across scales (from local to national). These chapters demonstrated that on the North Sea, spatial integration requires adaptation of national level frameworks for allocating various functions in relation to each other. The case of the North Sea Dialogues (NSD) showed in a top-down manner that adaptation of these national level frameworks is necessary to subsequently offer space for area-based approaches (e.g., the area-passport in Section 4.4.1). As such, while existing research typically identifies the institutional context as problematic in researching energy transition at the regional and local level (Cajot et al., 2017; Hoppe & Miedema, 2020), the concept of spatial integration helps to explicitly focus attention on the changes needed in this 'context' *across* scales and sectors.

The concept of spatial integration agrees with existing research in spatial planning (De Roo, 2018), environmental governance (Zuidema, 2016; Zuidema & De Roo, 2015) and land-use- and transport integration (Heeres et al., 2012; van Geet, Lenferink, et al., 2021), in which it is often argued that involving increased numbers of actors and interests calls for increasingly decentralized and area-based approaches. Cooperation and coordination in more collaborative planning settings is an essential part of these efforts (De Boer, Zuidema, & Gugerell, 2018). However, such collaborative efforts should not only focus on the local and regional level, but should also inform national level frameworks in which conditions are set for these local level actions and ideas. Existing theories that are used in spatial planning and environmental governance research, such as post-contingency approaches (Zuidema, 2016) and insights from complexity science (De Roo, 2018), can be helpful in further establishing the connection between centralized and decentralized approaches and decision-making in the highly political context of energy transition.

6.3.2 **Institutional space**

The term institutional space was used and defined earlier by Oteman et al. (2014) in the context of community renewable energy as "as the degree of discretionary freedom of community initiatives to decide autonomously about the design of a project (in terms of procedures and planning) and its contents (in terms of its goals and means). This includes not only the absence of constraints but also the presence of enabling conditions" (p.4). This study agrees with Oteman et al. (2014) that both constraints and enabling conditions are important for studying institutional space. However, this study expands on this concept by going beyond formal institutional constraints and conditions, towards explicitly including the role of informal institutions. Moreover, the concept of institutional space is broadened to explicitly include the various sectors and actors that use the physical space. Finding physical space for renewable energy projects, then, becomes interdependent with finding institutional space among the institutional frameworks that guide these actors from various sectors. As such, this study positions the concept of institutional space as the institutional counterpart to physical space in energy transition contexts.

The concept of institutional space emerges throughout this study (see Chapters 2, 4 and 5). Chapter 2 posed that by pursuing institutional harmonization, actors can organize space within and among the various institutional frameworks involved to enable the spatial integration of RE with other land-uses. Institutional harmonization (see Section 6.3.3) can thus be seen as a key process in organizing institutional space, by limiting the constraints of both formal and informal institutions and creating enabling conditions *among various institutional frameworks that guide actors from various sectors*. This emphasis was added because this study takes the stance that institutional space is something that objectively exists among the various institutional frameworks that guide actors. Simultaneously, it is important to acknowledge that various actors can subjectively perceive and experience this space differently. This is a notable difference from the perspective posed by Oteman et al. (2014) who connect institutional space to the perception and decisions of a single 'autonomous' actor group such as a community initiative. This study suggests that processes of institutional harmonization can, through intersubjective interaction among actors in the 'play of the game' (see also Chapter 5), change the formal and informal rules of the game that constrain institutional space, as will be further discussed in Section 6.3.3.

This conceptualization of institutional space is in line with Dorado (2005), who also argues that a distinction should be made between the objective condition of an institutional field (what she calls 'institutional opportunity') and actor's perceptions of these opportunities. She defines institutional opportunity as "the likelihood that an organizational field will permit actors to identify and introduce a novel institutional combination and facilitate the mobilization of the resources required to make it enduring" (Dorado, 2005, p. 391). As such, Dorado's (2005) theorizing on opportunity opaque, -transparent and -hazy organizational fields can be highly valuable for further theorizing on institutional space, particularly when energy transition requires involvement of actors from various sectors that have different institutional opportunities.

Chapter 4 concluded that institutional space is something that actors must actively perceive, pursue, agree upon and shape. Particularly when institutional space is constrained by existing formal responsibilities, it is often difficult for actors to claim this space. This suggests that understanding and potentially changing rules concerning boundaries (i.e., distinctions among actors that affect their access to resources and social opportunities (Zietsma & Lawrence, 2010)) is key to finding institutional space. However, insights from Chapter 5 suggested that these rules concerning boundaries may be notoriously difficult to change. Simultaneously, Chapter 4 and 5 of this study indicated that a platform such as the NSD might be an important enabling condition that could make boundaries more permeable. Interestingly, the NSD was initially only a temporary platform. This suggests interesting avenues for future research in the potential of 'soft spaces' (Allmendinger & Haughton, 2009; Haughton, Allmendinger, & Oosterlynck, 2013; Jay, 2018; Walsh, 2021b) for pursuing, perceiving and shaping institutional space, particularly when this space in constrained by existing formal responsibilities. These soft spaces could be very effective in enabling a transparent 'play of the game' among actors from various sectors regarding energy transition, and progressing formal and informal institutional changes over time.

An additional point of discussion relates to how institutional space is affected by an overload of rules (institutional overload) and by a lack of rules (institutional void). Chapter 2 illustrated that the cross-sectoral nature of energy transition can result in both institutional overload and institutional voids (also Grotenbreg and van Buuren, 2018). On the one hand, it might be expected that a lack of rules contributes to institutional space; after all, rules are often seen as a barrier to innovation (Grotenbreg & van Buuren, 2018; Sørensen & Torfing, 2011) and institutional voids might "create favorable conditions for active institutional innovation" (Salet, 2018, p. 2). One the other hand, Dorado (2005) stated that low degrees of institutionalization make it more difficult for actors to act strategically and grasp opportunities. The need for internal harmonization – that was illustrated in both cases that were analyzed in this study – indicates that a degree of institutionalization might very well be an important condition for creating institutional space. Moreover, Chapter 2 of this study showed that in the absence of rules regarding the role and responsibility of Rijkswaterstaat on energy transition, actors tended to refer to dominant organizational cultures that in this case limited institutional space for energy transition. These organizational cultures are an important part of the institutional rule-sets that make up organizations, and are comprised of formal and informal institutions that affect how actors 'play the game' on an operational level, but can simultaneously be subject to the 'play of the game' on a meta-level. This again points to the importance of additional research into how the 'play of the game' on the operational- and meta-level interact, and how this affects the balancing act of responding to institutional voids and overloads in pursuing, perceiving and shaping institutional space.

Moreover, Chapter 4 argued that institutional space can more easily be shaped when actors are trying to find solutions at a higher level of abstraction – albeit still on the strategic level, rather than during the design of specific projects. As described in Chapter 4, the results from this study illustrated that in cases of concrete projects, actor tended to refer to existing formal

and informal institutional frameworks, while their capacity to reflect on these frameworks appeared to be limited. These findings suggest that actors need to perceive, actively pursue, shape, and agree upon institutional space at various scales in an iterative and adaptive fashion, preferably prior to the start of concrete projects. However, in the cases analyzed in this study, many of the actors involved were already aware of the need for institutional change due to prior experiences with institutional barriers. In other cases, notably when actors that should be involved are not (yet) aware of the need for institutional harmonization, zooming in and experimenting on the local-level might enhance opportunities for institutional harmonization. In these situations, specific exceptions from rules might be possible in controlled circumstances. Scholarship on self-organization, for example by Hasanov and Zuidema (2018), could provide a useful starting point for further exploration of this train of thought.

An important last point of discussion is the cross-scale and cross-sectoral nature of institutional space, in line with the concept of spatial integration. This study indicated that for actors to perceive, use and shape institutional space, it is necessary to recognize (1) cross-sectoral interactions between various actors; (2) cross-scale interactions; (3) both formal and informal institutions; (4) the organizational cultures of involved actors; and, (5) the ideas, understanding and deliberations of interacting actors in the 'play of the game'. Because of this broad range of factors, institutional harmonization becomes a nuanced and dynamic interplay between actors from various sectors across scales (see Section 6.3.3.).

6.3.3 Institutional harmonization for creating institutional space

As discussed above, cooperation and coordination between various sectors is essential to spatial integration. However, such cooperation and coordination is often hampered by institutional barriers that are the result of a variety of formal and informal institutions that guide involved actors (Jehling et al., 2019; Lammers & Heldeweg, 2016; Negro et al., 2012; Spijkerboer et al., 2019). In existing literature – particularly in relation to environmental policy – the term 'policy integration' is commonly used to deal with fragmentation in policy frameworks and explore cooperation and coordination problems in multi-actor and multi-level contexts (Candel & Biesbroek, 2016; Jordan & Lenschow, 2010; Stead & Meijers, 2009; Stevenson & Richardson, 2003; van Geet, Verweij, Busscher, & Arts, 2021). Stead and Meijers (2009) pose that cooperation and coordination are part of integration processes, but policy integration requires "more interaction, accessibility, and compatibility, lead to more interdependence […] need more formal institutional arrangements, involves more resources, requires stakeholders to give up more autonomy, and is more comprehensive in terms of time, space and actors" (p.324). However, Stead and Meijers (2009) focus solely on formal institutions and do not use explicitly institutional perspectives. As explained in the introduction, existing literature on energy transition and sustainability studies calls for increased attention to institutions and institutional change (Andrews-Speed, 2016; Beunen & Patterson, 2019; Köhler et al., 2019; Lockwood et al., 2017; Sovacool, 2014b). Policy integration, at the very least, requires better alignment of

policy frameworks and is sometimes interpreted as merging policy frameworks into more holistic approaches (Candel & Biesbroek, 2016; Stead & Meijers, 2009; van Geet, Verweij, et al., 2021). This study proposes the term institutional harmonization to analyze similar processes of dealing with institutional fragmentation. However, institutional harmonization takes an explicitly institutional perspective, looking at underlying formal and informal rules, as well as how actors (re)shape and use these rules in the 'play of the game'. While harmonization processes might result in policy integration, this study shows that (enabling) a degree of cooperation and coordination often suffices for progressing spatial integration by creating institutional space among the relevant institutional frameworks across involved sectors. As such, institutional harmonization is conceptualized as the process of improving alignment and coordination between competing or alternative institutional frameworks across sectors and across scales: the process of finding, shaping and using institutional space during the 'play of the game' (see also 6.3.2).

Most importantly, institutional harmonization not only relies on formal institutional change, but can also be progressed through informal changes, such as changes in norms, codes of conduct and values related to communication, sharing of information and points of view, and the building of trust among involved actors (see Chapter 4). Institutional harmonization processes must pay attention to both formal and informal institutions and the interrelations between these various institutions in creating institutional barriers and opportunities across sectors, as illustrated in Chapter 2. As such, institutional harmonization requires consideration of the interaction between formal and informal 'rules of the game' and how these institutions are interpreted and deliberated by interacting actors in the 'the play of the game'.

As a result of these interactions between actors in the 'play of the game', institutional harmonization will rarely be a fully planned and intentional process. Instead, such harmonization seems to rely more on incremental institutional change (cf. Mahoney and Thelen, 2010; van der Heijden and Kuhlmann, 2017) where actors engage in a joint search for solutions, compatibilities and incompatibilities both in formal and informal institutions. This is also illustrated in Chapter 5, which revealed that institutional harmonization is often pursued by actors through small adjustments and new interpretations of existing rules, some novel practices, but also by creating the space for such discussions to continue in the future. An example is the use of process agreements in the case of the NSD, as discussed in Chapters 4 and 5. While not directly changing existing institutional frameworks, these process agreements created legitimacy for certain debates and solutions to be continued in the future.

As such, actors can find, use and shape 'institutional space' in energy transition contexts by pursuing harmonization of various institutional frameworks, and by ensuring that this process of harmonization can continue in the future. Thus, the concept of institutional space can be helpful both in indicating where and when institutional harmonization is necessary, as well as in evaluating the effectiveness of institutional harmonization efforts over time. When institutional space for balancing energy transition with other sea- and land-uses is constricted, institutional harmonization can help in improving alignment and coordination

between competing or alternative institutional frameworks across sectors and across scale, an thus help actors identify, shape and use institutional space. This study hints at the importance of platforms, such as the NSD, for organizing coordination and cooperation between actor groups. This is in line with a broad range of existing research in both institutional studies (Dorado, 2005; Sørensen & Torfing, 2011) and planning theory (Innes & Booher, 2015). Dorado (2005), for example, argues that institutional change through convening in collaborative arrangements is important for developing solutions for complex social problems. Institutional harmonization, thus, requires a mutual effort of multiple sectors to adapt and change institutions, not the effort of one sector to accommodate another. Consequently, institutional harmonization is a concept to study the joint search by actors for institutional changes that create institutional space and progress spatial integration between RE and other sea- and land-uses.

The goal of institutional harmonization is to make the institutional complexity that is the result of various sectoral institutional frameworks more navigable for actors, by helping them identify, shape, and use institutional space. Institutional harmonization does not necessarily require policy integration or joint-policies for various sectors (although these might be outcomes of harmonization processes). Rather it is about alignment and coordination between the various rules that guide these sectors through, for example, limiting contradictions in the (understanding of) various institutional frameworks, the norms and values regarding communication and information exchange among actors from various sectors, and the construction of platforms to enable coordination and cooperation between actors. Thereby, institutional harmonization can ensure well-informed decision-making regarding the balancing of various interests in cross-sectoral and cross-scale energy transition contexts and progress spatial integration. While this study focused primarily on the meta-level 'play of the game' regarding institutions, it will be interesting for future research to also study how actors can be empowered to deal with this complexity by further examining the interrelations between the operational level and meta-level 'play of the game' (see also Aoki, 2007, and Section 6.4.3).

As discussed above, the 'play-of-the game' focuses on actors' ideas, understanding, and use of the 'rules of the game' in interaction with other actors. As such, the 'play of the game' goes beyond the relatively static 'rules in use' that were conceptualized by Ostrom (2005), and provides a more dynamic account of how norms, ideas, understanding and deliberation among various actors shape institutional change processes. The need for such a dynamic perspective on institutional change is also acknowledged by Ostrom and Basurto (2011). As a consequence, agency-oriented institutional perspectives (e.g., institutional work (Lawrence & Suddaby, 2006) or discursive institutionalism (Schmidt, 2008, 2010)) may be well suited to studying institutional harmonization processes. As demonstrated in this study, these theories allow the researcher to take into account 'the play of the game'. Moreover, this study also advanced these theories particularly regarding the (cross-sectoral) interrelations between actors in pursuing institutional harmonization.

This conceptualization of institutional harmonization, as well as the observation that platforms such as the NSD might make boundaries more permeable to enable future harmonization, invite discussion regarding how boundary-spanning literature relates to the concepts proposed in this study. Boundary spanning literature deals with similar problems to the ones discussed in this study: many current societal challenges require cross-boundary interaction because they cannot be solved within traditional silos and jurisdictional boundaries (van Meerkerk & Edelenbos, 2018b). However, boundary spanning literature tends to focus specifically on the role, enabling conditions, and activities of individual boundary spanners (van Meerkerk & Edelenbos, 2018a) or policy entrepreneurs (Brouwer & Huitema, 2018). This study does not dispute the importance of insights in individual actors and agency in spanning boundaries and institutional change. There seem to be fruitful avenues for future research into the role of boundary spanners in institutional harmonization processes and in perceiving and using institutional space. However, the various chapters in this study, particularly Chapter 5, showed how institutional harmonization is the result of nuanced interactions between various interacting actors that deliberate, negotiate and form ideas regarding the formal and informal 'rules of the game' in what is called 'play of the game'. While some of the individual actors representing sectors might be classified as boundary spanners, the individual agency of these actors in realizing institutional change is likely to be limited, or at least mediated by interaction processes in the 'play of the game'.

In relation to the agency of actors (and also in relation to boundary spanning literature), it is important to discuss the role of intentionality in institutional harmonization. As illustrated in Chapter 5, institutional harmonization can hardly be seen as the result of intentional actions by one actor (cf. Beunen and Patterson, 2019). Rather, it is the result of interactions between multiple actors that interact, with forces that push for maintaining certain aspects while others desire the creation of alternative frameworks. Therefore, it is important to be sensitive to which actors are involved and their power relations. Moreover, in the cases discussed in this study, institutional harmonization is not the result of a clear strategy or pathway by actors, but also involves 'in-the-spur' responses to each other (e.g., the findings of Chapter 5 suggested that these responses are also affected by the responses of other actors, by experiences from previous interactions, and by related developments in other institutional fields that affect how actors perceive each other). This is another reason for further exploring and expanding on the use of agency-oriented institutional theories for studying institutional harmonization processes, particularly regarding the role of power and intentionality in shaping agency in institutional change.

While this study does not dispute that radical or transformative change may be necessary to forward energy transition, it did show that existing literature might too easily disregard the usefulness and reality of incremental changes in forwarding spatial integration (cf. Mahoney & Thelen, 2010). This study indicated that institutional harmonization tends to be spurred on by incremental changes, which is more aimed at consensus building, avoiding direct conflict between actors and searching joint solutions in an iterative and adaptive fashion. Existing literature, particularly in marine spatial planning, increasingly calls for radical change after concluding that current efforts do not achieve their goals and are not quick enough (e.g.,

Clarke & Flannery, 2019; Kelly et al., 2019; Moore et al., 2014). However, this study suggested that, when examining agency-oriented institutional change, very few actors would be in the position to realize radical or transformative change. This is related to the fact that institutional change, as illustrated in Chapter 5, is the result of interrelated institutional work by many parties in various directions. While individual actors may pursue radical institutional change, these actors will likely have to operate in a wider field of actors and power relations that will limit their opportunities for realizing their ideas. Therefore, this study proposed focusing on institutional harmonization and how it might be accelerated. The pursuit of alignment and coordination between various institutional frameworks ensures that different perspectives and interests are included in a joint search for solutions for the complex societal challenges, such as energy transition, that the world is currently facing. As such, the perspective called for in this study is more in line with Termeer et al. (2017), who reject a strong dichotomy between incremental and radical or transformative change, and argue for "continuous transformational change with a focus on enabling and accelerating small in-depth change" (p. 571). It will be interesting for future research to further reflect upon institutional harmonization as an approach to bring about such continuous transformational change.

6.4 REFLECTIONS AND A RESEARCH AGENDA

This section first reflects on agency-oriented institutional theories and the methods applied in this study. These reflections and the general contribution of this study to the theoretical debates on energy transition and spatial planning will provide input for a research agenda with recommendations for future research.

6.4.1 Reflections on agency-oriented institutional theory

This study applied and advanced agency-oriented institutional theories to explore the fine-grained reality of how actors in their interactions affect institutional harmonization. The agency of actors in institutional change is still disputed, with the 'paradox of embedded agency' featuring in many papers that develop more agency-oriented institutional theories (Battilana & D'Aunno, 2009; Lawrence & Suddaby, 2006; Seo & Creed, 2002; Zietsma & Lawrence, 2010). This paradox centers around the question: "How can actors change institutions if their actions, intentions, and rationality are all conditioned by the very institution they wish to change?" (Holm, 1995, p. 398). This paradox is rooted in the traditional understanding of institutions, which often see institutions as static and enduring structures that constrain actors. As a result, many neo-institutional theories tend to be better at explaining continuity than change (Schmidt, 2008, 2010). This is also reflected in existing energy transition research that apply institutional analysis, which favor relatively passive account of institutional change, such as historical accounts of changes in specific contexts (Kooij et al., 2018; Mahzouni, 2019) or generic recommendations for necessary change (Jehling et al., 2019; Judson et al., 2020). However, the agency of actors has been receiving increased attention in theorizing on institutional change in recent decades.

Agency-oriented institutional theories endogenize institutional change by focusing on the agency of actors as a key driver of institutional change. Institutional design is also a term that is often used to acknowledge that actors change institutions (E. R. Alexander, 2012; Klijn & Koppenjan, 2006). Schmidt (2008; 2010) uses the term discursive institutionalism to categorize theories that place ideas and discourse at the heart of institutional change. This study instead used the term 'agency-oriented institutional theories' because there are a range of theoretical approaches (e.g., institutional work and institutional design) that focus on the agency of actors in realizing institutional change without necessarily referring to ideas and discourses. Moreover, the use of terms such as discourse and ideas in relation to institutions runs the risk of being seen as overly constructivist, as also illustrated by Bell's (2012, 2011) critique of discursive institutionalism. Nonetheless, this study agrees with Schmidt (2008, 2010) that there can be serious drawbacks to the traditional accounts of change in neo-institutionalist theories (often related to exogenous shocks or path dependency) and that a focus on ideas, understanding and interaction between actors is also crucial to understanding institutional change. This is supported by the findings in this study regarding the importance of both formal and informal institutions, as well as the ideas, understanding and deliberation of various interacting actors regarding these rules in 'the play of the game' for institutional harmonization and for identifying, shaping and using institutional space.

This study also showed that while the agency of actors is key to understanding institutional change processes, it is important to not only focus on individual agency (e.g., boundary spanners as discussed by van Meerkerk and Edelenbos, 2018a), but also on the collective agency of interacting actors in institutional harmonization processes. This study indicated that such collective agency is derived from processes of co-evolution and learning in which the purposeful agency of various actors in light of their respective interests is reshaped during the 'play of the game'. Therefore, in further developing the concept of institutional harmonization, it might be useful for future research to search for cross-pollination with theories of self-organization (where fruitful combinations have already been made with the concept of collective intentionality by Hasanov and Beaumont (2016)), and organizational learning (Pahl-Wostl, 2009; Willems, Busscher, van den Brink, & Arts, 2018). These theoretical perspectives can help in further developing the more nuanced perspective on agency that was promoted in this study, where the agency of actors in institutional harmonization processes is also shaped in the interaction between various actors.

The insights from this study provide interesting pathways for further scholarly attention in combination with various other fields of study that deal with questions of how complex societal challenges such as energy transition can be influenced and managed, including theories of spatial planning (De Roo, 2018; Healey, Cars, Madanipour, & De Magalhães, 2017), transition management (Köhler et al., 2019; Rotmans, Kemp, & Van Asselt, 2001) and governance networks (Hajer & Versteeg, 2005; Klijn & Koppenjan, 2015). For example, based on insights from complexity theory, De Roo (2018) discusses the roles of purposeful action in a dynamic, unstable and uncertain world, suggesting a need for spatial planning

that focuses on setting transformative conditions. This study contributed initial insights into how interacting actors might shape such conditions in the 'play of the game' and how these conditions, in turn, shape the 'play of the game' (as illustrated by the importance of the initially temporary platform of the NSD, see Chapter 4). Moreover, the insights from this study resonate with transition management, which also tends to focus on interacting forces that push for stability and change (Rotmans et al., 2001), but which has given only limited attention to the 'play of the game' and the nuanced ways in which interacting actors shape and change the rules of the game (as also acknowledged by e.g., Köhler et al., 2019; Murto et al., 2020). The insights regarding the fine-grained reality of institutional harmonization processes that were illustrated in this study are relevant in providing more nuanced and detailed insights into the role of actors in these transition processes. Governance network theories are also concerned with inter-organizational coordination between governments and other actors (Klijn & Koppenjan, 2015). However, these theories mainly focus on horizontal relationships and not on the cross-scale dimensions of various governance networks (Klijn & Koppenjan, 2015). Particularly Chapter 2 of this study showed the importance of taking into account these cross-scale dimensions in understanding institutional barriers. Moreover, while explicitly mentioning that "initiatives for institutional design are interpreted, bent, and opposed" (Klijn & Koppenjan, 2015, p. 204), the fine grained reality of how actors in their interaction affect these initiatives remains understudied in this field, as also acknowledged by Klijn and Koppenjan (2015). This study provided important new insights into the 'play of the game' that show how actors can affect institutional change in interaction processes, which can contribute to filling these research gaps in studying governance networks.

The analytical framework in Chapter 2 showed that fruitful combinations between neo-institutional theories and agency-oriented theories are possible and that they can provide useful insights for theory and practice. Such combination might even be necessary to enable application of these agency-oriented frameworks to the complex empirical settings that are at the heart of integrated spatial and energy planning. Many of the existing agency-oriented institutional theories were developed and tested in empirical settings that focus on a single organization or institutional field with relatively clearly demarcated boundaries and actors that appear to have relatively unclouded positions and interests. Spatial planning and environmental governance often deal with much more complex empirical settings that encompass a broader range of scales and actors, leading to unpredictable circumstances and dynamics in cases that span boundaries (Beunen & Patterson, 2019; De Roo, 2018). As a result, it is difficult to capture the nuances and complexity of these empirical settings using existing institutional theories and frameworks. Therefore, a degree of flexibility and creativity is sometimes necessary when applying frameworks that were often developed and applied in less complex settings. While combining agency-oriented theories with more traditional institutional theories has advantages (cf. Schmidt, 2008, 2010), it is important to be aware of the potential (in)compatibility of key assumptions underlying each of these frameworks. The Frameworks developed in Chapter 2, for example, is inspired by both the 'action situation' of the IAD framework by Ostrom (2005), as well as the idea of discursive institutionalism as developed by Schmidt (2008; 2010). However, this study mainly drew upon the structure of

the action situation of the IAD framework as the space where actors interact and how this space is structured by different types of rules. Discursive institutionalism, on the other hand, focuses explicitly on interaction between actors in progressing institutional change, but theoretical frameworks that help study these interactions are relatively limited. Therefore, the concept of the action situation and the various rules were used to provide structure to an analytical framework that studied both formal and informal 'rules of the game', as well as the understanding, ideas and deliberation of actors regarding these rules.

Such theoretical advancement can enable further application of these agency-oriented institutional theories, thereby providing a useful contribution to the theoretical toolbox of spatial planning, which is concerned with transformation of the socio-spatial environment and the development of institutional frameworks that help achieve these transformations. The analytical framework in Chapter 2 contributes mainly in analyzing institutional barriers and identifying opportunities for institutional harmonization. While this framework provides a valuable contribution in creating a nuanced understanding of the institutional barriers that actors encounter when pursuing spatial integration between RE and other land-uses, this framework does not yet show the fine-grained reality of how actors pursue harmonization and through their interactions change these frameworks to create institutional space. Therefore, Chapter 5 draws on institutional work theories (particualrly Zietsma and Lawrence, 2010), to further develop insights into the fine-grained reality of how actors in their interaction work at maintaining, disrupting, defending and creating institutions. As indicated above, there are fruitful avenues for further scientific exploration in combining these agency-oriented theories with insights from complexity theory in spatial planning (De Roo, 2018) to further elaborate on how these patterns of interaction are connected to more autonomous change processes.

Agency-oriented institutional theories are based on the assumption that institutional change is – at least to a degree – the result of intentional and deliberate action by actors. However, the role of intentionality in these theories requires additional reflection, particularly when considering the role of autonomous change. This study showed that institutional barriers and institutional harmonization are the result of a nuanced interplay between existing formal and informal institutional frameworks and the various ideas, deliberations and understanding of interacting actors in the 'play of the game'. As such, institutional change in the cases that were studied was rarely the result of intentional action by a single actor or organization. Rather, as illustrated by Chapter 5, it was the result of interaction, deliberation, negotiation, the setting and weighing of priorities, and even 'spur of the moment' responses. These responses could be influenced by emotions and 'institutional detritus' (Schneiberg, 2007) from previous interaction. As also questioned by Beunen and Patterson (2019), is it possible to distinguishing between deliberate actions and other actions and communications by actors that affect institutional change? And how to account for the effects of unintentional actions of disparate actors? While not fully solving these issues, this chapter does contribute some answers to these problems. While some of the answers to these questions are methodological (see Section 6.4.2), a major contribution of this study is the focus on patterns that are the result of interaction between various actors in Chapter 5. By focusing on

patterns that were the result of institutional work by various actors, the focus of the analysis was shifted away from the deliberate actions of one actor and towards how institutions were shaped through interactions between more or less deliberate actions of various actors in the 'play of the game'. This study expands analysis of institutional change in energy transition contexts from a dominant focus on the rules of the game towards including the 'play of the game'. Future research could also draw on theories on frame-reflection to examine the extent to which differences in frames between various actors in these interaction processes and patterns are bridged (Schön & Rein, 1994) and to what extent these patterns of interaction draw upon and lead to existing and new discourses (Hajer, 2002).

6.4.2 Reflections on methods

This study adopted a qualitative research approach based on two in-depth case studies: (1) the case of integrating solar photovoltaics (PV) with national transport infrastructure' and (2) the case of integrating offshore wind farms (OWF) with other sea-uses. These cases are distinct with one looking at the offshore and one looking at the onshore context. Compared to the onshore contexts, offshore there is a relatively limited number of actors and offshore space in the Netherlands is managed by the national government with an additional, but very limited, role for provinces and municipalities concerning coastal issues. Moreover, comprehensive spatial planning for the offshore context is a relatively new endeavor and institutional frameworks for such comprehensive planning are still under development. However, both cases shed light on the same issue: how actors pursue institutional harmonization between renewable energy generation and other sectors and the institutional barriers and opportunities they encounter to achieve spatial integration between RE and other sea- and land uses. The distinctly different context of these cases, therefore, can be argued to strengthen the findings, because it shows the applicability and relevance of the insights from this study for both onshore and offshore contexts. Moreover, this study is one of the first to provide an in-depth analysis of Dutch marine spatial planning, which – despite the Netherlands being one of the first countries to adopt MSP – was notably absent in most existing literature, with the exception of mentioning the Dutch case in comparisons of MSP efforts (e.g., Douvere and Ehler, 2009; Jay, 2010; Platjouw, 2018).

The fact that both cases focus on the Dutch context has created a bias towards the Dutch context in the results. However, the Dutch case is highly relevant in relation to the research problem, because the lack of physical space in densely populated countries such as the Netherlands reinforces the need for institutional harmonization, if space for energy transition is to be found. Moreover, these problems in finding physical space for renewable energy (RE) onshore have created a strong push for offshore wind farm (OWF) development on the already intensively used North Sea. The recent sixth IPCC assessment report (IPCC, 2021) again strengthened the urgency of the worldwide quest for sustainability and low-carbon energy solutions. This requires not only technological development but also a strong focus on how these technologies and practices can be implemented in space and society – this is not only true for the Netherlands, but it is a global quest in which developed countries should take a leading role (as also stipulated in the Paris Agreement). This study contributes to the

search for institutional designs that enable energy transition but also wider sustainability transitions, where developments in both the onshore and offshore context will be key. The theoretical concepts and insights into the nature of institutional barriers and harmonization processes, therefore, may have a broader relevance for other countries. Consequently, recommendations regarding the use of the theoretical concepts developed in this study in other countries are an important part of the research agenda. Similarly, application of these concepts in different empirical settings could provide additional insights in nuances and conditions that will help to further refine the concepts of spatial integration, institutional space, and institutional harmonization. This study provides an important first step in positioning these concepts and illustrating their usefulness for progressing energy transition and broader sustainability challenges and calls for additional theorizing and empirical studies to further expand and refine these concepts.

This study employed a variety of qualitative research methods, including in-depth interviews, a focus group, policy document analysis, and participatory observation. These qualitative methods enabled the analysis of perceptions, interactions, values and lived experiences of actors (Yin, 2014). However, qualitative methods, particularly retrospective methods such as in-depth interviews and focus groups, capture subjective views. Appendices A1.1, A1.3 and A2.6 show that interviews and the focus group were predominantly held with policy makers from various national government departments and organizations. Other involved parties such as grid operators, consultants, and energy companies were interviewed but received less priority in the first stage of the research. Therefore, the results of this study from Chapters 2 and 3 might have some bias towards institutional barriers experienced by government actors. On the other hand, Chapters 4 and 5 were based on observation of interactions of a broader range of actors, including representatives from NGOs, the fisheries sector, the fossil and renewable energy sector, ports, the grid operator, as well as various ministries.

Many studies related to spatial planning rely on *policy* document analysis, often to complement other methods, but sometimes as a distinct method of doing qualitative research (e.g., Lammers and Heldeweg, 2016; Neef et al., 2020; Spijkerboer et al., 2020; Willems et al., 2016). However, policy document analysis does not seem to be widely recognized as a specialized method of qualitative research (Bowen, 2009). Some guidance can be found when looking for broader 'document analysis' and 'content analysis' (e.g., Robson, 2011), but this does not take into account the specific nature of policy documents as a reflection of an often negotiated political reality at a specific point in time. Due to the wide application and the broad availability of policy documents online, and the experience regarding the usefulness of this type of analysis, it seems that additional engagement with and guidance on the distinct nature of policy document analysis as a qualitative research method in spatial planning publications and education might be called for. Based on the analysis for this study, an important point for refinement and guidance is related to the distinct nature of policy documents. These documents reflect dominant discourses and frames at a specific point in time, but it is important to realize that these are often highly

political and likely shaped by and a response to recent public debates, media attention and experienced 'crises' (this seems particularly relevant when examining policy memos). The distinct nature of policy documents requires that any analysis of these documents is sensitive to the political context in which they were developed.

Participatory observation as a research method provided highly useful insights into the real-life and fine-grained reality of institutional harmonization processes in this study. Particularly when studying institutional work, many of the commonly used retrospective methods such as in-depth interviews run the risk that "success might be over-claimed by arguing in hindsight that change processes followed a backwards-constructed plan" (Beunen & Patterson, 2019, p. 17). This study showed that the use of observational methods, particularly when studying the role of actors in institutional change processes, can provide valuable insights into interactions and actions by actors in real-life and real-time contexts. By using this method, this study responded to calls for more engagement with real-world actors and real-time studies in sustainability transition research (Köhler et al., 2019; Murto et al., 2020). However, the use of and reflection upon observational methods in sustainability transition and spatial planning literature appears to be limited. While observational and participatory methods have been applied in planning research – think for example of the extensive observation that lies at the heart of Jane Jacobs (1961) *'the Death and Life of Great American Cities'*, their main contribution is to "identify stakeholders, understand values and interests, uncover local knowledge, and gage the perceived legitimacy of the proposed plan or sponsor goal" (Pinel, 2014, p. 170). The use of participatory methods to study real-time actor interactions, negotiations, and decision-making in ongoing policy-making is rare. When observation is used to study planning processes, it is often used to observe a few meetings in addition to other methods such as in-depth interviews (e.g., van Hulst, 2012). In these cases, reflection upon observational methods often remains limited and the focus is not on the micro-level interactions that are also important for understanding planning processes.

There are practical reasons for the limited engagement with observational methods in studies concerning planning processes and transition studies (Murto et al., 2020), which also had to be dealt with in this study. For example, it can be difficult to get access to these meetings, due to political sensitivity. Moreover, there are ethical considerations related to the use of observational methods. In the case of the North Sea Dialogues (NSD) in this study, the secondment agreement (see Section 1.6.5) included a supplement with agreements on the use of observational data and at the first and last meeting attended by the researcher, the position of both researcher and staff member was explained. The support of both the university and responsible ministry department for this arrangement was therefore crucial in enabling this research and helped deal with a number of ethical issues. Another limitation is that these observational methods can be extremely time-consuming. For this study, the researcher was immersed in the processes of creating the NSD for nine months. However, policy-making processes will likely take longer than the time available for data collection. In the case of the NSD, observational data was collected for the process of coming to a 'negotiators agreement'. However, after the period of observation ended, it proved to take

another year for the agreement to be voted through parliament and in the meantime, the fisheries sector decided not to sign. While this does not reduce the relevance of the data that was collected, it does indicate that it is difficult to capture the entirety of policy-making processes, let alone the spatial outcomes of such processes. Nonetheless, the participatory observation in the NSD case led to a very rich data set in which personal notes on the whole process were complemented by a large amount of experiential data to provide unique insights into a high-level political negotiation process that will likely form a basis for North Sea policy for the coming decade in the Netherlands. For future research, it would be interesting add in-depth interviews to also capture the ambitions, and reflections of stakeholders on this process.

A final point that requires attention according to Kapinga et al. (2020), is reflection on the social process and context surrounding the collection and analysis of data. It is essential to engage in reflexivity regarding the position of the researcher during the collection and analysis of qualitative data, particularly from an epistemological stance within critical realism that knowledge is situational and subjective. Qualitative researchers are interested in capturing the perceptions, interactions, values and lived experiences of actors, but these perceptions are always captured, observed, and interpreted by the researcher. This is most notable in this study in the case of the North Sea Dialogues (NSD). It is important to note the fluid character of positionality, rather than a static listing of 'desirable' answers and justification regarding the insider and/or outsider position of the researcher (P. E. Hopkins, 2007; Kapinga et al., 2020). Hopkins (2007) emphasizes that "reflexivity has little purpose unless it is connected to a wider purpose and agenda about how the world should be, and how the world needs to change" (p. 387).

In the case of the NSD, the role of independent staff member enabled the researcher to facilitate and contribute to the process in which various stakeholders aimed to come to an agreement regarding the future of the North Sea. This was of mutual benefit, since the researcher's extensive and independent knowledge of marine spatial planning and offshore wind development in the Netherlands, as well as general skills in collecting and summarizing large amounts of information were very useful in this process. Simultaneously, the process of the NSD was a unique opportunity for data collection. While the interests of the researcher was more of a 'descriptive-analytical' nature (Wittmayer & Schäpke, 2014), the role of the staff member also allowed the researcher, within the context of the independent staff, to discuss potential ideas and solutions for impasses between actors. The contribution of the researcher mainly took the form of suggesting potential synergies or highlighting contradictions when changing the agreement texts after meetings and suggestions by actors during the NSD. As such, the staff's main interest was to facilitate actors in coming to an agreement, and in ensuring that different options and ideas were explored to achieve this. Over the course of the observation, the researcher shifted from a more outsider perspective at the start of the process towards an insider perspective towards the end of the process. To limit 'insider bias', where normalization of the context may constrain the researcher in their descriptive-analytical role (Greene, 2014), the researcher held regular meeting with

the supervision team throughout the process of data collection and analysis. During these meetings, the team reflected upon and discussed the main experiences, observations, and initial findings.

6.4.3 Towards a research agenda: recommendations for future research

This section will start with recommendations for wider application and comparison of the findings from this study, followed by recommendations for theory. The final paragraph will provide suggestions for methodology in planning research and education.

This study examined institutional barriers and processes of institutional harmonization for two cases in the Netherlands, one of which was cross-sectional (the case of RWS), the other longitudinal (the case of the Dutch North Sea and the NSD). As indicated in the reflection (Section 6.4.1 and 6.4.2), future research could compare and further develop the concept of institutional harmonization in different national contexts, both onshore and offshore, since the quest for sustainability – and energy transition – are global challenges. Institutional harmonization processes will likely differ depending on the specific socio-spatial context of various countries, and it would be highly valuable to gain insight in these similarities and differences (cf. Wu, Zuidema, & Gugerell, 2018). Moreover, while this research focused on balancing RE with transport infrastructure onshore, and various other sectors offshore, future research could apply and further develop the concepts from this study to a range of other sectors and related sustainability transitions, such as the transition towards low-carbon housing (van Doren et al., 2020), circular economy (Schulz et al., 2019), or climate adaptation (Tompkins et al., 2010). The concepts from this study can help provide new empirical insights into the role of actors for institutional harmonization in these various contexts. Simultaneously, these new insights can contribute to further refinement of the concepts of spatial integration, institutional space, and institutional harmonization.

While this study mainly focused on renewable energy generation, this topic can never be fully disconnected from the issues and problems that energy transition causes for electricity- and energy grids, transportation, and storage (e.g., Jay & Toonen, 2015; Lammers & Hoppe, 2019; Nieuwenhout & Müller, 2021). This is also related to potential future energy carriers such as hydrogen (Rosen & Koohi-Fayegh, 2016). While oil- and gas infrastructure has been a major topic of studies in for example, studies concerning international relations (e.g., Johnson & Derrick, 2012), the implications of energy transition for the development of renewable energy infrastructure are a relatively recent topic of study. Often these studies tend to approach these issues from a technological (Egerer, Gerbaulet, & Lorenz, 2016), economic (Brancucci Martínez-Anido et al., 2013), and legal perspectives (Nieuwenhout & Müller, 2021). The difficulties with public acceptance of these infrastructure projects have also been problematized (Sharpton, Lawrence, & Hall, 2020; Steinbach, 2013). As such, the search for physical space and institutional harmonization is also key in these debates (as also illustrated in Chapters 4 and 5 of this study by debates regarding grid connections for offshore wind during the NSD). While there are some studies on community micro-grids that use institutional

perspectives (Lammers & Heldeweg, 2016; Wolsink, 2012), the concepts developed in this study could be useful in further exploring the institutional dimensions of larger-scale and transnational grid-expansion, as well as how these large-scale developments connect to local levels. Moreover, future research could, for example, examine the barriers and opportunities for institutional harmonization to enable grid expansion and investment to be balanced with the want and needs of other sectors and actors that both use and supply electricity.

A final recommendation regarding the application of the findings from this study concerns the development of platforms such as the NSD. As indicated in the conclusion, this platform was a key enabler for organizing institutional harmonization, but initially it was a temporary platform. Simultaneously, this platform received wide support and received funding that enabled the hiring of an independent chair and supporting staff. Linking up with existing research on 'soft spaces' (Allmendinger & Haughton, 2009; Haughton et al., 2013) could provide promising avenues for future research into the possibilities for organizing platforms such as the NSD in various contexts, and how these platforms can contribute to institutional harmonization. A similar recommendation, as already discussed in Section 6.3.3. is to seek connections to literature on boundary spanning. This might also allow for additional theoretical development on the distinction between the analytical generalization of organizations as actors (Hodgson, 2006), and the role of individual actors in institutional harmonization processes.

Besides wider application of the concepts developed in this study in a variety of contexts, there are also a number of suggestions for theoretical development. First, the concepts of spatial integration, institutional space and institutional harmonization each require further exploration and the development of tools for further operationalization. This is particularly the case for the idea of institutional space as way of assessing and evaluating institutional harmonization processes. While this study provides initial insights into how institutional space forms the institutional counterpart of physical space for energy transition, further theorizing is necessary to enable assessment of how actors perceive, shape, and use institutional space in specific situations, and the role of formal and informal institutions in these dynamics. It would be particularly interesting to develop additional insights in the potential role of local experiments in creating temporary and specific exceptions to rules and how this might affect institutional harmonization processes and enable actors in perceiving, shaping and using institutional space (Hasanov & Zuidema, 2018).

This study mainly draws on discursive institutionalism and institutional work to study institutional harmonization. However, one of the main insights from this study was that institutional harmonization relies mainly on incremental institutional change, where actors mainly focus on informal changes, filling policy gaps and policy layering. Additional empirical studies in different contexts (both different countries and different sectors) are necessary to further substantiate these findings. However, based on the insights from this study, it appears that broader engagement with agency-oriented institutional change theories that focus on incremental change (Mahoney & Thelen, 2010) could strengthen the conceptualization

and understanding of institutional harmonization processes. Another promising avenue for future research is the combination of theories on institutional logics (Thornton, Ocasio, & Lounsbury, 2012b) and how actors deal with the multiplicity of institutional logics in institutional harmonization processes (cf. Besharov and Smith, 2014). Other suggestions for future research would be to connect theorizing on institutional work and discursive institutionalism to research on institutional capacity building to further explore how to enable institutional harmonization processes in various contexts (Healey, 1999; Healey et al., 2017).

Insights from this study would suggest that both in expanding the application of the theories applied in this study, as well as when exploring these new theoretical angles, future research should explicitly take into account and expand on the role of intentionality of actors in institutional harmonization processes (Beunen & Patterson, 2019). Another issue that is touched upon in this study but that requires further exploration is how power relations affect (cross-sectoral) interaction and institutional harmonization processes (Avelino & Wittmayer, 2016; Beunen & Patterson, 2019). These questions regarding intentionality are also related to the distinction and interaction between the operational and meta-level 'play of the game' (Aoki, 2007). Whereas this study focused primarily on the meta-level, insights from this study suggested that the distinction between these two levels is not always clear and that they affect each other. A possible solution for the 'cooperation paradox' (described in section 6.2 where cross-sectoral cooperation and coordination is hampered by institutional barriers, while such cooperation and coordination both within and across sectors is also necessary to solve these barriers) might be found in the games played on these different levels.

Based on the insights and experiences while executing the research for this study, there are two methodological recommendations for future spatial planning research and education. First, this study calls for more engagement with the distinct nature of policy document analysis as a qualitative research method, for example through dedicated publications on this topic in journals such *Planning Education and Research*. Policy document analysis is used widely within spatial planning research, but it is difficult to find methodological guidance on this topic. Second, this study recommends further exploration of opportunities for the use of observational methods in planning and sustainability research, particularly related to policy-making processes.

6.5 RECOMMENDATIONS FOR PRACTICE

Pay explicit attention to the interaction between institutional space and physical space
Finding physical space for energy transition is difficult and examples of protest and other difficulties surrounding projects for renewable energy generation and grid reinforcement are plenty (Neukirch, 2016; Temper et al., 2020). This study suggests that in order to find physical space for energy transition, it is necessary to also take into account its institutional counterpart: institutional space. In line with Salet (2018), this study acknowledges that institutions, being rather abstract, are rarely explicitly the focus of practitioners who aim to solve 'real problems'. However, various informal conversations with practitioners showed that the concept of institutional space resonates with the experiences of practitioners in energy transition and other sustainability contexts. These practitioners noticed that their organizations only have partial control over RE projects and that cross-sectoral cooperation and coordination with other parties is necessary. However, such cooperation and coordination are often hampered by institutional barriers that pose constraints and the absence of enabling conditions. In such cases, the institutional space for RE development appears to be narrow, which limits opportunities for finding physical space for RE. As such, the concept of institutional space can point the attention of practitioners and decision-makers towards potential barriers and opportunities for harmonization. Knowing major institutional barriers that limit institutional space and how they are related to existing formal and informal institutional frameworks is an important first step for institutional harmonization. Chapter 2, for example, showed a case where there was limited institutional space because of numerous barriers, which could be boiled down to a few major barriers, including the lack of a clear target in combination with a risk averse organizational culture. As a result, a recommendation could be to provide clear targets for RE to organizations such as Rijkswaterstaat and connect these targets to the organizational culture by ensuring that not meeting these targets becomes part of perceived 'risks' to projects. Such insights can provide legitimacy for institutional change and improve the effectiveness of this change because it is clearer where such change is necessary (for example, the need to address formal and/or informal institutions, in which sectors and at what scales).

Institutional harmonization for cross-sectoral and cross-scale institutional change
The complex challenges posed by energy transition and other sustainability transitions require spatial planners to deal with questions of institutional change and development. Since these transitions cross sectoral boundaries and various spatial scales, institutional changes should take into account these cross-sectoral and cross-scale interrelations. Institutional harmonization was conceptualized in this study as the process of improving alignment and coordination between competing or alternative institutional frameworks across sectors and across scales. As such, institutional change for progressing energy transition in a balanced manner becomes a joint responsibility of various sectors. In the case of the NSD, for example, all parties who signed the agreement shared the perception that the total package

of changes was an improvement compared to the situation prior to the NSD, despite the fact that the agreement also included institutional changes that went against the direct interests for each of the actors involved. While this study does not dispute that radical change might be necessary in certain instances, the opportunities offered by incremental change through institutional harmonization should not be disregarded. Continuous incremental institutional change with smaller adjustments of existing frameworks and policy layering seem to offer feasible solutions that are more likely to gain support in political arenas and society at large. Such changes could include the creation of temporary platforms or soft-spaces, such as the NSD, that allow for explicit deliberation on the rules of the game. Another option would be to examine the use of such platforms to relax specific rules and allow for experiments that could be considered more radical. For example, the establishment of a permanent NSD, as a result of the initially only temporary platform of the NSD, could be seen as a more radical change in the governance of the North Sea. However, even these smaller initial changes do require leadership, commitment, and resources. As such, it is important for actors from various sectors to reflect upon their potential role in such platforms related to energy transition and to commit to finding solutions within the context of such platforms. For government actors, there is an additional role in accommodating the establishment of such platforms and in commitment to the implementing outcomes and potential changes in formal 'rules of the game', including policy documents and regulations.

Take into account the 'play of the game' and both formal and informal institutions
This study convincingly showed that understanding institutional barriers requires an understanding of not only the formal institutions, but also informal institutions, as well as the ideas, understanding and deliberation among interacting actors regarding these institutions in the 'play of the game'. In finding space for energy transition, it is key that various actors create a mutual understanding of problems and opportunities. The case of the North Sea Dialogues illustrated that a transparent 'play of the game' among actors, was important in enabling institutional harmonization.

This study indicated that a platform such as the NSD, which can even be a temporary platform or 'soft space', is a useful tool for enabling such a mutual understanding and exchange to be developed among actors. This also calls for practice to experiment with the use of soft spaces (see also the research agenda 6.4.3). There are a few recommendations regarding the nature of such platforms or soft spaces based on observations from this study. These platforms should consider: serious commitment from all governmental and non-governmental parties that take part and a willingness to compromise; some financial backing to support the organization of face-to-face meetings; a staff for preparation of meetings and to guide discussions; a manageable number of participants to enable participants to 'get to know each other'; political support to ensure that results are at least having an impact and cannot just be shoved aside. As such, these platforms can create a game-board where the game can be played in an open and transparent way, which helps create mutual trust and understanding among sectors and actors.

Another recommendation is related to the phase in the planning process where these platforms are most useful and where institutional harmonization appears to achieve most results. Based on the results from this study, it appears that these interactions are most feasible when they focus on a more strategic level, where the various institutional frameworks can be aligned through a mutual exploration of compatibilities and incompatibilities, on the basis of which enabling conditions can be created and constraints can be limited. This means that such platforms preferably need to be organized before the project phase in more strategic phases, because this study showed how concrete projects seem to limit actors' capacity to reflect on the current institutional framework. However, this study also indicated that this reflective capacity appears to be more limited for cases that are still surrounded by a high degree of uncertainty regarding their (technological) feasibility. In these case local experiments and might provide opportunities as indicated in the research agenda (Section 6.4.3)

Do not let the urgency of energy transition eclipse the interests and needs of other sectors
As shown by the recent sixth IPCC report and the global response to this report, the urgency of tackling climate change, and the shift towards a low-carbon energy system, are undeniable. Particularly in light of this urgency, however, there is a risk of a narrow focus on RE policy and targets in countries around the world. As argued in Chapter 3, such a narrow focus might enhance resistance to these changes and even limit physical space for energy transition, which in turn could delay the meeting of these targets. Therefore, this study would recommend that the enhanced sense of urgency is also used to establish, for instance, a network of platforms or soft spaces at various scales, where the interests, spatial requirements, compatibilities, and incompatibilities of various sectors are communicated and barriers are identified and limited. The 'regional energy strategies' in the Netherlands are examples of such platforms, but these are relatively disconnected from each other, and focused on implementation on the regional level. Instead, such platforms could be established on multiple scales and preferably be of a more strategic nature. The enhanced sense of urgency can contribute to creating commitment from various actors from various sectors for institutional harmonization between RE and other sectors, thereby enabling actors to perceive, shape and use institutional space and, by extension, physical space, for energy transition.

6.6 EPILOGUE

While it is unlikely that all parties will commit to institutional harmonization processes, I do believe that the less conflict-oriented nature of institutional harmonization on the mid-term, strategic level will contribute to spatial integration of RE and other sea- and land-uses. I also acknowledge that the radical and transformative changes that are widely called for might be necessary in certain instances, but it is likely that such radical change will also enhance distinctions between sectors and create increased resistance among

certain actor groups which, in turn, can limit physical space for renewable energy. Society is becoming increasingly polarized as is also indicated by the current Covid-19 pandemic and the societal responses to this pandemic. On the mid- to long term, particularly when talking about structures such as wind turbines or solar PV that will likely shape the built environment for the coming decades, various interests and actors that use this space need to be balanced against each other. Focusing solely on energy transition without acknowledging and balancing these interests is likely to enhance resistance which might further delay the meeting of RE targets. As such, the benefits and reality of institutional harmonization and more incremental institutional changes should not be disregarded too easily because this approach might prove more constructive and even faster in realizing actual change by creating institutional space, and by extension physical space for energy transition.

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Appendices

A1 Appendices chapter 2

A1.1 Overview interviews

Code	Interviewees and discussion sessions
I1	Interview employee Rijkswaterstaat WVL 1
I2	Interview employee Rijkswaterstaat WVL 2
I3	Interview employee Rijkswaterstaat WVL 3
I4	Interview employee Rijkswaterstaat corporate staff
I5	Interview employee Rijkswaterstaat regional department
I6	Interview employee Rijkswaterstaat regional department
I7	Interview employee ministry of Infrastructure and the Environment
I8	Interview employee grid operator
I9	Interview employee Central Government Real Estate Agency
I10	Interview employees consultancy firm
I11	Interview employee energy company
I12	Interview employee Groningen Province
I13	Interview employee Drenthe Province
I14	Interview employees Friesland Province
F1	Focus group – see Appendix 1.3

A1.2 Interview guide Chapter 2

Introduction of the research regarding energy projects on lands managed by RWS and informed consent

Algemeen [general]

- Wat is officieel uw functie en in hoeverre speelt energie hierin een rol?
  [What is your task and what role does energy play in it?]

Acties en resultaten [action and results]

- Waarom houdt uw organisatie zich bezig met energieprojecten op RWS areaal en welke rol speelt uw organisatie hierin?
  [why is your organization involved in energy projects on RWS lands and what role does your organization play?]
- Welke energieprojecten spelen er binnen uw organisatie?
  [Which energy projects are currently going on your organization?]
- Op welke typen energie ligt de nadruk en waarom? (prompts: Kennis/ervaring/bewijs/competenties)
  [Is there a focus on certain types of energy and why?] [prompts: Knowledge, experiences, competences]
- Hoe gaat uw organisatie te werk als het op energieprojecten aankomt? En waarom zo?
  [How does your organization approach energy projects? And why do you take this approach?]
- Welke kaders spelen een rol als het gaat om energieprojecten voor uw organisatie en wie zet deze kaders? (pompt: beleid op hoger niveau, rol van organisatie in het zetten van kaders, wat staat er vast en wat kan en mag er nog?)
  [Which frameworks are important for energy projects concerning your organization? And who is involved in making these frameworks?] [indicators: policy, both RWS and higher level, is there any room for flexibility in these frameworks]
- In hoeverre heeft uw organisatie vrijheid om te experimenteren? Hoe verhoudt zich dit tot programmeringen (bij RWS bijvoorbeeld voor de SLA en MIRT) die voor een aantal jaar worden vastgesteld?
  [To what extent does your organization have the freedom to experiment? How does this relate to existing programs (e.g., for RWS SLA and MIRT) that are laid down for a number of years?]

Actoren en informatie [actors and information]

- Welke partijen zijn er nog meer betrokken bij energieprojecten en wie is de initiatiefnemer van dit soort projecten?
  [Which other parties are involved in energy projects? And who is the initiator of these type of projects?]

- Welke rol speelt uw organisatie hierin, en welke rol ziet u weggelegd voor uw organisatie in de toekomst?
  [What role does your organization have in these projects? And what role do you think your organization should have?]
- Is er informatie beschikbaar voor partijen die een idee hebben voor energieprojecten op RWS areaal? En zo ja, hoe en waar, en wat is de doelgroep?
  [Is there information available for parties that want to approach RWS with an idea for renewable energy projects? If yes, how and where and what is the target group?]
- Hoe worden partijen bij deze projecten betrokken? Komen er nieuwe partijen bij?
  [How are parties involved in projects? Are there opportunities for new parties to join?]

Posities [positions]

- Wat is het belang van uw organisatie in deze projecten?
  [What is the interest and need of your organization in these projects?]
- Hoe verhoudt zich dit tot de belangen en wensen van andere partijen? Wat zijn conflicten die voorkomen en wat (met wie) gaat juist goed?
  [How does this relate to interest and needs of other parties? Are there conflicts and are there good examples of cooperation?]

Besluitvorming [decision-making]

- Hoe wordt besloten of, en welke projecten kansrijk zijn?
  [How do you decide which projects are potentially useful?]
- Welke overwegingen spelen hierin een rol?
  [What considerations are important in this process?]

Leren [learning]

- Wordt informatie en opgedane kennis uit projecten teruggekoppeld (en zo ja, hoe en naar wie?)
  [How are information and experiences from existing projects communicated? And to whom?]

Kosten en baten [costs and benefits]

- Hoe worden kosten en baten verdeeld over betrokken actoren?
  [How are costs and benefits distributed among involved actors?]

Algemeen [general]

- Wat zijn de (3) grootste barrières bij de ontwikkeling van energieprojecten in samenhang met het RWS areaal?

[What are the (3) main barriers when developing renewable energy on RWS lands?]

A1.3 Focus group Chapter 2

The focus group was conducted on 12 December 2016. The focus group started with a short presentation of the research and the aim was to discuss the main findings. The presentation posed that there are two ways for RWS to generate RE on their lands: (1) having third parties use these lands for RE generation; and (2) combining opportunities for RE generation with existing projects related to construction and renovation of transport infrastructure networks. Subsequently, the discussion was structured using a number of propositions related to main findings:

- Performance indicators are key in realizing both of these ways for generating RE on RWS lands
- Conditions must be set to ensure a relationship between energy projects and the direct (socio-economic) environment
- Standardization versus the need for area-specific approaches
- The current search regarding the responsibility of RWS in the spatial domain offers opportunities to position and realize energy ambitions
- Enhanced integration in policy and communication (e.g., with the RVB) is necessary for RE projects
- There are opportunities for using existing arrangements such as BOA, MIRT-research, and the Beter Benutten program

#	**Participants Focus group**
1	Employee Rijkswaterstaat
2	Employee Rijkswaterstaat
3	Employee Rijkswaterstaat
4	Employee Rijkswaterstaat
5	Employee Rijkswaterstaat
6	Employee Rijkswaterstaat
7	Employee Rijkswaterstaat
8	Employee Rijkswaterstaat
9	Employee Rijkswaterstaat
10	Employee Central Government Real Estate Agency
11	Employee Central Government Real Estate Agency
12	Employee Netherlands Enterprise Organization

A1.4 Results 'Rules of the game'

* The column 'sources' refers to interviews and focus groups as indicated in Appendix A1.1

Boundary rules define who may enter or leave positions		Sources*
B1:	*Location:* Ownership, governance or management of land or infrastructure assets within a specified area determines which actors are involved (e.g., province, municipality, grid operator, and regional department of Rijkswaterstaat).	*I2; I6; I8*
B2:	*Legal:* Legal obligations determine that a party needs to be involved (e.g., ministries and Central Government Real Estate Agency).	*I2; I9; I14*
B3:	*Project:* Based on the specific project, additional parties may enter or leave the arena (e.g., advisory bureaus, experts from national departments of Rijkswaterstaat, or market parties).	*I1; I5; I10*
B4:	*Competition:* Developers enter the arena based on competition on price. The developer with the highest bid may enter the arena.	*I1; I2; I9*

Position rules define the positions held by actors		Sources
P1:	*Legislators:* • The ministry of Infrastructure and the Environment is the legislator for i.a. policy regarding infrastructure, environment and spatial policy related to renewable energy. • The Ministry of Economic Affairs is the legislator for i.a. energy ambitions and policy. • The Ministry of Internal Affairs is the legislator for i.a. central government real estate policy.	*I1; I2; I14; F1*
P2:	*Commissioner:* The ministry of Infrastructure and the Environment provides assignments to their executive organization Rijkswaterstaat.	*I6; I7; F1*
P3:	*Executive organization:* Rijkswaterstaat is the executive organization of the Ministry of Infrastructure and the Enviroment and responsible for design, construction and maintenance of the main infrastructure networks in the Netherlands for the purpose of safety, accessibility and livability, which is laid down in assignments set by the Ministry.	*I4; I6; I14; F1;*
P4:	*Developer:* A market party or citizen initiative is allowed to develop and exploit solar panels along a highway. Rijkswaterstaat is not allowed to hold this position.	*I1; I2; I3; I4; I5; I6; F1*
P5:	*Licensing authorities:* • Rijkswaterstaat is the licensing authority for the permit on the basis of the Public Works Act (Wbr-permit); • Municipality or provinces are the licensing authority for the environmental permit.	*I1; I2; I7; I9; I14*
P6:	*Contract-holder:* The Central Government Real Estate Agency is the contract-holder for state-owned land.	*I2; I3; I6; I9; I14*
P7:	*Grid operator:* The grid operator is responsible for realizing the grid connection.	*I2; I8; I12; I14*

Choice rules specify what actors in certain positions may, must or must not do at certain points		Sources
C1:	*Draft policy and regulation:* The ministries may draft policy and regulations for their legislative domains (see P1).	*I1; I2; F1*
C2:	*Provide locations:* Rijkswaterstaat may designate locations that are available for energy production.	*I1; I2; I3; I4; I9*
C3:	*Set permit conditions:* Rijkswaterstaat may set conditions connected to the Wbr-permit only to ensure safety, accessibility and livability of their networks.	*I4; I9*

C4:	*Organize the auction:* The Central Government Real Estate Agency must organize an auction after a location is approved for energy generation by Rijkswaterstaat	*I2; I3; I5; I6; I7; I9; I10; I14*
C5:	*Submit bid:* Every potential developer may submit a bid in the auction procedure.	*I2; I3; I5; I9; F1*
C6:	*Apply for permits:* The developer must apply to the municipality or the province for an environmental permit.	*I2; I7;*
C7:	*Set permit conditions:* Provinces and municipalities may set conditions connected to the environmental permit, only to ensure the spatial quality of their territory.	*I12; F1*
C8:	*Sign the contract:* The Central Government Real Estate Agency must sign the private-law agreement for surface-rights over the respective area with the developer who submits the highest bid.	*I2; I3; I7; I9; I10; I14*
C9:	*Arrange grid connection:* Rijkswaterstaat or the developer may contact the grid operator. The grid operator checks whether there is space available on the grid for a new PV park and provides a price estimate based on standard rate structures.	*I8;*
C10:	*Apply for subsidies:* After winning the auction, the developer may apply for SDE+ subsidy with the Netherlands Enterprise Organization. Government organizations are not eligible for SDE+ subsidies.	*I2; I14*
C11:	*Involve citizens:* A developer may include citizens participation in the project.	*I2; I11*

Aggregation rules determine how actors jointly affect decisions regarding proposed actions and activities and in what manner.		Sources
A1:	*Permit decision:* A province or municipality must decide whether to provide an environmental permit based on compatibility with the area vision.	*I2; I5; I12; I13; I14*
A2:	*Subsidies:* The Ministry of Economic Affairs (or Finances) must decide whether to appoint subsidies to developers after they have won the bid and have the necessary permits.	*I2; I10;*
A3:	*Termination rights:* the Central Government Real Estate Agency always includes a clause for 'termination in the public interest' in contracts to safeguard the executive organization's interests.	*I9*

Information rules determine what information is to be send and received by which actors at what moment		Sources
I1:	*Publishing locations*: The Central Government Real Estate Agency must publish locations that are going to be auctioned in an open and transparent manner.	*I2; I9*
I2:	*Regular consultation:* The Central Government Real Estate Agency and Rijks-waterstaat have regular consultations (once per 4-6 weeks) regarding concrete energy-projects. If discussions have financial consequences the ministries are involved as well.	*I2; I9;*

Scope rules determine which outcomes may occur		Sources
S1:	*Infrastructure expansion:* Solar panels must not be realized on grounds reserved for expansion of infrastructure networks	*I2; I3; I7*
S2:	*Safety:* Solar panels must not compromise the safety of the infrastructure networks.	*I1; I4; I5;*
S3:	*Maintenance:* Panels must be accessible to maintenance, and must not hinder maintenance of networks	*I5; I9; I10*
S4:	*General agreements:* Goals set in the Dutch Energy Agreement (connected to EU targets) and the Paris Agreement	*I3; I1;I4; I7*
S5:	*Target:* target stating that Rijkswaterstaat must become energy neutral by 2030.	*I1; I4; I6; I7;I9; I10; I9; F1; I14*

S6:	*Environmental vision:* Provinces may indicate preferred locations for solar parks in their area vision (e.g., adjacent to build-up areas); they may not indicate who needs to be involved (e.g., participation).	*I2; I12; I13; I14*

Payoff rules assign costs and benefits to actors		Sources
Y1:	*Lease:* Developers must pay Rijkswaterstaat for the use of the grounds, which is laid down in the contract with the R Central Government Real Estate Agency VB and is paid per MWh. A minimum price is laid down by the Central Government Real Estate Agency	*I2; I10; I9*
Y2:	*Earn money:* Rijkswaterstaat may use its lands to earn money	*I3; I6; I7; I11; F1*
Y3:	*Subsidies:* Rijkswaterstaat is not eligible for SDE+ subsidies.	*I2; I10; I4*
Y4:	*Project funding:* Major construction and renewal projects (› €30 mln.) are laid down in the MIRT and funds must not be used for other purposes than Rijkswaterstaat's primary tasks.	*I2; I3; I4; I7*
Y5:	*Performance funding:* General maintenance and management of infrastructure networks is laid down in the SLA, which includes commitments regarding financial and human resource for four years.	*I2; I3; I5; I7*
Y6:	*Highest bid:* Rijkswaterstaat land is granted to the party issuing the highest bid.	*I2; I3; I7; I9; I10; I14*

A1.5 Results 'Play of the game'

* The column 'sources' refers to interviews and focus group as indicated in Appendix A1.1

Ideas related to **boundary rules**		Sources*
Ib1:	*Early involvement*: Partners (neighbors and municipalities) should be involved early to create more certainty regarding permits and grid connection.	*I2; I3; I5; I7; I8; I12; F1*
Ib2:	*Citizen involvement*: Citizen initiatives should compete in auctions according to Rijkswaterstaat and the Central Government Real Estate Agency, but they are bound to one location and often lack knowledge, competences and experience.	*I2; I5; F1*
Ib3:	*Reduce fragmentation:* Boundary rules related to renewable energy within the organizations of Rijkswaterstaat and Infrastructure and the Environment should be clarified to reduce the fragmentation of departments and people working on topics related to renewable energy from their own position and interest with little coordination.	*I1; I4; I5; I10; I11; I14*
Ib4:	*Province or municipality:* Rijkswaterstaat should identify when provinces or municipalities should be involved regarding PV at specific locations, because this can differ per province and municipalities – if it regulated at all – depending on e.g., the size of the initiative or the procedure.	*I2; I12; I13;*

Ideas related to **position rules**		Sources
Ip1:	*Open attitude:* Civil servants, especially experts and regular employees (within Rijkswaterstaat and the Central Government Real Estate Agency in particular, but provinces, municipalities and grid operators are also mentioned), should have a more open and less risk-averse attitude towards renewable initiatives. Higher level managers, who are more used to dealing with new ideas, should encourage such an attitude.	*I1; I2; I5; I6; I7; I8; I10; I11; I14;F1*
Ip2:	*Position of Rijkswaterstaat regarding RE:* The position of Rijkswaterstaat regarding the energy transition should be clarified; despite statements regarding far-reaching opportunities for PV on Rijkswaterstaat lands, Rijkswaterstaat only received the assignment to make the infrastructure networks energy neutral, leaving the position regarding the energy transition in general and the accompanying role as either facilitator or puller in the middle.	*I1; I4; I5; I6; I7; F1;*
Ip3:	*Contradictory positions within Rijkswaterstaat:* Citizen involvement should be a point of attention in PV projects, because the ambition of Rijkswaterstaat to make as much money as possible with auctioning lands is at odds with the importance of citizen involvement in infrastructure projects where quality criteria are always required in bids.	*I5; I6; I11; I14; F1*
Ip4:	*Create problem-owner:* There should be a 'problem-' or 'opportunity-owner', to pull the initiatives, create commitment within organizations, address barriers, and reduce the inertia that currently characterizes PV on Rijkswaterstaat lands. The creation of the position of ' HID sustainability and environment' is considered a step in this direction by Rijkswaterstaat.	*I4; I6; I8; I9; I10; I11; I12; F1*
Ip5:	*Adapt organizational culture:* Rijkswaterstaat should adapt the culture of the organization so employees are aware of the fact that you can have a role in PV projects even if you are not fully responsible for the whole project (contrary to the current culture where you are either responsible or you are not).	*I6; I14; F1*

Ideas related to **choice rules**		Sources
Ic1:	*Joint map-making:* Rijkswaterstaat should participate in joint-map-making to create insight in overlapping interests and opportunities for PV, in relation to other land owners, provinces, municipalities and grid-operators.	*I2; I6; I7; I8; F1*
Ic2:	*Area-agenda's:* Strategic cooperation should take place between various parties involved to coordinate actions and ideas for future use of space in e.g., area-agenda's.	*I2; I3; I5; I7; I8; I12; F1*
Ic3:	*Assignment for RE:* Rijkswaterstaat is used to acting when given an assignment connected to a resource allocation. If more PV need to be realized, Rijkswaterstaat should be given a specific assignment in this regard by the Ministry of Infrastructure and the Environment.	*I5; I10; F1*
Ic4:	*No assignment:* Rijkswaterstaat wants an assignments from the ministry of Infrastructure and the Environment, but the ministry does not want to give this assignment because the Ministry of Economic Affairs is responsible for RE.	*I1; I7; F1*
Ic5:	*Fragmentation up to the highest level:* Cooperation should be initiated at the highest level to deal with the division of responsibilities for infrastructure and (renewable) energy up to the highest level, between ministries.	*I1; I7; I14*
Ic6:	*Responsibility:* According to Rijkswaterstaat, municipalities should safeguard citizen interests and participation in PV projects on Rijkswaterstaat lands..	*I2; F1*
Ic7:	*Exception for citizen involvement:* Rijkswaterstaat and the Central Government Real Estate Agency should allow exceptions from the rule that locations must be auctioned for citizen initiatives for projects below a certain size.	*I2; I6; I9; F1*
Ic8:	*Structured assessment of Rijkswaterstaat lands:* There should be a structured (method for) assessment of locations that Rijkswaterstaat deems feasible.	*I5; I7; I10; F1*

Ideas related to **aggregation rules**		Sources
Ia1:	*Control:* Rijkswaterstaat wants to be the single 'owner' of a project because this reduces the complexity	*I2; I4; F1*
Ia2:	*Safeguard control over public lands:* The Central Government Real Estate Agency and Rijkswaterstaat want to keep as much control as possible over grounds which is not compatible with third-party ownership over (parts of) Rijkswaterstaat lands.	*I10; F1*
Ia3:	*Simple, uniform procedures:* Rijkswaterstaat and the Central Government Real Estate Agency want to keep procedures as simple and uniform as possible because of limited resources, using an auction based on price with limited criteria.	*I2; F1*
Ia4:	*Interdependence:* Rijkswaterstaat should coordinate actions with other actors (e.g., developers, grid operators, municipalities and provinces) municipalities because, contrary to traditional infrastructure projects, Rijkswaterstaat depends on these parties for the realization of energy ambitions.	*I1; I2; I5; I6; I7; I9; F1*
Ia5:	*Individual persuasion power:* The success of initiatives should be less dependent on the right people at the right level pulling their weight, thereby making initiatives less ad hoc.	*I1; I10; I14; F1*
Ia6:	*Control within the policy domain:* Higher level managers within Rijkswaterstaat or the Ministry of Infrastructure and the Environment should more often use their power in the hierarchy of the organization to enable PV initiatives.	*I1; I5; I10; I14; F1*
Ia7:	*Province or municipality:* It should be clarified when provinces and when municipalities must decide on environmental permits and municipal and provincial environmental plans should be aligned.	*I2; I12; I13; I14*
Ia8:	*Political dimension:* Parties involved in PV on Rijkswaterstaat lands should be aware of the large political dimension of certain decisions (e.g., regarding Rijkswaterstaat role and responsibility in the energy transition), especially at the ministerial level which is colored by party-politics.	*I2; I4; I6; I10; F1*

Ideas related to **information rules**		Sources
Ii1:	*Platforms for communication:* Platforms should be established to enable structured communication within Rijkswaterstaat, between Rijkswaterstaat and the Ministries, and between Rijkswaterstaat and other parties at early stages, to function beside current, loosely structured meetings regarding these topics.	*I5; I7; I10; I12; I13; F1*
Ii2:	*Learning:* Structures should be installed that stimulate learning from initiatives and communication of this knowledge to various parts of the organization.	*I6; I10; F1*
Ii3:	*Lack of connection between policy and practice:* Both within Rijkswaterstaat and between Rijkswaterstaat and the Ministry, connections between people working on projects (and their experiences) and the people involved in policy-making and regulations should be improved.	*I7; I10; I14; F1*
Ii4:	*Contact persons:* Rijkswaterstaat should clarify responsibilities for PV within the organization and avoid changes in contact persons over the course of projects as much as possible.	*I10; I11; I14*
Ii5:	*No communication of essential information:* Essential information affecting projects should be communicated to project-partners immediately.	*I5; I11*

Ideas related to **scope rules**		Sources
Is1:	*Infrastructure expansion:* It should be clarified when potential future expansion of infrastructure networks is a valid argument for blocking PV projects.	*I7; I11*
Is2:	*Risk assessment:* It should be clarified how and when PV compromises the safety of infrastructure networks.	*I5; I10; I11*
Is3:	*Too narrow focus:* Rijkswaterstaat should watch out for a very narrow focus on energy neutrality for themselves, which might hinder (future) opportunities that are beneficial to the energy transition in the Netherlands.	*I6; I7; I8; F1*
Is4:	*Operationalization:* Rijkswaterstaat and the Ministry should translate high level ambitions into an implementation agenda, with clear goals which should be connected resource allocations, to reduce current confusion regarding approaches about: • Rijkswaterstaat should become energy neutral *or* Rijkswaterstaat should contribution to energy transition in the Netherlands • Rijkswaterstaat should realize a few large scale projects, o*r* Rijkswaterstaat should realize many smaller projects	*I1; I4; I5; I7; F1*
Is5:	*Environmental visions:* Provinces and municipalities should reach agreements on scope rules for environmental permits for PV along infrastructure.	*I2; I12; I14*
Is6:	*Place-based assessment:* The provinces want to assess per project, in the context of the location what fits the landscape for solar projects, so exceptions from the rule may be possible but have to be assessed on a case-by-case basis.	*I12; I13*
Is7:	*Spatial quality and participation:* Provinces want to safeguard spatial quality and participation, but unlike spatial quality, participation cannot be safeguarded in the environmental permit.	*I5; I10; I12; I13; F1*

Ideas related to **payoff rules**		Sources
Iy1:	*Subsidies:* The ministry of EZ however wants to limit the flow of government funds to government parties. This is a conflict of interests which may in the future limit the possibilities for PV on Rijkswaterstaat lands.	*I1; F1*
Iy2:	*Resources:* It should be clarified how many resources (time and money) Rijkswaterstaat is allowed to spend, since there is no assignment with clear resource allocations (also because there are barely any resources programmed in the MIRT or SLA for sustainability, let alone renewable energy).	*I3; I5; I7; I11; F1*
Iy3:	*Assignment with resource allocation:* Rijkswaterstaat is an executive organization focused on executing assignments given by the Ministry and should therefore be given an assignment with clear resource allocations and consequences for not meeting the assignment.	*I1; I2; I3; I5; I10; F1*
Iy4:	*Energy as a primary task:* RE should become a primary task of Rijkswaterstaat to deal with the fact that the parliament (particularly with the current leading political party being liberal) disapproves of project costs that are not directly related to the primary tasks of Rijkswaterstaat.	*I2; I4; F1*
Iy5:	*Include quality criteria in the bid:* Quality criteria regarding e.g., citizen involvement should be part of the bid to enable developers to use experiences with citizen participation and reduce possible resistance.	*I11; I14; F1;*
Iy6:	*Resource competition:* it should be clarified who pays for what between the Ministries of Infrastructure and the Environment and Economic Affairs, e.g., who's employees will execute which tasks and how these employees are financed	*I7; I9; I14*
Iy7:	*Clarity on costs and benefits of options:* Rijkswaterstaat should clarify the costs and benefits of the various options that are discussion among ideas regarding scope rules, not only for Rijkswaterstaat itself but for the Netherlands as a whole.	*I1; I10; F1*

A2 Appendices chapter 3

A2.1 Marine spatial plans for the Dutch North Sea

Year	Marine spatial plan	Reference
2004	Nota Ruimte – ruimte voor ontwikkeling [Spatial Planning Policy Document]	(Ministry of VROM et al., 2004)
2005	Integraal Beheerplan Noordzee 2015 [Integrated management plan for the North Sea 2015]	(IDON, 2005a)
2009	Nationaal Waterplan 2009-2015 [National Water Plan 2009-2015]	(Ministry of V&W et al., 2009b)
2009	Beleidsnota Noordzee 2009-2015 [Policy Document in the North Sea 2009-2015]	(Ministry of V&W, Ministry of VROM, & Ministry of LNV, 2009a)
2011	Integraal Beheerplan Noordzee 2015 – herziene versie [Revised integrated management plan for the North Sea 2015]	(IDON, 2011)
2014	Structuurvisie Windenergie op Zee [Partial revision of NWP & PDNS 2009-2015 called the White Paper on Offshore Wind Energy]	(Ministry of Infrastructure and the Environment & Ministry of Economic Affairs, 2014c)
2015	Nationaal Waterplan 2016-2021 [National Water Plan 2016-2021]	(Ministry of Infrastructure and the Environment & Ministry of Economic Affairs, 2015b)
2015	Beleidsnota Noordzee 2016-2021 [Policy |Document in the North Sea 2016-2021]	(Ministry of Infrastructure and the Environment & Ministry of Economic Affairs, 2015a)
2016	Rijksstructuurvisie Windenergie op Zee – Aanvulling Gebied Hollandse Kust [Partial Revision of NWP & PDNS 2016-2021 called the White Paper on Offshore Wind Energy – supplement Hollandse Kust]	(Ministry of Infrastructure and the Environment & Ministry of Economic Affairs, 2016)

A2.2 Related policy documents, laws and regulations focusing on energy policy with relevance for MSP and OWF

Year	Document	Reference
2007	Werkprogramma schoon en zuinig [Work program clean and efficient]	(VROM, 2007)
2008	Sectorakkoord Energie 2008-2020 [Sector agreement Energy 2008-2020]	(Rijksoverheid & Energiebranche, 2008)
2009	Regeling windenergie op zee [Rules for offshore wind energy]	(Rijksoverheid, 2009b)
2011	Green Deal Windenergie op Zee [Green Deal Offshore Wind]	(NWEA, 2011)
2013	Energieakkoord [Energy Agreement]	(SER, 2013)
2015	Wet windenergie op zee [Offshore Wind Energy Act]	(Rijksoverheid, 2015b)
2015	Regeling windenergie op zee [Rules for off-shore wind energy]	(Rijksoverheid, 2015a)

2017	Beleidsregel wijziging productie installatie windenergie op zee [policy rule revision for generation of offshore wind energy]	(Rijksoverheid, 2017a)
2018	Gedragscode doorvaart windparken [code of conduct for safe passage through offshore wind farms]	(Rijkswaterstaat, 2018)

A2.3 Related spatial documents policy documents, laws and regulations with relevance for MSP and OWF

Year	Document	Reference
2002	Beleidsregels inzake toepassing Wet beheer rijkswaterstaatswerken met betrekking tot installaties in exclusieve economische zone [policy rules on the application of the Public Works Act]	(Rijksoverheid, 2002)
2004	Beleidsregels inzake toepassing Wet beheer rijkswaterstaatswerken met betrekking tot installaties in exclusieve economische zone [policy rules on the application of the Public Works Act]	(Rijksoverheid, 2004)
2008	Wijzigingsbesluit Beleidsregels inzake de toepassing van de Wet beheer rijkswaterstaatswerken op installaties in de exclusieve economische zone [revision of policy rules on the application of the Public Works Act]	(Rijksoverheid, 2008)
2009	Beleidsregels inzake de toepassing van de Wet beheer rijkswaterstaatswerken op installaties in de exclusieve economische zone [policy rules on the application of the Public Works Act]	(Rijksoverheid, 2009a)
2012	Structuurvisie Infrastructuur en Ruimte [National Policy Strategy for Infrastructure and the Environment]	(Ministry of Infrastructure and the Environment, 2012)
2014	Haalbaarheidsstudie Wind op Zee binnen de 12-mijls zone [Feasibility study wind within the 12-mile zone]	(Ministry of Infrastructure and the Environment & Ministry of Economic Affairs, 2014a)
2014	Gebiedsagenda Noordzee 2050 [North Sea Spatial Agenda 2050]	(Ministry of Infrastructure and the Environment & Ministry of Economic Affairs, 2014b)

A2.4 Policy memos with relevance for MSP and OWF

Year	Authentication and topic	Author
2008	Kamerbrief VenW/DGW 2008/592: Windenergie op de Noordzee [Letter to parliament: Offshore wind in the North Sea]	Ministers of Ministry of Transport, Public Works and Water Management
2009	Kamerbrief 31239, No. 70: Stimulering duurzame energieproductie [Letter to parliament: stimulation sustainable energy]	Minister of Economic Affairs
2009	Regeling windenergie op zee 2009, nr. WJZ/9203919 [Letter to parliament : regulation offshore wind 2009]	Minister of Economic Affairs
2011	Kamerbrief 29675, No. 118: Nader antwoord op de vraag of een rijksbestemmingsplan nodig is bij het sturen op inhoudelijke doelen voor de Noordzee [Letter to parliament: Answer to the question whether a zoning ordinance is necessary to steer towards substantive goals fort he North Sea]	Minister of Infrastructure and Environment
2012	Kamerbrief 30195, No.31: Integraal Beheerplan Noordzee 2015 [Letter to parliament: Integrated Management Plan North Sea 2015] (reaction to the advice by the RLI)	Ministers of Infrastructure and Environment and Minister of Economic Affairs
2012	Kamerbrief RWS/SDG/NW12/73/119984: Verlengen vergunningen windparken op zee [Letter to parliament: extending permits offshore wind]	Minister of Infrastructure and Environment
2012	Kamerbrief 31239, no. 140: stand van zaken rond windenergie op zee (Letter to parliament: development regarding offshore wind energy)	Ministers of Economic Affairs and Minister of Infrastructure and Environment
2013	Kamerbrief IENM/BSL-2013/4610: Kamerbrief over structuurvisie Windenergie op Zee [Letter to parliament: regarding White Paper Offshore Wind Energy]	Minister of Infrastructure and Environment
2014	Beantwoording feitelijke vragen ontwerp-rijksstructuurvisie Windenergie op zee [Answering questions regarding the draft White Paper on Offshore Wind Energy]	Ministry of Infrastructure and Environment and Minster of Economic Affairs
2014	Kamerbrief DGETM-ED/14153930: Windenergie op zee [Letter to parliament: Offshore wind energy]	Minister of Economic Affairs and Minister of Infrastructure and Environment
2014	Kamerbrief IENM/BSK-2013/297316: Opvolger Nationaal Waterplan [Letter to parliament: sequel NWP]	Minister of Infrastructure and Environment
2014	Kamerbrief DGETM-ED/14164418: Beantwoording vragen over windenergie op zee [answering questions offshore wind]	Minister of Economic Affairs
2014	Memorie van toelichting kst34058-3 Regels omtrent windenergie op zee (wet windenergie op zee) [Explanatory memorandum Rules regarding offshore wind energy (Act)]	Minister of Economic Affairs

2015	Kamerbrief IENM/BSK-2015/123818: Beantwoording Kamervragen van het lid Veldman (VVD) over gebiedsaanwijzing op de Noordzee [Answereing parlimentary questions by member Veldman (VVD) about the designation of areas for offshore wind]	Ministry of Infrastructure and Environment
2015	Kamerbrief DGETM-ED/15062338: SDE+ Wind op Zee 2015 [Letter to parliament: SDE+ offshore wind 2015]	Minister of Economic Affairs
2014	Verslag kst-34058-5 Regels omtrent wind-energie op zee (Wet windenergie op zee) [Report rules regarding offshore wind energy (Act)]	Permanent Parliamentary Committee for Economic Affairs
2014	Nota naar aanleiding van het Verslag kst-34058-6 Regels omtrent windenergie op zee (Wet windenergie op zee) [memorandum regarding report about rules regarding offshore wind energy (Act)]	Minister of Economic Affairs
2015	Nader verslag kst-34058-8 regels omtrent windenergie op zee (wetsvoorstel windenergie op zee) [follow-up report rules regarding offshore wind energy (Act)]	Permanent Parliamentary Committee for Economic Affairs
2015	Nota naar aanleiding van het nader verslag kst-34058-9 Regels omtrent windenergie op zee (Wet windenergie op zee) [memorandum regarding follow-up report about rules regarding offshore wind energy (Act)]	Minister of Economic Affairs
2015	Plenaire vergadering: wet windenergie op zee (34058) [Parliamentary debate: Offshore Wind Energy Act]	House of Representatives
2015	Kamerbrief 33561, Nr. 18: Benutting gebied IJmuiden ver [Letter to parliament: use of the area IJmuiden Ver]	Minister of Economic Affairs
2015	Kamerbrief 34058J: Voortgang wind op zee [Letter to parliament: progress offshore wind]	Minister of Economic Affairs
2015	Kamerbrief IENM/BSK-2015/230376 Vastgesteld Nationaal Waterplan 2016-2021 [Letter to parliament: Established National water plan 2016-2021]	Minister of Infrastructure and Environment
2016	Kamerbrief DGETM-E2020 / 16103033 Uitslag tender windenergie op zee voor eerste twee kavels van windenergiegebied Borssele [Letter to parliament: Result tender offshore wind energy for the first two plots of the area Borssele]	Minister of Economic Affairs
2016	Kamerbrief DGAN-NB / 16039177 over integrale benadering windenergie op zee ecologisch programma en resultaten vervolg uitvoering masterplan wind op zee [Letter to parliament regarding the integrated approach tot he offshore wind energy ecological program and results and continuation implementation masterplan offshore wind energy]	Secretary of State of Economic Affairs
2016	Kamerbrief kst-33561-38 Structuurvisie wind op zee [Letter to Parliament: White Paper on Offshore Wind Energy]	Minister of Economic Affairs

2017	Kamerbrief DGETM-E2020 / 17098755 Aanpak tenders windenergie op zee [Letter to Parliament: Approach tenders offshore wind energy]	Minister of Economic Affairs
2017	Kamerbrief kst-33450-53 Mariene Strategie voor het Nederlandse deel van de Noordzee [Marine Strategy fort he Dutch part of the North Sea]	Minister of Infrastructure and Environment
2018	Kamerbrief 2018-0000156939 Over opstelling windparken op zee voor doorvaart [Regarding the passage for ships through wind farms]	Minister of Internal Affairs
2018	Kamerbrief DGETM-E2020 / 17177527 Routekaart windenergie op zee 2030 [Letter to Parliament: Roadmap offshore wind 2030]	Minister of Economic Affairs and Climate
2018	Kamerbrief DGETM-E2020 / 18034926 Uitslag 3e tender windenergie op zee van het windenergiegebied Hollandse Kust (zuid) [Results 3rd tender offshore wind energy for the area Hollandse Kust (south)]	Minister of Economic Affairs and Climate

A2.5 Plot decisions for offshore wind farms

Year	Document	Reference
2016	Kavelbesluit I windenergiegebied Borssele	(Rijksoverheid, 2016a)
2016	Kavelbesluit II windenergiegebied Borssele	(Rijksoverheid, 2016b)
2016	Kavelbesluit III windenergiegebied Borssele III	(Rijksoverheid, 2016c)
2016	Kavelbesluit IV windenergiegebied Borssele IV	(Rijksoverheid, 2016d)
2017	Kavelbesluit V (innovatiekavel) windenergiegebied Borssele V	(Rijksoverheid, 2017d)
2017	Kavelbesluit I windenergiegebied Hollandse Kust I (zuid)	(Rijksoverheid, 2017b)
2017	Kavelbesluit II windenergiegebied Hollandse Kust II (zuid)	(Rijksoverheid, 2017c)
2018	Kavelbesluit III windenergiegebied Hollandse Kust (zuid)	(Rijksoverheid, 2016c)
2018	Kavelbesluit IV windenergiegebied Hollandse Kust (zuid)	(Rijksoverheid, 2018)

A2.6 List of interviews Chapter 3

#	Interviewees
1	Interview employee Ministry of Infrastructure and Environment
2	Interview employee Ministry of Economic Affairs
3	Interview consultant (independent expert)

A2.7 Interview guide Chapter 3
Introduction research regarding marine spatial planning and offshore wind energy and informed consent.

Algemeen over de rol van uw organisatie m.b.t. wind op zee [General questions on the role of your organization regarding offshore wind]

- Wat is de rol van uw organisatie met betrekking tot wind op zee?
  [What is the role and responsibilitiy of your organization regarding offshore wind]
- Hoe vindt besluitvorming over offshore wind plaats?
  – Wie zijn er nog meer bij betrokken?
  – Hoe zijn de verhoudingen tussen de partijen?
  [How does decision-making regarding offshore wind farm development take place? Which parties are involved in such decision-making? And how do parties interact?]
- Hoe is dit veranderd over de tijd?
  – Wat vindt u van deze veranderingen?
  – Hoe zou het beter kunnen, wat zijn uw verwachtingen, wat is nodig?
  [How has this changed over time? What is your opinion on these changes? Are there opportunities for further improvement?]

Algemene ervaring met ruimtelijke ordening op zee [General experience regarding marine spatial planning]

- In hoeverre bent u bekent met het concept ruimtelijke ordening op zee (in het Engels Marine Spatial Planning) en andere strategieën en vormen van governance en op zee?
  – Hoe verhoudt zicht dit tot planning op land (Wat zijn naar uw mening de verschillen met RO op land)?
  – Wat is uw mening over de Nederlandse ontwikkelingen op dit gebied?
  [To what extent are you familiar with the concept of Marine Spatial Planning and other strategies and forms of governance offshore? How does MSP relate to planning onshore and what are main differences? What is your opinion on the Dutch development of MSP?]
- In hoeverre is uw organisatie betrokken bij het opstellen van deze ruimtelijke plannen?
  – Wat zijn de belangen van EZ in het opstellen van deze plannen en hoe worden deze nagestreefd?
  – Wie zijn er verder nog bij betrokken en wat zijn de verhoudingen met deze partijen?
  [What is the responsibility of your organization in developing MSP? What are your main interests in the development of MSP and how do you try to achieve this? Which other parties are involved and how does your organization relate to these parties?]
- Welke verschuivingen zijn er opgetreden in de rol van uw organisatie in de loop van de tijd?
  – Wat vindt u van deze verschuivingen en zijn er volgens u nog verbeterpunten?
  [Which changes were made in the role and responsibility of your organization regarding MSP? What is your opinion on these changes and do you have any recommendations for the future?]

De performance van ruimtelijke ordening op zee voor wind op zee
[The performance of MSP on offshore wind farm development]

- In hoeverre denkt u dat ruimtelijke ordening op zee belangrijk is voor wind op zee?
  - Welke aspecten zijn het meest van belang en waarom?
  - Welke minder/zijn er ook negatieve effecten en waarom?
  - Wat zijn volgens u verbeterpunten?

  [To what extent do you consider MSP to be important for offshore wind farm development? What are potential positive aspects and why? What are potential negative aspects and why? Are there any points of imporvement according to you?]
- Welke rol spelen de ruimtelijke plannen in besluitvorming over wind op zee?
  [What role does MSP play in decision-making regarding OWF?]
- In hoeverre zijn andere partijen, inclusief de windenergie sector, betrokken bij het opstellen van de ruimtelijke plannen?
  [To what extent are other parties, including the wind energy sector, involved in developing MSPs?]
- Wat is uw mening over de Ronde 2 windparken?
  - De besluiten rond de SDE lijken een belangrijke rol te hebben gespeelt in de uiteindelijke beslissingen over de ronde 2 parken (Gemini/Luchterduinen), wat is uw mening hierover?
  - In hoeverre speelden de inmiddels gepubliceerde ruimtelijke plannen (het NWP en PDNS) een rol bij deze besluiten?

  [What is your opinion on the Round II system for OWF? The decisions surrounding SDE appear to have been important in decisions surrounding Round II, what is your opinion on this? To what extent did the development of the new MSP (the NWP and PDNS) affect these decisions?]
- Waarom is er besloten te wachten met het uitschrijven van nieuwe tenders na het publiceren van het nieuwe systeem in 2009 (NWP en PDNS)?
  [Why has there been a gap between the drafting of the MSP in 2009 and the first tenders for offshore wind recently?]
- Wat is de rol van uw organisatie in nieuwe system o.b.v. Wet Windenergie op Zee?
  - Wat is de rol van uw organisatie bij de voorbereiding en besluitvorming van kavel-besluiten en hoe verhoudt zich dit tot de andere partijen?
  - Wat is de ervaring en verwachting over de samenwerking met andere partijen?
  - Wat is uw mening over dit systeem?

  [What is the role and responsibility of your organization in the new system for offshore wind energy based on the Offshore Wind Energy Act? What is the role of your organization regarding the preparation and decision-making surrounding plot-decisions? What are your expectations regarding the cooperation with other parties? What is your opinion on this system?]

Samenwerking (indien nog niet genoemd) [cooperation (if not yet mentioned)]

- Hoe verloopt de communicatie van uw organisatie met de offshore wind sector/other sectors/governmental actors
  - Waarover, Wanneer, Met wie (niet), Knelpunten
  - Op welke wijze en met welk doel proberen deze partijen het beleid/MSP te beïnvloeden?

  [How is communication and interaction between your organization and the offshore wind energy sector/other sectors/governmental actors organized? Why, when, with whom, are there any barriers? How and why do these parties try to affect policy making/MSP?]

Summary

SUMMARY

There is widespread agreement that mitigating climate change requires transition towards a low-carbon energy system. Simultaneously, there is much societal and scientific debate on how energy transition can and should be pursued. Particularly in densely populated countries such as the Netherlands (the country this study focuses on), installations for generating renewable energy (RE) are an additional contender for already contested space. As a result, there are numerous conflicts surrounding RE projects around the world, both onshore and offshore.

The systematic interrelations between energy and spatial planning have been largely overlooked until recently in both research and practice. Particularly, guidance on cross-sectoral coordination and cooperation between actors within and across various scales in energy transition contexts remains limited. Moreover, existing research focuses on how local and regional governments and initiatives navigate within the context of existing (national) institutional frameworks, not on how these institutional frameworks can be harmonized to enable cross-sectoral interconnections. Targets and ambitions have been set regarding energy transition and broader sustainability transitions across the globe. If spatial and energy planning systems are to meet these ambitions, changes in policies and institutional frameworks are called for to enable *spatial integration* of RE and other sea- or land-use functions.

Chapter 1: Navigating institutional change for energy transition
Energy transition introduces changes in the context in which various sectors operate, for example by requesting them to respond to, recognize, and act upon opportunities and challenges related to RE projects and policies. Within these sectors, many actors might previously not have had any dealing with the physical or institutional particularities of the energy system. Often, actors reflect upon these new opportunities and challenges related to RE by referring to existing sector-specific institutional frameworks. However, frameworks tend to be ill equipped for recognizing and acting upon opportunities for cross-sectoral coordination and cooperation, resulting in institutional barriers that hamper RE development. Moreover, energy transition also requires the adaptation of existing energy-related institutional frameworks and the creation of new rules specifically related to RE. Finding physical space for energy transition, therefore, also requires institutional change and alignment towards improved harmonization between the institutional frameworks that guide various sectors. This will henceforward be described as *institutional harmonization*.

One of the novelties of this study is the explicit focus on the role of actors in progressing institutional change towards – or against – harmonization in the context of the energy transition, using institutional theories that place the agency of actors at the heart of change

processes. This study not only focuses on institutions as the 'rules of the game', but also on the ideas, understanding and deliberations regarding these rules by various interacting actors in what is called 'the play of the game'.

The main research question for this study is: *How do actors pursue institutional harmonization between renewable energy generation and other sectors in energy transition contexts and what institutional barriers and opportunities do they encounter?* This question is answered in Chapter 6 on the basis of the empirical material and insights from Chapters 2-5.

This study adopted a qualitative research approach with in-depth case study research as the main process of empirical inquiry. Two cases are used: (1) the case of Rijkswaterstaat (the executive agency of the Ministry of Infrastructure and Water Management in The Netherlands), which focuses on integrating solar photovoltaics (PV) with national level transport infrastructure; (2) the case of integrating offshore wind farms (OWF) with other sea uses in the Netherlands, with specific attention to the North Sea Dialogues. While these cases might seem widely different, they both show recognition of the need for cooperation and coordination to enable energy transition and actors are currently engaged in processes of institutional change. Multiple methods of data collection were used, including interviews, a focus group, document analysis and participatory observation. Data was analyzed using the qualitative data analysis software Atlas.ti.

Chapter 2: Integrating solar PV with transport infrastructure
Chapter 2 of this study mainly focuses on the barriers and opportunities encountered by actors with regards to integrating solar PV with national transport infrastructure networks and opportunities for institutional harmonization. Spatial integration of RE with other land-use functions, such as transport infrastructure networks, provides opportunities to use limited amounts of space more efficiently. However, such integration requires the involvement of various policy domains that are each guided by specific institutional frameworks, which are often tailored to specific sectoral needs. Therefore, institutional harmonization between involved policy domains is required. However, there is limited guidance in literature on how such harmonization does or could occur.

While literature on RE recognizes the merits of institutional approaches, it focuses on institutions as the formal rules of the game, often disregarding the agency component (the 'play of the game'). A key component of this chapter is the analytical approach that was developed. This analytical approach combines the Institutional Analysis and Development (IAD) framework by Elinor Ostrom with insights from Discursive Institutionalism by Vivien Schmidt. The approach enabled structured assessment of the dynamic relationships within and between established institutions (the 'rules of the game') and actors' ideas, interpretations and deliberations regarding these institutions (the 'play of the game').

This analytical approach was applied to the case of integrating solar PV with national transport infrastructure networks managed by Rijkswaterstaat in the Netherlands. This chapter reinforced the research problem, illustrating that it is difficult for actors to pursue solar PV along highways within the context of the existing formal and informal rules. There are three main findings from this chapter regarding institutional barriers and opportunities for harmonization. First, this chapter showed that various institutional barriers are interrelated and that insights into these interrelations are necessary to effectively address barriers and enable actors to pursue institutional harmonization and spatial integration. Notably, this includes informal institutions, which are often unwritten and include conventions, norms, and codes of conduct at the societal, organizational, and individual level. Institutional barriers appear to be the result of nuanced interrelations between formal and informal institutions. When pursuing institutional harmonization, it is important to take into account these interrelations because they can help determine the level at which action is required, by whom, and the potential influence of these actions on other experienced barriers and actors.

Second, this chapter showed that institutional harmonization *within* policy domains (internal institutional harmonization) is a precondition for harmonization *between* policy domains (external institutional harmonization). This also reinforced by insights from Chapter 4 and 5 which show similar patterns of internal and external harmonization during the North Sea Dialogue. In the case described in Chapter 2, the high level of ambiguity regarding their roles and responsibilities for energy transition within Rijkswaterstaat and the Ministry of Infrastructure and Environment created institutional barriers that hampered institutional harmonization across sectoral boundaries.

Third, Chapter 2 illustrated the importance of the agency component (play of the game) to successful institutional harmonization. This is the part of the arena where actors tend to contemplate new ideas and deal with a lack of knowledge and experience. Thereby, this chapter showed that institutional harmonization is more than merely improving the coordination and coherence of formal policies and regulations. Rather, it focuses on the co-evolution of the formal and the informal 'rules of the game' across sectors and scales as they are being (re)shaped by ideas, interpretations, and interactions between actors in the 'play of the game'. By pursuing institutional harmonization, actors can organize space within and among the various institutional frameworks involved to enable the spatial integration of RE with other land-uses.

Chapter 3: The performance of marine spatial planning in coordinating offshore wind energy with other sea-uses

Chapter 3 also focused primarily on barriers and opportunities encountered for spatial integration of RE, but turned the gaze offshore by examining the case of offshore wind farms (OWF) and marine spatial planning (MSP). The sea is often perceived as a relatively empty space and, therefore, proposed as a solution for energy transition primarily by means of OWF. However, the Dutch North Sea is one of the busiest offshore areas in the world. Simultaneously, spatial planning systems that balance various functions and interests offshore are much less developed. As a result, governments across the world are currently

searching for institutional designs that enable coordination of sea-uses in a more systematic and integrated manner. Marine Spatial Planning (MSP) is a dominant approach for such improved coordination, particularly in the European Union. Simultaneously, existing literature is increasingly doubting the ability of MSP to accomplish such coordination, particularly for the case of offshore wind farms (OWF). While there has been a surge in publications on MSP in various European countries in the past decade, the Dutch case has been notably absent in these publications and comparisons, despite the Netherlands being one of the first countries to develop a spatial plan for the Dutch North Sea.

Therefore, this chapter evaluates how six key principles of MSP performed in coordinating OWF against other spatial claims in the Dutch North Sea over time. The six key principles claim that MSP should be: (1) area-based; (2) integrated (both cross-sectoral and inter-organizational); (3) participative; (4) ecosystem-based; (5) strategic; (6) adaptive. Moreover, rather than focusing on the *conformance* of material outcomes to stated objectives, this chapter develops a framework for evaluating *performance*. Performance is understood as the manner in which the principles of MSP are understood and used by actors in subsequent decisions regarding OWF. Thereby, this framework helps to examine how the six principles are understood in successive manifestations of MSP in the Netherlands and subsequently used in decision-making regarding OWF. Three conditions of performance are established based on literature: the conditions of knowledge, legitimacy, and feasibility. Knowledge is a necessary condition, without which there can be no performance. If the condition of knowledge is met, four modes of performance can be identified: (1) *Established practice*: the principle of MSP is known and actors accept and are able to pursue it; (2) *Feasibility misfit*: the principle of MSP is known and actors accept it, but their ability to pursue it is constrained; (3) *Legitimacy misfit*: the principle of MSP is known and actors are able to pursue it, but they do not necessarily accept the principle as a guideline for action; (4) *Passive reception:* the principle of MSP is known, but actors are neither able nor willing to follow the principle.

The findings showed that knowledge of the principles of MSP is present throughout successive manifestations of MSP in the Netherlands. However, the understanding of these principles in the Dutch case was narrowed to creating a robust system to ensure quick and cost-effective roll-out of offshore wind energy to meet (inter)national renewable energy targets. This pointed to the importance of the interpretation of these principles in the specific context. The focus within Dutch MSP was to progress the feasibility of OWF development. This created institutional barriers in the form of 'legitimacy misfit', with a 'pick and mix' of principles to meet renewable energy targets. As such, MSP was used as a tool to implement external sustainability discourses and renewable energy targets, rather than forming a systematic and integrated marine governance approach that balances various interests at sea. Simultaneously, this chapter also pointed towards a need for developing more critical approaches regarding the operationalization of the principles of MSP that is sensitive to possible interdependencies and conflicts between these six key principles. It might sometimes be necessary to choose between principles, but these choices should at least be made in a transparent manner.

Chapter 4: Institutional change for progressing spatial integration of OWF with other sea-uses

Building upon the findings in Chapters 2 and 3 and the insights into the nature of institutional barriers in energy transition contexts, Chapters 4 and 5 examine the process of institutional harmonization itself. They do so by focusing on how actors pursue institutional change during the North Sea Dialogues (NSD), which were high-level, political negotiations with the purpose of drafting a North Sea Agreement. This North Sea Agreement had the purpose of improving the balance between various interests in the Dutch North Sea, particularly related to energy, fisheries/food, and nature.

Chapter 4 explored to what extent actors during the NSD pursued formal and informal institutional change to progress the various dimensions of integration in line with the six key principles of MSP to improve spatial integration between OWF and other interests at sea. Marine spatial planning (MSP) literature identifies various dimensions of integration to deal with fragmented, sectoral, and ad hoc approaches to managing various uses offshore, including cross-border integration, policy/sector integration, stakeholder integration, knowledge integration, and temporal integration. However, the spatial dimension of MSP has receded into the background, the dimensions of integration remain ill-defined, and there is a lack of appreciation for the institutional changes that these integration efforts induce and require.

Chapter 4 conceptualized spatial integration as a key purpose of MSP processes. Spatial integration means that there is a patchwork of functions and uses that can be physically integrated when beneficial, but that, when necessary, can also lead to conscious separation of functions. The goal is to achieve a sustainable spatial configuration of sea-uses. The various dimensions of integration in existing literature are considered key components of MSP processes that help progress spatial integration. To better define these various dimensions of integration, they are matched with the six key principles that are attributed to MSP, to provide direction as to 'what is being integrated'. Subsequently, an analytical framework is developed for studying spatial integration in MSP by examining formal and informal institutional changes pursued by actors to progress various dimensions of integration in line with the key principles of MSP.

First, the findings illustrated the importance of the NSD as an, initially temporary, platform that proved key for stakeholders to pursue subsequent formal and informal institutional changes that progressed integration in MSP. Second, while formal institutional changes in rules and policies were achieved during the NSD, informal institutional changes in norms, values and codes of conduct also proved fundamental in progressing various dimensions of integration. Third, the case of the NSD showed that incremental institutional change can be effective in progressing integration, and suggested that multiple incremental changes can add up to more meaningful changes. While there are often calls for radical changes both in scientific literature and in practice related to energy transition, this case showed that smaller and more incremental steps might be more feasible in progressing institutional harmonization

and spatial integration of RE with other sea- and land-use functions. However, this chapter also shows the limits to this approach. Particularly, the place-based and temporal dimensions of integration require additional attention because this is where stakeholders most notably rely on existing institutional frameworks and conflicts are most prominent.

Chapter 5: Unraveling institutional work patterns
Chapter 5 also draws on the case of the North Sea Dialogues, but this chapter focused specifically on the patterns of institutional work by observing how the 'play of the game' enfolded in the context of the NSD. Institutional work is a strand of institutional theory focusing on the work done by actors aimed at creating, maintaining, defending, or disrupting institutions. This analytical lens helped to explore patterns resulting from the interplay between different forms of institutional work by actors over time during the NSD. This chapter focused on balancing the interests of various sea-uses in the context of multi-use of OFW.

Chapter 5 revealed, firstly, that institutional change in the case of the NSD relied mostly on a highly subtle interplay between forms of creating and maintaining work that result in incremental changes to existing practices. Defending and disrupting work only played a marginal role during the NSD and outright conflict was often avoided. This appears to be related to the importance of creating trust and a joined understanding among parties in intensive participatory processes. Maintaining work was used by actors to create a benchmark for certain core values of the existing system (such as cost-efficiency or reducing uncertainty for OWF) in what was termed a pattern of 'collaborative stage setting'. These maintained values were subsequently used to condition new ideas and creating work, thereby ensuring that new ideas and practices adhered to maintained key values. As a result, institutional changes that were observed were more incremental, and focused on adding or adapting practices within the context of these broader maintained frameworks.

Second, chapter 5 showed that actors mainly aimed institutional work at practices, while boundaries were kept relatively intact. Formal roles and responsibilities of incumbents were barely changed during the NSD, as indicated by the pattern of boundary dodging in which actors avoided and redirected debates regarding boundaries. There is one notable exception, which is the establishment of the permanent NSD through which the future roles of various non-governmental actors in North Sea governance was shifted. Simultaneously, the permanent NSD does not change the formal roles and responsibilities regarding the North Sea; rather it is an additional body. This shows that institutional changes often take the form of policy layering. However, the permanent NSD may have created more permeable boundaries that enable actors to address issues in the future, by reducing the barriers for sharing and communicating information.

A third important finding in this chapter is that institutional harmonization is to some extent a process of learning-by-doing and experimentation within certain boundaries. The 'play of the game' is not a fully planned, strategic endeavor, it is also a joint search for common ground which is sometimes affected by stakeholders' emotions and past experiences. In this joint search, actors develop a mutual understanding of opportunities and limits, and develop ideas (often in an incremental manner) that tend to be more feasible for implementation.

Chapter 6: Conclusions on institutional harmonization in energy transition contexts
Chapter 6 combines the insights from the various chapters in this study, and presents the conclusions of the research by answering the main research question: *How do actors pursue institutional harmonization between renewable energy generation and other sectors in energy transition contexts and what institutional barriers and opportunities do they encounter?*

This study provides insight into the nature of institutional barriers and opportunities encountered by actors in energy transition contexts. It is shown that these institutional barriers are often the result of complex and nuanced interrelations between formal and informal institutions, both within individual sectors and in guiding the interactions between them. Understanding these interrelations and nuances is necessary for pursuing institutional harmonization, not only for scientists but notably for practitioners and the actors involved in these processes. Progressing institutional harmonization, therefore, requires attention to both formal and informal institutions, as well as the 'play of the game' where interacting actors deliberate and exchange ideas and create a joint understanding of (potential) 'rules of the game'. As such, institutional harmonization benefits from platforms that help establish norms for mutual interaction, communication and sharing of information; i.e., platforms that encourage an open and transparent 'play of the game'.

This study proposed the concept of spatial integration to focus on the cross-sectoral and cross-scale consequences and demands of energy transition. Rather than arguing for broad policy integration at each scale, spatial integration manifests differently at various scales. Institutional harmonization is presented as an approach for improving interconnections within and across scales. Institutional harmonization processes were shown to be the result of more incremental formal and informal institutional changes that often take the form of policy layering. While formal institutional changes were pursued by actors mainly to address policy gaps or minor adaptations of existing rules, this study showed that informal institutional changes and the 'play of the game' were extremely important in creating a foundation for many of the institutional changes that were pursued by actors. Organizational cultures, routines, interpretations and ideas of actors, as well as their mutual interactions proved key in institutional harmonization processes. Moreover, actors seem to be better able to navigate the complexity of various institutional frameworks on a more strategic level where they can agree on rules that ensure that certain processes and interests are taken into account.

By pursuing institutional harmonization, actors can organize *institutional space* within and among the various institutional frameworks involved to enable the spatial integration of RE with other sea- and land-uses. Institutional space is conceptualized as something that objectively exists among the various institutional frameworks that guide actors, but this space can be perceived and experienced differently. Institutional harmonization can be seen as a key process in organizing institutional space, by limiting the barriers that result from existing formal and informal institutions and creating enabling conditions *among various institutional frameworks that guide actors from various sectors*.

The insights from this study point towards the need for a more dynamic understanding of institutional change in energy transition contexts. Institutional harmonization is not only about transforming 'rules of the game' to different rules states, but also about a joint search by actors for ideas and mutual understanding of rule-sets, while taking into account how they relate to the broader institutional context. By taking into account both formal and informal institutions and the 'play of the game', institutional harmonization can provide a more dynamic and agency-oriented account of institutional change processes in energy transition and broader sustainability transition contexts.

This study recommends, firstly, that both science and practice pay explicit attention to the interaction between physical space for energy transition, and its institutional counterpart which is called institutional space. Second, both formal and informal institutions, as well as the 'play of the game' are important for institutional harmonization processes that contribute to the creation of this institutional space. These institutional harmonization processes should take into account cross-scale and cross-sectoral interconnections. Third, it is important to not let the urgency of energy transition eclipse the interests and needs of other sectors. Fourth, the benefits of more incremental institutional changes should not be disregarded too easily, because this approach might prove more constructive and even faster in creating institutional space, and by extension, finding physical space for energy transition.

Samenvatting

SAMENVATTING

Er is brede consensus dat energietransitie een essentieel onderdeel is in het tegengaan van klimaatverandering. Tegelijkertijd vindt een omvangrijk maatschappelijk en wetenschappelijk debat plaats over hoe deze energietransitie zou moeten worden nagestreefd. Zeker in een dichtbevolkt land zoals Nederland (het land waar deze studie zich op richt) zijn installaties voor het opwekken van duurzame energie een extra mededinger voor de reeds schaarse ruimte. Als gevolg daarvan zijn conflicten rondom duurzame energieprojecten alomtegenwoordig, zowel op land als op zee.

De onderlinge samenhang tussen energie en ruimtelijke ordening heeft tot voor kort weinig aandacht gekregen in onderzoek en in de praktijk. Specifiek valt op dat er weinig handvatten zijn voor intersectorale coördinatie en coöperatie tussen actoren, zowel binnen als tussen verschillende schaalniveaus. Bovendien is bestaand onderzoek gericht op hoe lokale en regionale overheden en initiatieven navigeren binnen de context van bestaande (nationale) institutionele kaders, niet op welke wijze deze institutionele kaders onderling kunnen worden geharmoniseerd om intersectorale verbindingen mogelijk te maken. Wereldwijd worden er ambities en doelen gezet met betrekking tot energietransitie en bredere duurzaamheidsdoelstellingen. Het ontwikkelen van energie- en ruimtelijke ordeningssystemen die bijdragen aan deze ambities vereist verandering van beleid en institutionele kaders. Daarmee kan ruimtelijke integratie van duurzame energie en ander zee- en landgebruik mogelijk worden gemaakt.

Hoofdstuk 1: Het navigeren van institutionele verandering voor energietransitie
Energietransitie introduceert veranderingen in de context waarbinnen verschillende sectoren handelen. Het gaat bijvoorbeeld om het herkennen van en reageren op kansen en uitdagingen die voorkomen uit projecten en beleid op het gebied van energietransitie. Echter, binnen deze sectoren hebben veel actoren vaak weinig tot geen kennis en ervaring in de omgang met de fysieke en institutionele bijzonderheden van het energiesysteem. Kansen en uitdagingen worden daarom vaak bezien vanuit bestaande, sectorspecifieke institutionele kaders. Tegelijkertijd zijn de bestaande kaders over het algemeen slecht uitgerust voor het herkennen en reageren op deze kansen en uitdagingen en de bijbehorende intersectorale verbindingen. Dit resulteert in institutionele barrières die de ontwikkeling van duurzame energie belemmeren. Daarnaast staat ook de context niet stil omdat energietransitie tevens vraagt om aanpassing van bestaande institutionele raamwerken op het gebied van energie, en om de ontwikkeling van nieuwe raamwerken specifiek voor duurzame energie. Het vinden van fysieke ruimte voor energietransitie vraagt daarom ook om institutionele verandering en harmonisatie tussen de institutionele raamwerken die de leidraad vormen voor verschillende sectoren. Dit wordt in deze studie institutionele harmonisatie genoemd.

Een belangrijke bijdrage van deze studie is de focus op de rol van actoren in het bevorderen – of soms ook tegenwerken – van institutionele harmonisatie in de context van energietransitie. Centraal staan hierbij institutionele theorieën die agency van actoren als de drijvende kracht achter veranderingsprocessen zien. Door het centraal zetten van de actoren wordt niet enkel aandacht besteed aan de instituties zelf als 'spelregels', maar juist ook aan de ideeën, interpretaties en overwegingen die tussen actoren worden uitgewisseld met betrekking tot deze regels tijdens het 'spelen van het spel'.

De hoofdvraag van deze studie is: hoe streven actoren institutionele harmonisatie na tussen duurzame energieopwekking en andere sectoren en welke institutionele barrières en kansen doen zich hierbij voor? Deze vraag wordt beantwoord in hoofdstuk 6 op basis van het empirische materiaal en de inzichten uit hoofdstukken 2 tot en met 5.

Deze studie kent een kwalitatieve onderzoeksopzet, waarbij empirische data is verzameld op basis van twee casusstudies: (1) de casus van Rijkswaterstaat, waarbij de focus ligt op de opwekking van zonne-energie in combinatie met transportinfrastructuur, en (2) de casus van integratie van windenergie op zee met ander zeegebruik in Nederland, met specifieke focus op het Noordzeeoverleg. Hoewel deze casusstudies erg verschillend lijken, gaat het om gelijksoortige vraagstukken waar in beide casussen de noodzaak tot meer coöperatie en coördinatie in de context van energietransitie centraal staat. Daarbij vinden in beide casusstudies institutionele veranderingsprocessen plaats. Data is verzameld middels meerdere methoden, waaronder interviews, een focusgroep, documentanalyse en participatieve observatie. Deze data is vervolgens geanalyseerd met behulp van de kwalitatieve data-analyse software Atlas.ti.

Hoofdstuk 2: Integratie van zonne-energie met transportinfrastructuur
In hoofdstuk 2 wordt voornamelijk de aandacht gevestigd op de institutionele barrières voor actoren om opwekking van zonne-energie te combineren met nationale transportinfrastructuur en kansen voor institutionele harmonisatie. Ruimtelijke integratie van duurzame energieopwekking met ander landgebruik, zoals transportinfrastructuur, biedt kansen voor efficiënter gebruik van schaarse ruimte. Echter, dit vraagt om samenwerking tussen diverse beleidsdomeinen en -sectoren met elk hun eigen, vaak sectorspecifieke institutionele raamwerk. Ruimtelijke integratie tussen duurzame energie en ander landgebruik vereist daarom ook institutionele harmonisatie tussen deze beleidsdomeinen en -sectoren. Hoe dergelijke harmonisatie moet of kan plaatsvinden blijft echter onduidelijk.

Bestaande literatuur op het gebied van energietransitie erkent weliswaar het nut van institutionele theorieën, maar de focus ligt voornamelijk op de formele spelregels zonder aandacht te besteden aan de agency van actoren ('het spelen van het spel'). Een belangrijke bijdrage van dit hoofdstuk is de analytische werkwijze die is ontwikkeld door de combinatie van het 'Institutional Analysis and Development (IAD) Framework' van Elinor Ostrom met 'Discursief Institutionalisme' van Vivien Schmidt. Deze werkwijze biedt mogelijkheden voor

het analyseren van zowel de dynamische relatie binnen en tussen bestaande instituties ('spelregels'), als ook de ideeën, interpretaties en overwegingen van actoren met betrekking tot deze regels ('het spelen van het spel').

Deze werkwijze is toegepast op de casus van opwekking van zone-energie op areaal beheerd door Rijkswaterstaat (RWS). In dit hoofdstuk wordt het eerder geschetste onderzoeksprobleem bevestigd door te illustreren hoe moeilijk het is voor actoren om zonne-energie op areaal van RWS te realiseren binnen de bestaande institutionele kaders. Daarnaast zijn er drie belangrijke bevindingen. Ten eerste wordt in dit hoofdstuk uiteengezet hoe verschillende institutionele barrières aan elkaar gerelateerd zijn, en dat inzicht in deze relaties noodzakelijk is om barrières aan te pakken en institutionele harmonisatie te verwezenlijken. Hierbij is het van groot belang om ook informele instituties, zoals ongeschreven normen, conventies en gedragscodes in beschouwing te nemen. De resultaten in dit hoofdstuk geven inzicht in de fijnmazige onderlinge relaties tussen formele en informele instituties die ten grondslag liggen aan veel institutionele barrières. Bij het nastreven van institutionele harmonisatie is kennis van deze onderlinge relaties en nuances van belang, omdat hieruit kan worden opgemaakt wie op welk niveau actie kan ondernemen, evenals de gevolgen van deze acties op de barrières en kansen die door actoren worden ervaren.

Ten tweede wordt in dit hoofdstuk geconcludeerd dat institutionele harmonisatie *binnen* organisaties en sectoren (interne harmonisatie) nodig is om institutionele harmonisatie *tussen* organisaties en sectoren (externe harmonisatie) te bevorderen. Zo wordt in hoofdstuk 2 beschreven hoe de hoge mate van ambiguïteit wat betreft de rol en verantwoordelijkheden van zowel Rijkswaterstaat en het Ministerie van Infrastructuur en Milieu, ten aanzien van energietransitie vraagstukken, ten grondslag ligt aan institutionele barrières die sectoroverschrijdende harmonisatie compliceren. Deze conclusie wordt versterkt door bevindingen in Hoofdstukken 4 en 5 waarin vergelijkbare patronen van interne en externe harmonisatie worden geobserveerd tijdens het Noordzeeoverleg.

Ten derde wordt in hoofdstuk 2 geïllustreerd hoe belangrijk de agency-component ('het spelen van het spel') is voor institutionele harmonisatie. Dit is namelijk het deel van de arena waar actoren nieuwe ideeën opwerpen, deze bediscussiëren en hun overwegingen delen. Daarmee proberen deze actoren oplossingen te bedenken in een context die vaak wordt gekarakteriseerd door gebrek aan kennis en ervaring met de vraagstukken rondom energietransitie. In dit hoofdstuk wordt duidelijk gemaakt dat institutionele harmonisatie meer is dan enkel het verbeteren van de coördinatie en samenhang tussen formeel beleid en regels. In plaats daarvan lijkt er sprake te zijn van co-evolutie tussen formele en informele spelregels binnen en tussen verschillende sectoren en over verschillende schaalniveaus. Tegelijkertijd worden deze regels tijdens dit spel gevormd en hervormd door de ideeën, interpretaties en overwegingen die tussen actoren worden uitgewisseld met betrekking tot deze regels. Door institutionele harmonisatie na te streven, kunnen actoren institutionele ruimte organiseren binnen en tussen de verschillende betrokken institutionele raamwerken. Daarmee wordt de ruimtelijke integratie van duurzame energie en ander landgebruik mogelijk.

Hoofdstuk 3: De doorwerking van mariene ruimtelijke ordening in de coördinatie van windenergie op zee met ander medegebruik.
Hoofdstuk 3 ging ook hoofdzakelijk in op de barrières en mogelijkheden voor ruimtelijke integratie van duurzame energie, maar in dit geval is gekeken naar de casus van windenergie op zee en mariene ruimtelijke ordening. De zee wordt vaak voorgesteld als een relatief lege ruimte. Als gevolg daarvan wordt vaak naar de zee verwezen als locatie voor duurzame energieopwekking, voornamelijk middels windenergie op zee. Echter, de Nederlandse Noordzee is één van de drukste zeeën ter wereld. Daarnaast bestaat er, in tegenstelling tot op land, geen veelomvattend ruimtelijk ordeningssysteem om verschillende belangen tegen elkaar af te wegen. Als gevolg hiervan zijn overheden op zoek naar institutionele ontwerpen om meer systematische en integrale coördinatie tussen verschillende belangen op zee mogelijk te maken. Mariene ruimtelijke ordening is een dominante benadering voor de organisatie van dergelijke coördinatie, die tevens actief wordt gestimuleerd door de Europe Unie. Tegelijkertijd is er steeds meer wetenschappelijke literatuur die de huidige mariene ruimtelijke ordeningspraktijk in twijfel trekt, voornamelijk als het gaat om de coördinatie van windenergie op zee in relatie tot ander zeegebruik. Opvallend in deze bestaande literatuur is de afwezigheid van de Nederlandse casus, ondanks het feit dat Nederland één van de eerste landen was die een ruimtelijk plan voor zijn zeegebied had ontwikkeld.

Dit hoofdstuk kijkt naar de doorwerking ('performance') van zes kernprincipes vanuit de mariene ruimtelijke ordeningsliteratuur in de coördinatie van verschillende belangen in de Nederlandse Noordzee. Deze zes kernprincipes zijn: (1) gebiedsgericht; (2) integraal (zowel tussen sectoren als organisaties); (3) participatief; (4) ecosysteemgericht; (5) strategisch; en (6) adaptief. In dit hoofdstuk wordt dus gekeken naar meer dan alleen de conformiteit van uitkomsten aan gezette doelen, door de ontwikkeling van een raamwerk om 'doorwerking' te bestuderen. Met doorwerking wordt verwezen naar de manier waarop de kernprincipes van mariene ruimtelijke ordening worden geïnterpreteerd in mariene ruimtelijke plannen en gebruikt in de Nederlandse praktijk en besluitvorming rondom windenergie op zee. Op basis van bestaande literatuur zijn drie condities voor doorwerking vastgesteld (kennis, legitimiteit en haalbaarheid). Kennis is een noodzakelijke conditie omdat er zonder kennis van een kernprincipe van mariene ruimtelijke ordening ook geen sprake kan zijn van doorwerking. Daarmee vormen deze condities de basis voor vier vormen van doorwerking: (1) bestaande praktijk: een kernprincipe is bekend, actoren accepteren het en zijn in staat het na te streven; (2) haalbaarheidstekort: een kernprincipe is bekend en actoren accepteren het, maar hebben niet de mogelijkheden om het na te streven; (3) legitimiteitstekort: een kernprincipe is bekend en haalbaar, maar actoren accepteren het principe niet als leidraad voor hun handelen; en (4) passief bereik: een kernprincipe is bekend, maar wordt niet door actoren nagestreefd en geaccepteerd.

De bevindingen in dit hoofdstuk laten zien dat kennis van de kernprincipes van mariene ruimtelijke ordening aanwezig is in alle opeenvolgende ruimtelijke plannen voor de Nederlandse Noordzee. Echter, de interpretatie van deze principes in de Nederlandse casus is vaak erg smal. De focus lag op het creëren van een robuust systeem voor snelle en

kostenefficiënte uitrol van windenergie op zee om zo aan (inter)nationaal gestelde duurzaamheidsdoelstellingen te kunnen voldoen. Dit illustreert het belang van aandacht voor interpretatie van deze kernprincipes in hun specifieke context. De focus in de Nederlandse mariene ruimtelijke ordeningspraktijk lag op het bevorderen van de haalbaarheid van windenergie op zee. Door het combineren en prioriteren van bepaalde basisprincipes van mariene ruimtelijke ordening, in combinatie met een smalle interpretatie van deze principes, werd een legitimiteitstekort opgebouwd wat tot institutionele barrières heeft geleid. Daarmee is mariene ruimtelijke ordening verworden tot een hulpmiddel voor het behalen van externe duurzaamheidsdoelstellingen in plaats van een systematische en integrale ruimtelijke ordeningsaanpak waarin verschillende belangen tegen elkaar worden afgewogen. Tegelijkertijd zet dit hoofdstuk aan tot een meer kritisch perspectief op de operationalisering van de basisprincipes van mariene ruimtelijke ordening die de mogelijke onderling afhankelijkheid en conflicten tussen deze principes blootlegt. Hierbij moet aandacht zijn voor het feit dat het soms noodzakelijk is om te kiezen tussen basisprincipes, maar deze keuzes dienen ten minste op een transparante wijze te worden gemaakt.

Hoofdstuk 4: Institutionele verandering voor het nastreven van ruimtelijke integratie tussen windenergie op zee en ander zeegebruik
In hoofdstukken 4 en 5 wordt meer inzicht gegeven in het proces van institutionele harmonisatie zelf. Deze inzichten zijn gebaseerd op participatieve observatie van het Noordzeeoverleg (NZO), waarbij de focus lag op hoe actoren institutionele verandering probeerden te bewerkstelligen tijdens dit overleg. Het NZO is in 2019 ingesteld met als doel om een Noordzeeakkoord op te stellen. In dit akkoord staan afspraken tussen de Rijksoverheid en stakeholders over de invulling en samenhang tussen de drie grote transities op het gebied van energie, natuur en voedsel op de Noordzee.

In hoofdstuk 4 wordt onderzocht in welke mate actoren tijdens het NZO formele en informele institutionele verandering nastreefden. Hierbij wordt specifiek geanalyseerd of deze verandering in overeenstemming is met de zes kernprincipes van mariene ruimtelijke ordening, vanuit het idee dat daarmee de ruimtelijke integratie tussen windenergie op zee en andere belangen kan worden gestimuleerd. In dit hoofdstuk wordt ruimtelijke integratie als een hoofdzakelijk doel van mariene ruimtelijke ordeningsprocessen gepositioneerd. Ruimtelijke integratie verwijst hier naar een lappendeken van functies en belangen. Zowel het functioneel scheiden als het fysiek integreren van functies en belangen kan van voordeel of noodzaak zijn. Het doel van ruimtelijke integratie is om tot een duurzame ruimtelijke configuratie van zeegebruik te komen. De verschillende dimensies van integratie uit de bestaande mariene ruimtelijke ordeningsliteratuur worden hierbij als belangrijke ingrediënten gezien. Deze dimensies zijn: grensoverschrijdende integratie, beleids-/ cross-sectorale integratie, stakeholder integratie, kennis integratie en temporele integratie. Echter, deze bestaande literatuur wordt ook bekritiseerd omdat de dimensies van integratie onvoldoende gedefinieerd zouden zijn. Daarnaast is de ruimtelijke dimensie van mariene ruimtelijke ordening ondergeschoven geraakt in deze literatuur en is er weinig aandacht voor de institutionele veranderingen die voor en door integratie nodig zijn.

Om de dimensies van integratie beter te definiëren wordt gebruik gemaakt van de basisprincipes van mariene ruimtelijke ordening zoals beschreven in Hoofdstuk 3. Deze principes helpen om meer richting te geven aan de dimensies van integratie een daarmee duidelijkheid te geven over wat er precies geïntegreerd wordt. Daarmee wordt de vraag of de formele en informele institutionele veranderingen die worden nagestreefd door actoren, bijdragen aan integratie die in overeenstemming is met de verschillende kernprincipes van mariene ruimtelijke ordening. Op basis van deze ingrediënten is een raamwerk ontwikkeld voor het bestuderen van ruimtelijke integratie binnen mariene ruimtelijke ordening.

Uit dit hoofdstuk komen een aantal belangrijke bevindingen naar voren. Ten eerste wordt door dit hoofdstuk inzicht verschaft in het belang van het NZO als een, aanvankelijk slechts tijdelijk, platform waar actoren institutionele verandering konden nastreven ten behoeve van ruimtelijke integratie op zee. Ten tweede wordt wederom duidelijk dat naast formele veranderingen, vooral ook de informele institutionele veranderingen van normen, waarden en gedragscodes fundamenteel zijn voor het mogelijk maken van deze integratie. Ten derde wordt door de casus van het NZO geïllustreerd dat integratie effectief kan worden nagestreefd door incrementele institutionele verandering, waarbij opeenvolgende kleinere veranderingen tot betekenisvolle verandering kunnen leiden. Waar in bestaande literatuur en in de praktijk vaak wordt opgeroepen tot radicale veranderingen, laat deze casus zien dat kleinere en meer incrementele stappen de haalbaarheid en acceptatie van institutionele verandering kunnen vergroten, en daarmee effectiever kunnen zijn in het nastreven van institutionele harmonisatie en ruimtelijke integratie van duurzame energieopwekking met ander zee- en landgebruik. Tegelijkertijd worden in dit hoofdstuk enkele inzichten geboden in de grenzen van een dergelijke aanpak. Voornamelijk de gebiedsgerichte en temporele dimensies van integratie vragen om meer aandacht, omdat dit de dimensies zijn waar actoren het meest lijken terug te vallen op bestaande institutionele raamwerken.

Hoofdstuk 5: Het ontrafelen van patronen van 'institutioneel werk'
Hoofdstuk 5 is eveneens gebaseerd op de casus van het NZO, maar in dit hoofdstuk ligt de focus op 'het spelen van het spel'. De inzichten in dit hoofdstuk zijn gebaseerd op de observaties van patronen van 'institutioneel werk' door actoren tijdens het NZO. Institutioneel werk is een vorm van institutionele theorie waarin de focus ligt op hoe actoren te werk gaan bij het creëren, behouden, verdedigen of verstoren van instituties. Deze theorie vormt de basis voor het analyseren van interactiepatronen die ontstaan als gevolg van de wisselwerking tussen verschillende vormen van institutioneel werk door actoren over een bepaalde tijdsperiode (in dit geval het overlegproces van het NZO tot aan de presentatie van het onderhandelaars-akkoord voor de Noordzee). In dit hoofdstuk ligt de focus op de discussies omtrent het afwegen van verschillende belangen in de context van meervoudig ruimtegebruik van windenergiegebieden op zee.

In Hoofdstuk 5 is aangetoond dat institutionele verandering binnen het NZO het gevolg was van een subtiele interactie tussen institutioneel werk gericht op het creëren en behouden van instituties, wat resulteerde in incrementele veranderingen van bestaande praktijken.

Werk gericht op het verdedigen of verstoren van instituties speelde een marginale rol in het NZO, en actoren deden hun best om onderling conflict te vermijden. Dit lijkt gerelateerd te zijn aan het belang van vertrouwen en gedeeld begrip tussen partijen in intensieve participatieve trajecten zoals het NZO. Werk gericht op het behouden van instituties werd door actoren gebruikt om een benchmark te zetten voor bepaalde kernwaarden van het huidige systeem (zoals kostenefficiëntie of het reduceren van onzekerheid omtrent windenergie op zee). Dit patroon is 'collaborative stage-setting' genoemd. Deze behouden waarden konden vervolgens door actoren worden ingezet om condities te stellen aan nieuwe ideeën en werk gericht op het creëren van nieuwe instituties.

Ten tweede wordt in Hoofdstuk 5 duidelijk dat actoren hun institutionele werk voornamelijk richten op werkpraktijken ('practices'), terwijl de rollen en verantwoordelijkheden van partijen relatief ongemoeid werden gelaten tijdens het NZO. Het patroon 'boundary dodging' is hier een goed voorbeeld van, waarbij actoren de discussie over verandering van rollen en verantwoordelijkheden actief lijken te ontwijken of in een andere richting om te buigen. Er is één duidelijke uitzondering op dit patroon en dat betreft de afspraken over het instellen van een permanent NZO. Dit is een duidelijke verandering in de rollen en verantwoordelijkheden van niet-overheidspartijen binnen beleidsprocessen rondom de Noordzee. Echter, dit is geen verandering van bestaande formele rollen en verantwoordelijkheden, maar 'slechts' een extra platform. Dit laat ook zien dat institutionele verandering vaak de vorm van beleidsstapeling ('policy layering') aanneemt. Tegelijkertijd kan het permanente NZO in de toekomst mogelijk wel tot verandering in de rollen en verantwoordelijkheden leiden, doordat barrières rondom het delen en communiceren van informatie zijn verminderd.

Een derde belangrijke bevinding in dit hoofdstuk is dat institutionele harmonisatie tot op zekere hoogte een leerproces is dat ook om experimenten vraagt. Het 'spelen van het spel' is geen volledig geplande en strategische activiteit, maar juist ook een gezamenlijke zoektocht naar een gemeenschappelijke basis die wordt beïnvloed door actoren hun emoties en ervaringen uit het verleden. In deze gezamenlijke zoektocht ontwikkelen actoren een gedeeld begrip van mogelijkheden, grenzen, en ideeën (vaak op meer incrementele wijze), die haalbaarder lijken te zijn in de implementatiefase.

Hoofdstuk 6: Conclusies over institutionele harmonisatie de context van energietransitie
In Hoofdstuk 6 worden de inzichten uit de voorgaande hoofdstukken gecombineerd en worden conclusies getrokken door het beantwoorden van de hoofdvraag: hoe streven actoren institutionele harmonisatie na tussen duurzame energieopwekking en andere sectoren en welke institutionele barrières en kansen doen zich hierbij voor?

In deze studie wordt inzicht geboden in de institutionele barrières en kansen die actoren tegenkomen in de context van energietransitie. Deze institutionele barrières zijn vaak het resultaat van complexe en genuanceerde onderlinge relaties tussen formele en informele instituties, zowel binnen als tussen sectoren. Begrip van deze onderlinge relaties en hun nuances is noodzakelijk voor het nastreven van institutionele harmonisatie. Dit geldt niet

alleen voor de wetenschap, maar ook voor de praktijk. Institutionele harmonisatie vraagt daarom om aandacht voor zowel formele als informele instituties en het 'spelen van het spel', waar actoren onderling overwegingen en ideeën uitwisselen en een gedeeld begrip van (potentiële) spelregels uitwisselen. Institutionele harmonisatie lijkt daarmee baat te hebben bij platformen die het uitwisselen van ideeën tussen actoren stimuleren en de normen voor communicatie en uitwisseling van informatie herijken; i.e. platformen die een open en transparant 'spelen van het spel' mogelijk maken.

Het concept ruimtelijke integratie wordt in deze studie gebruikt om aandacht te vestigen op de sector- en schaal-overstijgende consequenties en behoeften van energietransitie. In plaats van een roep om brede beleidsintegratie die onafhankelijk is van schaalniveaus, wordt met het concept van ruimtelijke integratie expliciet de nadruk gelegd op het feit dat dergelijke integratie op elk schaalniveau iets anders kan betekenen. Institutionele harmonisatie kan vervolgens worden gezien als een manier om de intersectorale en schaal-overstijgende verbanden te versterken. Deze studie laat zien dat dergelijke harmonisatie-processen vaak het resultaat zijn van meer incrementele formele en informele institutionele veranderingen die zich manifesteren in de vorm van beleidsstapeling. Hierbij dienen formele institutionele veranderingen vooral voor het opvullen van duidelijke beleidsgaten of vaak kleine aanpassingen van bestaand beleid. Echter, in deze studie wordt vooral ook het belang van informele institutionele veranderingen en het 'spelen van het spel' benadrukt, die de fundering vormen voor andere institutionele veranderingen. Organisatieculturen, routines, interpretaties en ideeën van actoren, en hun onderlinge relaties en interactie, blijken van groot belang voor institutionele harmonisatie processen. Hierbij moet wel worden benadrukt dat actoren beter in staat lijken om de institutionele complexiteit te navigeren op een hoger, meer strategisch niveau, omdat het op dit niveau makkelijker is om overeenstemming te bereiken over regels die vastleggen hoe in de toekomst bepaalde processen en belangen worden afgewogen.

Door institutionele harmonisatie na te streven, kunnen actoren institutionele ruimte creëren binnen en tussen de betrokken institutionele raamwerken, en daarmee ruimtelijke integratie van duurzame energie en ander zee- en landgebruik mogelijk maken. Institutionele ruimte wordt daarmee geconceptualiseerd als een fenomeen dat objectief bestaat te midden van de verschillende institutionele raamwerken, maar deze ruimte kan door verschillende actoren anders worden waargenomen en ervaren. Institutionele harmonisatie kan worden gezien als een essentieel proces in het organiseren van dergelijke institutionele ruimte. In dit proces worden institutionele barrières verminderd en worden er condities gecreëerd die ruimte scheppen tussen de verschillende institutionele raamwerken die als leidraad dienen voor actoren uit verschillende betrokken sectoren

Op basis van de inzichten uit deze studie wordt aanbevolen dat er een meer dynamisch begrip van institutionele verandering nodig is binnen energietransitie. Institutionele harmonisatie gaat niet enkel over het aanpassen van 'spelregels', maar vooral ook over een gezamenlijke zoektocht van actoren naar ideeën en begrippen van verschillende regels en

hoe deze (kunnen) werken binnen de bredere institutionele context. Door zowel formele als informele instituties in beschouwing te nemen, net als het 'spelen van het spel', kan institutionele harmonisatie een dergelijk, meer dynamisch en actor-georiënteerd begrip van institutionele verandering binnen energietransitie en bredere duurzaamheidstransities ondersteunen.

Op basis van deze studie worden een aantal aanbevelingen gedaan. Ten eerste is het van belang dat, zowel in de wetenschap als in de praktijk, expliciet aandacht wordt besteed aan de interactie tussen fysieke ruimte voor duurzame energie en zijn institutionele tegenhanger genaamd institutionele ruimte. Ten tweede zijn zowel formele als informele instituties en het 'spelen van het spel' van belang voor institutionele harmonisatieprocessen die bijdragen aan het creëren van institutionele ruimte. Hierbij moet aandacht worden besteed aan zowel de intersectorale als schaal-overstijgende relaties tussen actoren en vraagstukken. Ten derde is het van belang te zorgen dat de urgentie rondom energietransitie, de interesses en belangen van andere sectoren niet te veel overschaduwd, en daarmee een barrière wordt voor goede belangenafweging. Tot slot moeten de voordelen van meer incrementele institutionele veranderingen niet te snel terzijde worden geschoven, omdat deze aanpak misschien wel constructiever en zelfs sneller zou kunnen zijn in het creëren van institutionele ruimte en, in het verlengde daarvan, fysieke ruimte voor energietransitie.

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During her PhD research, conducted at the Faculty of Spatial Sciences, University of Groningen, Rozanne was mainly interested in institutional dimensions of cross-sectoral cooperation and coordination in energy transition contexts, both onshore and offshore. In addition, Rozanne taught courses, provided guest lectures, and supervised bachelor and master theses. She was part of the organizing committee for the 12th AESOP Young Academics Conference in Groningen in 2017. Moreover, she was involved in the establishment of the Energy Community of Young Researchers Groningen. Rozanne presented her work at various international and national conferences. During her PhD research, she went on a secondment as project secretary for the North Sea Dialogues [*Noordzeeoverleg*], at the Physical Environment Consultative Council, Ministry of Infrastructure and Water Management. From September 2021 onwards, she is working as a postdoctoral researcher at the Faculty of Spatial Sciences, University of Groningen. She is involved in, among others, the EU-funded project 'Institutionalized Integrated Sustainable Energy and Climate Action Plans' and the project 'Harnessing the heat below our feet: Promises, pitfalls and spatialization of geothermal energy as a decarbonization strategy'.

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Institutional harmonization for energy transition

Generating renewable energy (RE) typically requires much space and is more visible in the landscape compared to fossil fuels. Due to the limited amount of space available, both onshore but also offshore, finding physical space for energy transition requires cross-sectoral cooperation and coordination between RE and various other sea- and land uses to ensure efficient use of spatial resources. This study draws on agency-oriented institutional theories to study the role of actors in institutional harmonization processes in energy transition contexts. Two case studies form the empirical backbone of this study. The cases comprise: (1) photovoltaics along national transport infrastructure; and (2) offshore wind farm development in the Dutch North Sea, with particular focus on the North Sea Dialogues. The findings show that institutional barriers are often the result of complex and nuanced interrelations between formal and informal institutions, both within and between individual sectors. The fine-grained reality of institutional harmonization between RE and other sectors is shown to be a process of incremental institutional change, where interacting actors are involved in adaptation, reinterpretation and (re)design of rules, while also actively maintaining aspects of key institutional frameworks. Informal institutions are of key importance in these processes. This study illustrates how finding physical space for energy transition also requires attention to its institutional counterpart which is coined institutional space.

Rozanne C. Spijkerboer (Zwolle, 1989) holds a Research Master in Regional Studies from the University of Groningen, in which she focused on renewable energy and marine spatial planning from an institutional perspective. These topics were further expanded during her PhD research at the University of Groningen. Her research was funded by the Ubbo Emmius Fund of the University of Groningen and by Rijkswaterstaat as part of the cooperation program 'Sustainable Networks' between the University of Groningen and Rijkswaterstaat.

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