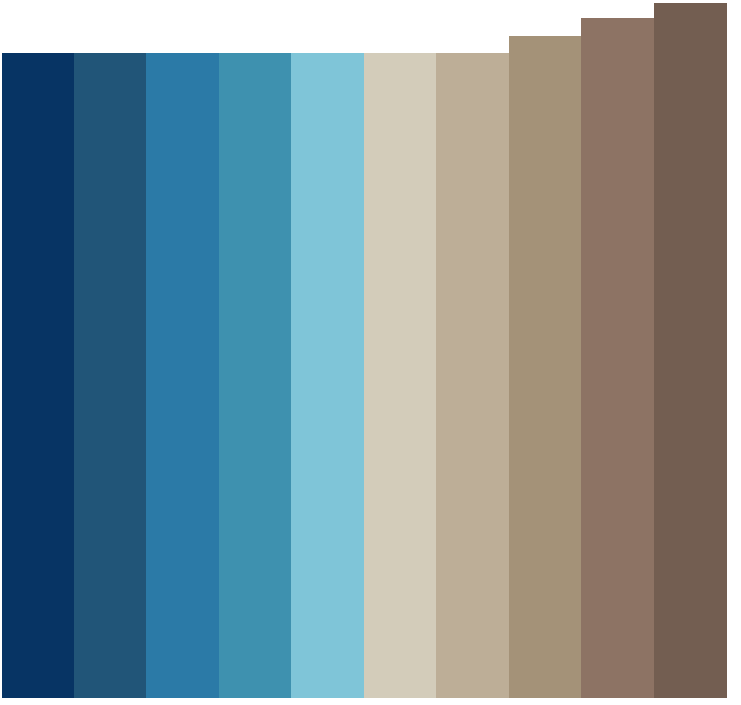
FRAMING COASTAL SQUEEZE: UNDERSTANDING THE INTEGRATION OF MEGA-NOURISHMENT SCHEMES INTO THE DUTCH COASTAL MANAGEMENT SOLUTIONS REPERTOIRE



Ewert Aukes

FRAMING COASTAL SQUEEZE: UNDERSTANDING THE INTEGRATION OF MEGA-NOURISHMENT SCHEMES INTO THE DUTCH COASTAL MANAGEMENT SOLUTIONS REPERTOIRE

AN INTERPRETIVE ANALYSIS OF
COASTAL MANAGEMENT PROCESSES

Ewert Johannes Aukes

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COASTAL MANAGEMENT PROCESSES

PROEFSCHRIFT

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de graad van doctor aan de Universiteit Twente,
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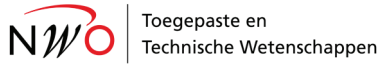

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Contents

List of illustrations

List of tables

INTRODUCTION

“De kust moet als het ware van achtertuin weer voortuin worden.”

“As it were, the coast has once again to turn from back garden into front garden.”

Jonker & Van Veen, 2008

1.1 The research puzzle: Dutch coastal management as a complex policy domain

For a long time, inhabitants of the Dutch coast were convinced of the value of withholding land from the forces of nature, turning it into a stronghold against these forces, and even snatching more and more land from the surrounding waters. A result of that continuous struggle for survival in an otherwise life-threatening surrounding is the artificiality of a large part of the current national territory of the Netherlands. If nature would have its way, a considerable part of what is now arable land, dry nature or urban area would be submerged below the North Sea (see Figure 1.1). What made so many generations of inhabitants of those coastal areas choose to endure a lifetime of hardship fighting the waves? Coastal areas had more in store than only hardship for those who dared to resist. Just like riversides, coastal areas promised long distance travel and cultural and economic exchange. These areas embodied hope for a good life countervailing the adversities. It was just another frontier to be pushed (Pye 2015). Since those early days, the relative level of hardship to endure decreased (Pranzini, Wetzel, and Williams 2015, 1). Meanwhile, Dutch coastal management developed from small-scale, haphazard coastal protection to a large-scale, full-fledged management program.

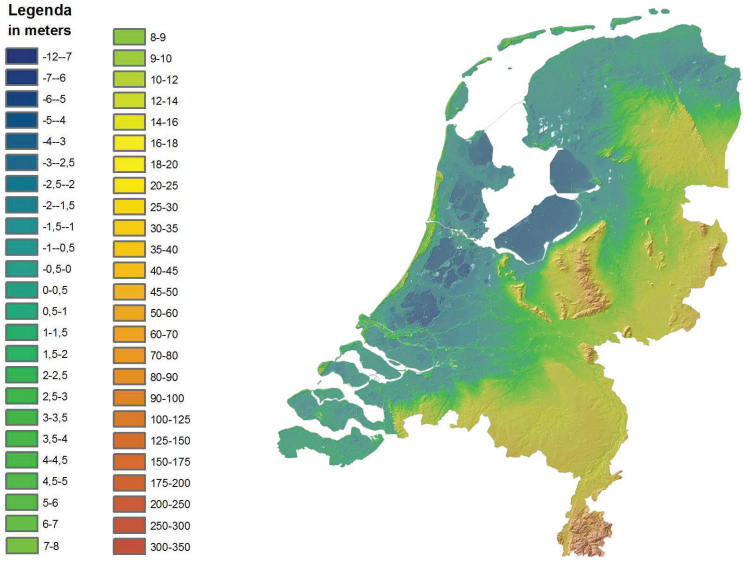


Figure 1.1 Erosion and sedimentation at the Dutch coast during recent decades (Stam 1999, 4.)

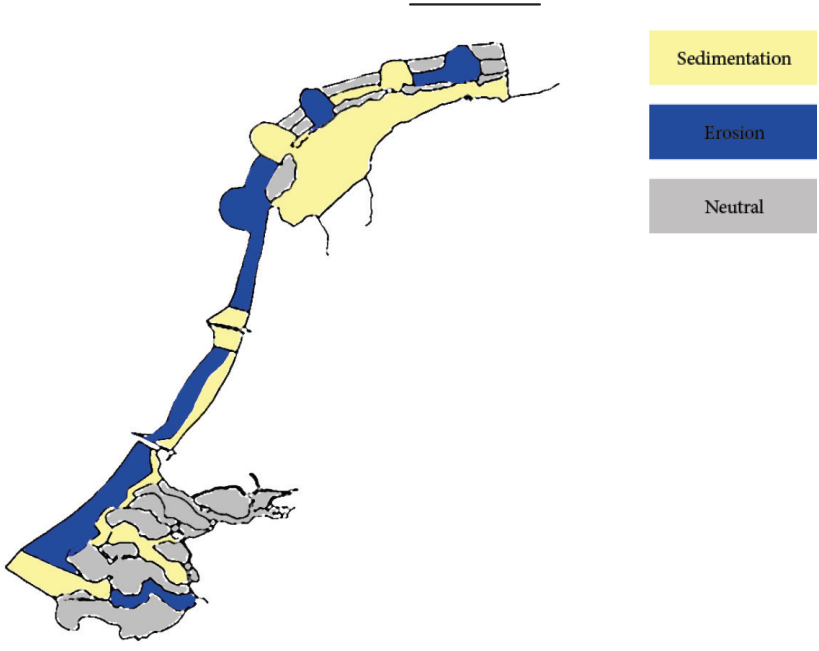


Figure 1.2 Contour map of the Netherlands (Adviesdienst Geo-informatie & ICT.

A core task of this coastal management program is the mitigation of the effects of erosion at the Dutch coast. Due to physical circumstances, some parts of the Dutch coast erode, while others grow (Figure 1.2). Nowadays, the Dutch coastal management program faces additional challenges. It is no longer only the direct influence of the forces of nature that has to be taken into account. Instead, the influence of other natural and social processes on coastal areas grows continuously. For one, sea-level rise, as one of the tangible outcomes of anthropogenic climate change, threatens the coastal protection system in place. Safety standards have to be adapted to expected increases in water levels (Church et al. 2013, 1140). Second, since the 1900s, urbanization is an ongoing phenomenon notably observed in the western part of the Netherlands (Figure 1.3). With the growth of urban areas, the population pressure on the coastal areas increases, too. And with an increased population, the demand for space dedicated to economic development, nature as well as recreation will inevitably rise. For example, within two years (2006-2008), parts of the Dutch Randstad area suffered strong decreases of green areas for recreational walks (Figure 1.4).
The lower parts of the Netherlands already harbor a large share of economic productivity and have become a tourniquet for dif-

ferent types of economic activity. First, the Netherlands' main airport Schiphol has developed into one of the most important European airports ranking fifth in the top-ten of busiest airports in Europe in 2015 (AirportsinEurope.com 2016). Second, the Netherlands is also bustling with container transport, as the recently-expanded Rotterdam harbor is a central node for global container transport. In 2015, coming in ninth in the top-twenty world ports, Rotterdam harbor processed 466.4 million metric tons of cargo (Port of Rotterdam Authority 2016). Third, the Netherlands hosts one of the largest data transport hubs worldwide with high-capacity internet cables arriving from overseas, arguably the fastest way to travel in modernity and featuring the coast as a connecting node for a global network. In total, an estimate of 9 million people's lives are threatened and two-thirds of the Dutch GDP is at risk in case of flooding in the Netherlands (OECD 2014, 53). Flood damages in the Western Randstad area of the Netherlands may amount to as much as €400 billion (OECD 2014, 53). The awareness of these multiple problem drivers and the growing necessity to deal with them is captured in what others called 'coastal squeeze' (Doody 2004, 134).

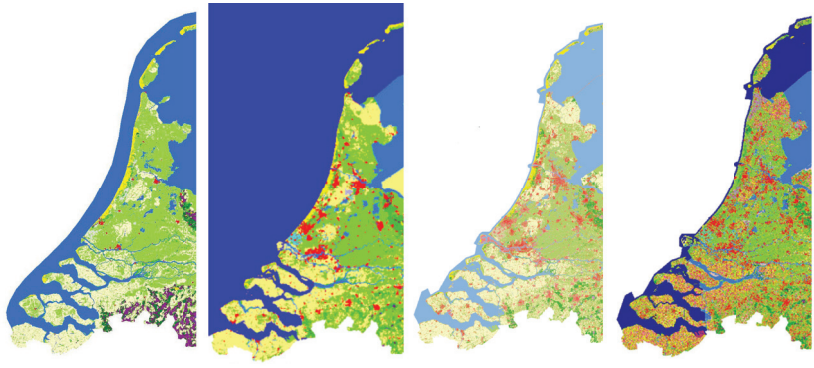
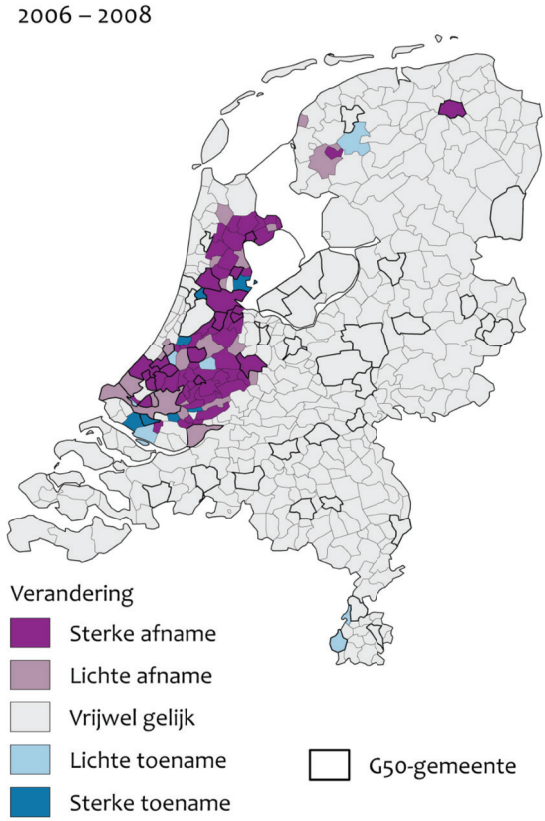


Figure 1.3 Urbanization of Dutch coastal areas (red). Left to right: 1900, 1970, 1990, 2012 (Kramer and Knol 2003; Knol, Kramer, and Gijsbertse 2004; Kramer and Van Dorland 2009; Hazeu et al. 2014).

Coastal squeeze as a concept stems from the British coastal management tradition (Taylor, Murdock, and Pontee 2004, Doody 2004). Its original meaning pertained to ecological problems in coastal areas that were due to human interference, mostly hard sea defenses, thereby inhibiting natural mechanisms coping with changing water levels and extreme weather events (Birchenough et al. 2015, 204, Cooper and McKenna 2008, 116). While Pontee (2013, 206) attempts to restrict the conceptual definition to the

afore-mentioned, others also include effects of urbanization (Schlacher et al. 2007, 557), agriculture (Hanley et al. 2014, 137), and other human processes as drivers of ecological problems in coastal areas leading to coastal squeeze. The problem context presented previously allows for the conclusion that the limited technical conceptual definition of coastal squeeze offered by Pontee (2013) c.s. ignores the broader socio-economic drivers of ecological problems, especially in densely populated, path-dependent[1] coastal areas as they are in the Netherlands. It disregards the spatial demands of coastal socio-economic processes. Instead, in this dissertation, coastal squeeze is the interdisciplinary complex of problem drivers from natural, sea-side processes as well as land-side, socio-economic processes impacting on the coastal area and setting the framework for coastal management solutions (cf. Pranzini, Wetzel, and Williams 2015, 1).



1 Path-dependency is in so far the case, as the land use of Dutch coastal areas cannot easily be transformed into low-risk uses. The transaction costs to retreat from the coast, leave a safety buffer zone and move all socio-economically infrastructure away from the coast would be sky-high. A coastal management strategy including large-scale retreat as an instrument is in the Netherlands, therefore, not only difficult to conceive from a national identity point of view, but also from this more economic perspective.

Figure 1.4 Change in availability of green areas 2006-2008; purple through blue colour represents a gradient from strong decrease to strong increase (CBS, PBL, and Wageningen UR 2013).

A major downside of approaching the challenge posed by coastal squeeze as merely a technical one, i.e. increasing safety standards of coastal infrastructure without taking into account the broader problem complex, is the implementation of coastal management solutions serving a limited objective at the expense of other socio-economic processes. Understandably, coastal managers in the Netherlands generally prefer solutions, which they are experienced with and that have proven themselves to be successful. However, the complexity of the coastal management challenge calls for new, more integrated approaches (e.g. Van Slobbe et al. 2013). Coastal squeeze, understood as a multisectoral policy problem, therefore, requires adaptive coastal management in the vein of Lulofs and Bressers (2010, 7).

Recently, coastal managers in the Netherlands have proposed to experiment with existing coastal management technologies to deal with the changing demands on coastal management. During the last decade, a spatial infrastructure approach called Building with Nature whose origin dates back to the early 1980s (Waterman 2010) has emerged as a philosophy to redesign coastal management strategies (Van Dalfsen and Aarninkhof 2009, De Vriend, Van Koningsveld, and Aarninkhof 2014). Preferred coastal management methods under this philosophy include maximal use of natural materials in combination with the favorable utilization of natural processes while taking into account the ecosystemic context. Currently, the most talked-about outcome of this evolution in Dutch coastal management is the implementation of sand mega-nourishment schemes[2]. Previously, the Dutch coastal management program used around 12 million m^3 sand annually for coastal protection, pumping it up with ships from the sea floor and redepositing it either in the foreshore or on the beach itself. The size of individual nourishments is often in the order of 1 Mm^3 with a maximum of 5 million m^3 (Oost et al. 2016, 8), while the two mega-nourishment schemes implemented in the Netherlands – the Sand Motor and the Hondsbossche Duinen – used 21 million m^3 and 30 million m^3, respectively. With an eye for the spatial, recreational and economic effects, these mega-nourishment schemes are first steps in developing the set of coastal management instruments into an adaptive repertoire able to deal with coastal squeeze (cf. Masria, Iskander, and Negm 2015, 10)[3].

2 Among others, 'nourishment', 'replenishment', or 'filling' are notions used for describing the deposition of sand on or in front of beaches for coastal safety or other purposes.

3 Aspiring to the inclusion of multiple goals has also found its way into the most recent Delta programme which delineates Dutch coastal policy (Staf Deltacommissaris 2015). Deltacommissaris 2015).

Up to now, I have spoken of 'coastal managers' as an impersonal, cumulative group of actors who are responsible for 'making' coastal management. Moreover, I have very briefly recounted a history of Dutch coastal management and the socio-economic context, in which these coastal managers act, to introduce the scope of this research. However, most of what I described so far deals with outcomes: outcomes of policy processes. Nothing of the story told suggests the nitty-gritty, micro-level conflicts, problematics and complexities between actors in coastal management decision-making processes. But following the notion of Adaptive Water Management (Lulofs and Bressers 2010, 7), we cannot assume that the outcomes of those processes are the result of rational decision-making of rational actors weighing all conceivable pro's and con's to find the absolute, value-free, best solution to the policy problems at hand. Given the large diversity of sectors and policy levels involved in Dutch coastal management and the vested interests of all those potential policy-relevant actors, cooperation is necessary and conflict is common. In addition, facts are not accepted as indisputable truths anymore. Instead, in the light of uncertainty and ambiguity, facts are challenged by other facts and it is up to actors to categorize their relevance and trustworthiness and select which they want to use. Selected facts are embedded in stories about the policy problem at hand and how to solve it. A network of many policy-relevant actors emerges, all of them with their own interpretation of policy situations. Given such diversity, it is wondrous that policy change occurs, let alone allowing profound changes in the ways in which coastal management deals with issues as coastal squeeze.

In the following section 1.2, I define the research objectives and questions, which will guide the research in this dissertation. Afterwards, section 1.3 explicates the lay-out of the dissertation's chapters and their relevance for the research questions. This chapter ends with a summary in section 1.4.

1.2 Research objectives and questions

The complexity of coastal management in terms of actors and interests, and the resulting differences in meaning-making among those actors generate potential for policy controversy. It may even lead to the breakdown of decision-making processes. Meaning-making in the coastal management domain and the processes by which meaning is made by individual actors or in interaction is, thus, crucial to understanding the dynamics, and outcomes of decision-making processes. This holds especially for processes of innovation in coastal management, as represented by the development of mega-nourishment schemes in the Netherlands, because innovative technologies embody a deviation from the way in which things were done before. The dual relevance of the research subject for theory as well as practice leads to two overarching research questions. Both have a number of lower order research questions pertaining to them. The more practice-oriented set of main and lower order research questions reads as follows:

4 These aspects of frames and framing are framing foci (section 9.4.1), meta-properties of frames (section 9.4.2), properties of framing performers (section 9.4.3), properties of the framing activity (section 9.4.4), and collective effects of framing (section 9.4.5). These concepts will be discussed in due course.

A. *Which interpretations of the policy situation were relevant for adding mega-nourishment schemes to the accepted set of coastal management technologies in the Dutch coastal management context?*

A.1. *What is the position of mega-nourishment schemes in the history of coastal management in the Netherlands?*

A.2. *How does the coastal science literature gauge the expected performance of the Sand Motor concept in terms of advantages and disadvantages?*

A.3. *What is the influence of a language of 'experiments' on the adoption of mega-nourishment schemes?*

The practice-oriented part takes a historical lens to put the mega-sand nourishment technology into its coastal management context. This question is discussed mainly in Chapters 1-3 and is answered in Chapter 10. In addition to the position of innovative sandy technologies in the coastal management domain's history, the expectations of the coastal science community towards them are explored in Chapter 3 and the respective question is also answered in Chapter 10. The last practice-oriented lower-order question is not related to one chapter specifically and is answered in Chapter 10, as well.

These preliminary discussions lead the way for the interpretive parts of this dissertation. The theory orientation of the research is embodied by the following set of main and lower order research questions:

B. *How does meaning-making of the policy situation influence decision-making processes about mega-nourishment schemes in the Dutch coastal management context?*

B.1. *How do the interpretations of some policy situations, the solutions embedded in those interpretations, and the processes by which the solutions are chosen result in policy consensus while others do not?*

B.2. *How do interpretive policy entrepreneurs use interactional framing mechanisms to realize an innovative coastal management technology in a complex policy context?*

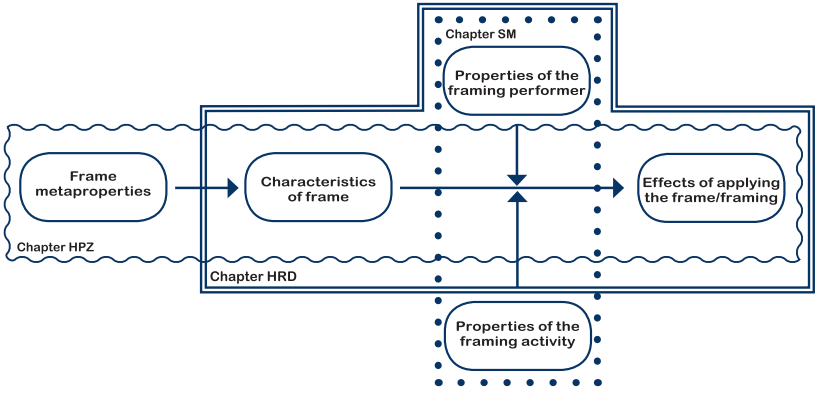


Figure 1.5 Frame and framing concepts, their relationship and how they figure in the empirical chapters of this dissertation.

B.3. *How do aspects of frames and framing[4] influence the decision-making process and the formation of epistemic communities across different Dutch coastal management cases?*

As will be explained in Chapter 5, the three cases studied in this dissertation – Hondsbossche Duinen, the Houtribdijk pilot, and the Sand Motor – are all in some way subtypes of the mega-nourishment concept. While all research questions will be discussed comprehensively concerning all three cases, the answer to B.1 in Chapter 10 will devote special attention to the distinction between diminished and full subtypes of mega-nourishment schemes (see Chapter 5 for an explanation). The overarching research questions

5 Note on the integration of published articles in this dissertation: Four research articles have been integrated in this dissertation. These include the scientific literature in section 2.3.2 as well as the three empirical chapters 5-7. Details of publication will be clarified at the respective chapter's beginning. In general, the texts are as published, with the exception of reference lists, which can be found combined at the end of the dissertation in the general reference list. I note and just-ify changes, whenever I deviate from the original published text

A. and B. translate into objectives for the research pertaining to both overarching research questions. Similar to the overarching research questions, the research objectives are practice-oriented and theory-oriented, respectively. The research in this dissertation, guided by the afore-mentioned research questions, aims to

> *Understand the arguments whereby sandy solutions, such as mega-nourishment schemes, gained traction in the coastal management community in what is arguably a recent episode of the development of coastal management solutions in the Netherlands.*

In addition, the more theory-oriented objective is to

> *Understand the mechanisms of meaning-making in Dutch coastal management decision-making processes, by analyzing cases, in which innovative, sandy coastal management solutions – such as, but not exclusively, mega-nourishment schemes – were implemented.*

Although the former is practice-oriented and may inform policy in subsequent stages, it is not the explicit aim of this dissertation to formulate policy recommendations.

1.3 Textual and visual guidance: The dissertation map

Research questions help to structure scientific work. In this, the dissertation at hand is no different. But visual guidance adds to the clarity of text (Tufte 2006, 13), which is why I provide a map of sorts for the following texts (Figure 1.5).

Most chapters and sections can be retraced in one way or another on this map. The five oval elements of this map are aspects of the framing process. The element to the left – 'frame metaproperties' – describes frames on a more abstract level. These metaproperties contain elements of scaling scope and consensuality. Next, 'characteristics of the frame' relates to the content of a frame or interpretive scheme. In policy terms, this may relate to the concrete problem definition and a possible solution to this problem. This is congruent to what others called 'cognitive frames'.

To the right, 'effects of applying the frame/framing' describes what happens to epistemic communities, because of framing. The connection in between the characteristics and the effects of the frame is the act of framing. The oval elements of 'properties of the framing performer' and 'properties of the framing activity' pertain to the act of framing. The former observes who does the framing and the framer's interpretive characteristics.

The latter observes how the framer does the framing, which comes close to what has been termed 'interactional framing'. I call the figure a map and consciously avoid the term of 'conceptual model'. Conceptual models raise the expectation of causal relations between the elements of the map often taking the shape of directed arrows. The map does not propose such relations. Rather, it only shows connections between elements of the framing process. Connections between framing process elements are not directed. Instead, the connections in Figure 1.5 are understood as reciprocal, i.e. changes in one have effect on the other and vice versa. Reciprocity between the elements of the framing process also explain, why the colored borders depicting the scope of the empirical sections all span more than one element. These borders will be explained in the following.

Chapter 2 of this dissertation extends the problem background. It gives a historic overview of coastal management in what has become the Netherlands. It describes the role of mega-nourishment schemes in coastal management and is part to the answer to the lower-order research question A.1. Chapter 3 accommodates a review of the scientific literature on advantages and disadvantages of mega-nourishment schemes in relation to other types of nourishment schemes[5]. This section relates to research question A.2. In Chapter 4, I give an overview of the theoretical background of framing theory. It begins with a historical overview and presents the state of the framing literature. It relates existing literature to the framing concept as used in this dissertation. The research design is sketched in Chapter 5. The chapter kicks off with a brief biographical sketch to introduce the reader to my personal way of seeing things. This is followed with an outline of my philosophical commitments. The ensuing methodology section builds on those philosophical foundations. It describes the case study design I employ, studying the population of mega-nourishment schemes in the Netherlands and smaller cases where they have relevance for mega-nourishment schemes. In addition, the

6 This coastal management project is also the core of the NatureCoast research project of the Dutch Technical Science Foundation STW. This research project funded the research including my employment as a PhD candidate at the University of Twente between 2013 and 2017.

case is made for the qualitative interview as central data generation method. I explain how I developed the semi-structured interview guide and how I analyzed the transcripts the interviews produced. I also explain the extension of the analysis techniques as applied in the comparative Chapter 9. Both Chapters 4 and 5 are relevant to answering the lower-order questions related to research question B. Chapters 6 through 9 are the empirical chapters. All but the comparative Chapter 9 are based on research articles published in or submitted to peer-reviewed journals. In Chapter 6, the mega-nourishment case at the Dutch North Sea coast called 'Hondsbossche Duinen' is presented. In this chapter, I develop a framing approach based on framing foci. Reconstructing these framing foci throughout the duration of the case, including how they changed, showed how matching and mismatching framing foci influenced the course of the project.

In addition, actors emphasizing different framing foci showed how quite similar cognitive frames could still lead to conflict among actors. Chapter 7 deals with a smaller-scale experiment. As a diminished subtype of a mega-nourishment scheme, its results pertain to mega-nourishments schemes (Chapter 5; cf. Appendix X). It focuses on a sandy reinforcement project at the Houtribdijk, the seawall connecting the Flevoland province with North-Holland. In this chapter, I explore what happens in terms of meaning-making in coastal management projects initiated by pragmatic private parties, who aim at quick realisation of plans. In this case, a narrow-scoped frame dominated the interactions between the private initiator and governmental officials. Chapter 8 turns to the interactional aspect of framing. It develops the notion of an interpretive policy entrepreneur based on the interactional framing mechanisms deployed to make meaning across policy-relevant actors in a coastal management project. The project used as a case in this chapter is the 'Sand Motor'[6], which is the first mega-nourishment scheme at the Dutch North Sea coast preceding the Hondsbossche Duinen. In Chapter 9, I expand the analyses from the single cases to the other cases. This expansion is based on the case description as presented in the respective chapters and answers research question B.4. I focus on comparison of framing foci, scale framing, interpretive and generic policy entrepreneurs, framing interaction mechanisms and framing outcomes. Chapter 10 synthesizes the results, discusses their relevance, answers the research questions, and draws conclusions.

1.4 Summing up

This chapter introduced the reader to the complex problematics that coastal managers deal with in their day-to-day work. It highlights the identity-shaping quality of water management, including coastal management, for the Dutch. The technical problem of pressures on the coast from seaside and landside translates into a complex policy domain in which many interests and – in the Dutch case – also many policy-relevant actors are at play. I have described how the broader research puzzle boils down to research questions, which begin at a rather concrete descriptive level and move, through understanding questions for single cases, to understanding the similarities and differences between those single cases. The Dissertation map presented in section 1.3 serves as a visual guide through the research. Whenever applicable, the reader's position on the dissertation map is highlighted. In the next chapter, the dissertation proceeds with a description of the historical and institutional background of coastal management in the Netherlands.

MANAGING THE DUTCH NORTH SEA COAST

2.1 Introduction

Coastal squeeze, as a problem unfolding in the Dutch coastal region, did not develop in a historical vacuum. The three cases dealt with in this dissertation are all in their own way related to issues of coastal squeeze. In this section, I first retrace briefly the history of Dutch coastal management. It is presented as an interplay between human settlement, environmental circumstances and technological progress. For a better understanding of the coastal management arena as it is now, I outline the responsibilities of policy-relevant actors as well as concepts and policy documents central to Dutch coastal management.

2.2 Historical perspective

In this section, I briefly retrace the way in which the inhabitants of the Netherlands fought off the water, attempted to gain control over the land from nature and subsequently learned to live with it. The chronology of this process begins with the times when nature was dominating and continues with the Anthropocene era in coastal management.[7] The Anthropocene in coastal management began when humans ceased to regard retreat from coastal areas as the only way of protecting themselves from adversity from the seaside and began modelling the landscape to help them with this undertaking.

At the end of the last ice age, in which large parts of the North Sea were dry and accessible, glaciers began to melt and sea-levels began to rise again with a staggering 1m per century (Jelgersma 1996). This process stagnated around 5000 BC (Jelgersma 1996, Behre 2013). Subsequently, embankments developed roughly parallel to the current coastline and enclosed the lower-lying parts further inland. Appropriately, these embankments are called 'Old Dunes'. Because of these embankments, inland waters became fresh and peat areas began to grow. This did not result in complete inertia of the coastline. Instead, the amplitude of coastline fluctuations common at that time, which was due to glacial melting, merely decreased. By definition, there was no coastal squeeze in this developmental phase of the Dutch coast, because human activity in coastal areas was low. Once a change in mentality of the human coastal settlers had occurred, coastal squeeze began to develop.

7 The Anthropocene as a concept originated in climate science, where it represents the 'human era' – based on the unprecedented acceleration of greenhouse gas emissions to the atmosphere by human interference (Foley et al. 2013, Crutzen and Steffen 2003, Steffen, Crutzen, and McNeill 2007).

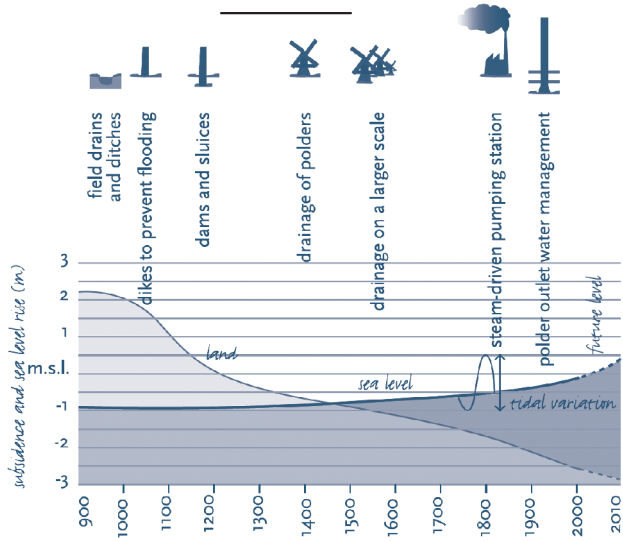


Figure 2.1
The succession of evermore powerful water-related interventions resulted in continual subsidence of low-lying areas of the Netherlands, while the sea level continued to rise ever faster (m.s.l. = mean sea level). (Arnold et al. 2011, 15).

This mentality shift changed the coastal settlers' coastal management approach from passive adaptation to active coastal protection (Behre 2013). As soon as they became available, coastal settlers in what is now the Netherlands used new materials and technologies for recreating coastal landscapes to protect their settlements (Figure 2.1). Around 500 BC, the first resistance against natural forces by settlers at the Dutch coast is documented. Settlers raised mounds with the materials they had at their disposal: presumably soil, timber and rocks. Since then, the enmeshment of human activity with physical reality at the North Sea coast is only matched by few areas in Europe (Behre 2013), rendering the treatment of one without the other less and less meaningful.

Between the 8th and 10th century AD, reduced riverine sedimentation initiated persistent erosive processes at the Dutch coast. In reaction, humans began building dikes to prevent their settlements from flooding. The more dikes were built, the more people realized that coastal defenses would retain weak spots as long as the dikes would not be completed into a ring. Consequently, dikes were connected to ring dikes. Unfortunately, encircling land with dikes had at least two negative consequences. First, if no water could come in, none could flow off without additional measures. Thus, water had to be drained to the sea by ditches, canals and sluices for agriculture to be possible. By and by, this led to subsidence of the ground level, which, in turn, increased the difficulty and costs of drainage. Second, a dike system without weak links

required maintenance, because seawater relentlessly attacked the dikes directly from the outside. The close temporal co-occurrence of three dike bursts in the 13th century illustrates that if dikes did break, restoration of the ring dike was still difficult due to insufficient technical knowledge and societal organization (Behre 2013). Once settlers felt sufficiently confident and capable of protecting existing flood-prone land, Dutch engineers began reclaiming land otherwise inundated by the sea or inland lakes (Figure 2.2).
In the first polders water was pumped out of ring dikes with windmills. Consecutively, these mills were updated with steam-driven and finally diesel-driven pumping stations. But this did not only the speed with which land could be reclaimed. Increasing pumping capacity also meant that larger surfaces could be turned into polder.

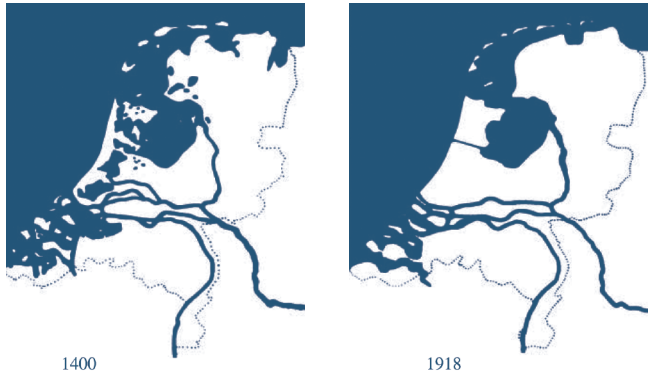


Figure 2.2 Physical developments of the Netherlands: net result of natural sedimentation and erosion plus active coastal and inland land reclamation (Gerritsen 2005, 1273; based on Van Veen 1962).

To put this in perspective, the Beemsterpolder was turned into a polder in 1612 and measures a little over 70km². In comparison, the Flevopolder, reclaimed at the end of the 1950's, is 970km² in surface. Over the centuries, the organization of coastal management has undergone an evolution characterized by specialization and division of labor. Whereas originally coasts were managed by individuals or organizations from all ranks of society, "by the late Middle Ages a group of peripatetic expert "dike masters" had come into being" (Disco 2002, 208). Further professionalization of the sector occurred with the establishment of the water boards, who "formed a vital and effective early form of local and democratic government, which exists to the present day" (Gerritsen 2005). Gradually, though, as Disco (2002, 208) explains, governance in the coastal domain became a matter of the central government:

> *At the close of the eighteenth century, care for the core hydraulic infrastructure passed to the central government with the founding of the Rijkswaterstaat, a national public works agency modeled on the French Corps des Ponts et Chaussees. During the nineteenth century, this agency became increasingly academized and professionalized (Disco 1990; Lintsen 1980) as graduates of the Civil Engineering Department at the Delft Engineering School succeeded in establishing a monopoly on engineering posts in the organization. In the course of the twentieth century, this professional monopoly was extended to the entire domain of hydraulic engineering and water management in the Netherlands, that is, to the provincial and even the local levels. (Disco 2002, 208)*

Up until 1850, when Rijkswaterstaat began measuring coastal erosion, sparse accounts of disappearing beaches were the only available data about coastline fluctuation. For example, the Hondsbossche seawall, constructed at its present location around 1792, extends into the sea, because large-scale erosion shifted the coastline north and south of the seawall further inland (Jelgersma 1996, 31). This example illustrates the ongoing eastbound erosive forces of the North Sea, which had already begun about a millennium before. It also suggests that the Dutch coastal protection system has interfered with the natural erosion process to such an extent that it is by now difficult to estimate the location of the coastline without the system (Arnold et al. 2011, 16).

In the 20th century, Dutch coastal management experienced incisive developments concerning flood disasters, the development of technological response possibilities as well as policy planning to avoid future disasters. The first major flood event to occur in the 20th century was the flooding of parts of North Holland due to a northwesterly storm in 1916 (Figure 2.3). A plan was formulated that included closing off the inland Zuiderzee. The expected advantages of this plan included the replacement of 250km of local dikes around the Zuiderzee as well as the possibilities to reclaim parts of the resulting inland lake for agricultural purposes (Disco 2002, 214). This plan was realized with the completion of the Afsluitdijk in 1932. Although the Afsluitdijk brought some relief, the coastal defense system was

by no means safe. However, the ensuing war and pressing issues, such as "rebuilding the country, food supply, and economic welfare", following in its wake prevented the remaining weakness of the coastal system to occupy a prominent place on the political agenda (Meijerink 2005, 1066). In the night of 31 January and 1 February 1953 the weaknesses of the Dutch coastal defense system were painfully exposed during the "Watersnoodramp". The northwesterly storm during spring tide that led to this flooding disaster was not even particularly strong (Gerritsen 2005, 1276). Nevertheless, its specific characteristics breached the Dutch coastal defenses in over one hundred places leaving 1.835 people dead and 200.000 hectares of land inundated (Disco 2002, 215, Meijerink 2005, 1066; see Figure 2.4). The direct as well as indirect economic effects of this storm were devastating.

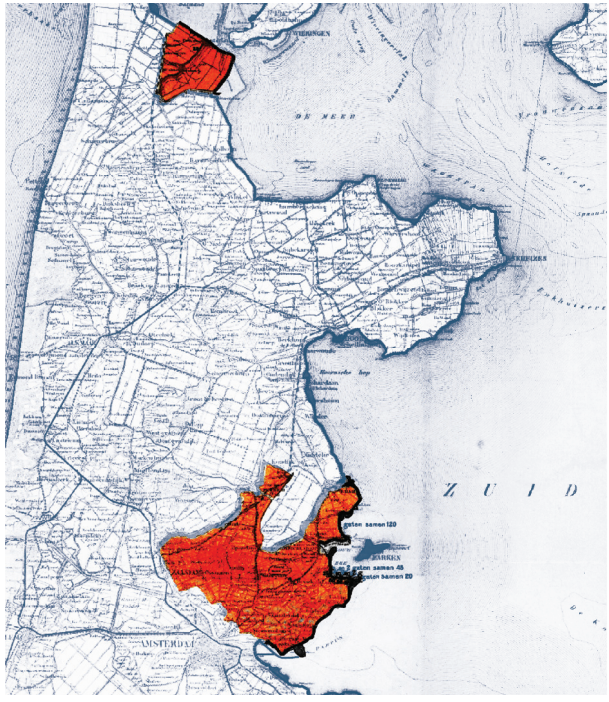


Figure 2.3 Inundated areas (red) due to north-westerly storm 1916 (Source: Hoogheemraadschap Hollands Noorderkwartier).

The immediate political reaction was the installment of what has come to be called the Delta Committee assigned "to develop measures, in order that such a disaster could not happen again" (Gerritsen 2005, 1284). Based on previous reports, this commit-

tee drafted the first so-called "Deltaplan" (Figure 2.5). This plan involved the application of mainly hard engineering solutions to create a single continuous coastline, which was to be put under the authority of Rijkswaterstaat, by closing off riverine estuaries with dams or flexible storm surge barriers. Interestingly enough, irrespective of the civil engineering dominance at Rijkswaterstaat, multifunctionality thought in coastal management was already present at this stage of Dutch coastal management. As a cost-benefit analysis revealed, the costs of using traditional measures would be significantly lower than those novelties proposed in the Deltaplan. However, the indirect benefits thought to be associated with the Deltaplan, "such as land reclamation, traffic, connections, reduced salinity intrusion, recreation, and so on," gave it an advantage over traditional measures and informed the decision to implement the innovative hard-engineering structures proposed

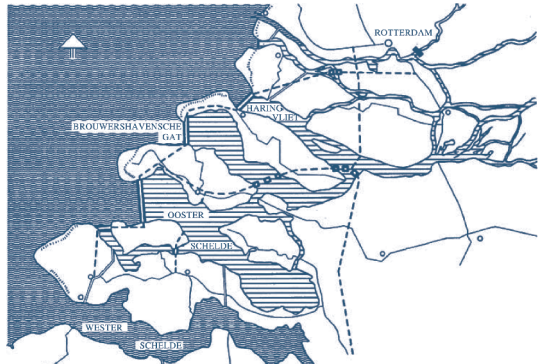


Figure 2.5 The original Delta Plan, as proposed by the Delta Committee (Gerritsen 2005, 1273; source: Rijkswaterstaat, The Hague).

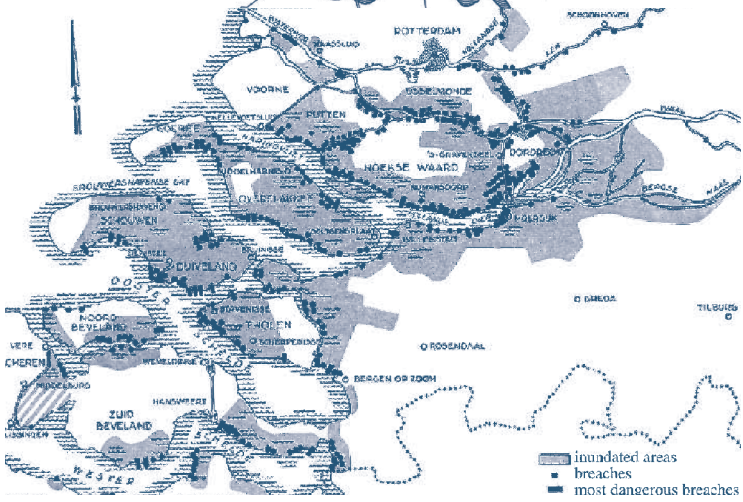


Figure 2.4 Extent of inundations during the 1953 storm (Gerritsen 2005, 1278; source: Rijkswaterstaat, The Hague).

by the Delta committee (Gerritsen 2005, 1286). The new structures came to be called "Deltaworks" due to their innovativeness and renewed promise of overcoming the forces of nature. They are described as "the nation's proudest major public work on its defense against water" (Verduijn, Meijerink, and Leroy 2012, 473) and "were widely celebrated as an expression of Dutch national vitality and Dutch civil engineering prowess in particular" (Disco 2002, 216)

Table 2.1
Delta Department Environmental Research, 1970 to 1985 (adapted from Disco (2002, 223))

Year	Organizational unit	Environmental personnel[a]	Disciplinary representation[b]
1970	Department for Water Management, Ancillary Works and Facilities Delta Lakes	0 of 15	6 CE, 0 univ., 3 HTS, 10 tech.
1972	Department for Water Management, Ancillary Works and Facilities Delta Lakes; Sub-Unit for Environmental Research and Prognosis (1971)	12 of 29	2 CE, 1 biologist (H.L.F. Saeijs), 1 HTS, 8 tech.
1975	Department of Environmental Research and Facilities	21 of 33	Department head is CE; Sub-Unit for Environmental Research: 5 univ. (top 5 positions), 0 CE, 8 HTS, 8 tech.
1980	Division of Environment and Facilities	14 of 21	Division head is CE; Department of Environmental Research: Saeijs head; top 6 positions: 5 univ. + 1 CE, 9 total univ., 4 total CE, 1 tech.
1985	Division of Environment and Facilities	15 of 21	Division head is CE, Land and Water Departments head CE, Land Department 4 univ + 2 CE, Water Department 4 univ. + 4 CE + 2 H TS

Staatsalmanak voor het Koninkrijk der Nederlanden (The Hague, Staats-drukkerij- en Uitgeverijbedrijf), 1970, 1972, 1975, 1980, 1985.

a. The first figure denotes the number in the environmental unit. The second is the total for the department or division as a whole (both figures are irrespective of training or discipline).

b. CE = Delft Institute of Technology graduated civil engineer; univ. = a regular university graduate, likely a biologist or ecologist, possibly a chemist; HTS = a graduate of a higher technical school, discipline unknown; tech. = a non-degree technician.

Although the Deltaworks had been selected as the most desirable course of action, among others due to their aura of multifunctionality, the rise in ecological awareness and a changing professional structure at Rijkswaterstaat during the 1970s (Table 2.1) initiated what is termed an "ecological turn" in coastal management (Disco 2002). It became increasingly clear that the construction of hard infrastructure in the natural ecosystem and with it a single coastline would have unforeseen consequences for ecology and economic activity. A crystallization point for this development was the last closure project of the Deltaworks: the closure of the Eastern Scheldt River. Originally, a reinforcement of the dikes around the Eastern Scheldt estuary could have avoided exacerbating ecological problems and putting fishers' livelihoods in jeopardy, "but the modernistic Rijkswaterstaat preferred starting with a clean slate: rather than mucking with ancient and unreliable dikes, it opted for heroic and innovative hydraulic projects" (Disco 2002, 217). After the consideration of the economic interests of the oyster and mussel fishery as well as the effects a closed barrier would have had on the unique tidal ecology in the Eastern Scheldt, a solution was chosen that would be more friendly to the ecological situation as well as minimize effects on fisheries: a sealable storm surge barrier that would still allow the tides to come in (Gerritsen 2005, 1286, Verduijn, Meijerink, and Leroy 2012, 473). With a critical level of 3m above Amsterdam Ordnance Datum[8], to date the barrier is closed once a year on average (Steenepoorte 2016, 20).

In addition to the finalization of the Eastern Scheldt storm surge barrier and other elements of the Deltaworks, new perspectives on coastal management emerged in the 1980s. Knowledge about ecosystems and society's impact on them grew parallel to technologies that were able to harness natural materials and processes to society's use. Coastal managers realized that the traditional way of protecting coastal areas from flooding were successful in its way, but created new problems which were revealed by population pressure, land use change and an increasing awareness of the environment. Among others, with the help of new dredging technologies, it was possible to utilize sand as a protective material that could be found in the receiving ecosystem itself. It was, thus, much less of a foreign body than a dike. Although beach nourishments were already sporadically used throughout Europe and outside before this time (Charlier, Chaineux, and Morcos

8 The Amsterdam Ordnance Datum – in Dutch "Normaal Amsterdams Peil, NAP – is a measure of the average sea water level.

2005, 102), they became more and more popular in Dutch coastal management from this point on.

1993 and 1995 saw renewed problems with, in this case, riverine flooding with large-scale evacuations of people living in the middle of the country. Although the threat could be contained relatively well, the belief grew that the approach to flood management had to change. These flood events were the main triggers for shifting the "Dutch 'fight against water' paradigm […] towards a more adaptive approach labelled as 'living with water'" (Meijerink 2005, 1068, Verduijn, Meijerink, and Leroy 2012, 473). This more adaptive approach culminated in a large-scale river renovation project called "Room for the Rivers", which focused on the renaturation of the surface water system (Verduijn, Meijerink, and Leroy 2012, 470). This is insofar relevant for coastal management, as "Room for the Rivers" further popularized a nature-oriented perspective by including ecological insights in flood management.

Since the end of the 20th century, the legal framework governing coastal management in the Netherlands experienced continual change. A first development was the formulation of a "basiskustlijn" in 1990 (Verhagen 1990), which is an approximation of the low-tide line (Figure 2.6).

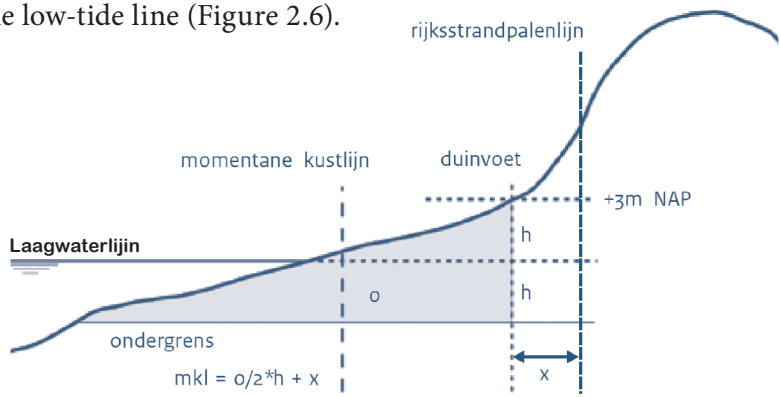


Figure 2.6 Definition of the reference coastline (DG Ruimte en Water, RWS Waterdienst, and Deltares 2012, 11).

The precise location of the reference coastline is approved by the state secretary of the Ministry of Infrastructure and Environment every six years. Since the reference coastline was conceived in 1990, beach nourishments with sand have become the go-to method to restore the desired state, which could earn beach nourishments a spot at the right hand side of Figure 2.1. By now, the reference coastline is at the core of coastal policy plans (see below). While in the decades since 1995 the Dutch flood defense system seems

to meet the expectations, this does not mean that coastal managers are not working to improve their methods. The mega-nourishment schemes Sand Motor (2011) and Hondsbossche Duinen (2013) are cases in point for the continuous improvement of coastal management methods.

The history of coastal management in the Netherlands as told here is a story of the popularization of ecosystem-friendly methods. In part, this popularization can be understood as the logical consequence of the availability of beach nourishments and their subsequent application, just like many other methods were applied once they became available. On the other hand, the societal development of the Netherlands, i.e. the development of population pressure in Dutch coastal areas and the associated land-use changes, have linked up with a growing awareness of environmental problems to promote emerging coastal management methods such as beach nourishments. Continuing experimentation with beach nourishments is thus a matter of technological progress as well as a matter of reducing the footprint our society leaves on the land we live in. The latter is arguably an added objective for coastal management since human-induced climate change has become an accepted given.

2.3 The policy arena

As of 2009, the Water Act is the main policy document outlining "the management and use of water systems" including coastal management in the Netherlands (Arnold et al. 2011, 75). It postulates water management as related to other policy areas, e.g. nature, environment and spatial planning.

Among policy-relevant actors the Water Act distinguishes two water authorities. Water boards manage coasts within their territory, while the State deals with coastal issues crossing the boundaries of the water boards. In addition, the national policy level sets out strategic policy and governs supra-regional defense structures. One of those strategic policy documents, the 2009 National Waterplan, outlines water management policy for the whole country and restates the Dutch government's ambitions with regard to coastal management. First, the coastal foundation is to grow proportionally to sea-level rise. Second, this process is to be stimulated by using sand and the natural dispersal

of this sand along the coast. Third, in addition to keeping coasts safe, coastal management should retain a broader focus on the balanced development of nature, economy as well as accessibility of coastal areas (DG Ruimte en Water, RWS Waterdienst, and Deltares 2012, 10). Under the program "Kustlijnzorg", i.e. coastline "care", Rijkswaterstaat, as the national executive agency entrusted with coastal management, performs annual inspections to assess the status of the coastline. The results of these inspections are evaluated and trigger nourishment activities, if necessary – a strategy in place since the formulation of the reference coastline in 1990 (Dijkzeul and De Hoog 2010, 13). The general situation and ambition of the nourishment program is compiled every four years in a long-range plan, which allocates a budget of 12 Mm^3/annum of sand for immediate nourishment and reserve. Besides these annual and multi-annual coastal management activities, the national Delta program is in place to guarantee flood safety in the long-term. This long-term program was established in 2008 by the Second Delta committee which "was asked to formulate recommendations for strategies for long-term flood protection and freshwater management" (Verduijn, Meijerink, and Leroy 2012, 469). The approach to coastal management advocated by the Second Delta committee is aptly reflected in the title of its final report: 'Working together with water: A living country builds for its future' (Deltacommissie 2008). The other water authority, the water boards, have the task of planning, realizing and maintaining regional coastal management projects, as long as the coastal stretch in question is not a primary defense structure, which is under Rijkswaterstaat responsibility.

Provincial governments are not categorized as water authorities by the Water Act, but this does not deny them involvement in water management. First, governmental bodies in water management are assigned to supervise each other mutually (Arnold et al. 2011, 75). This provision includes provincial governments which "supervise regional water authorities and municipalities" and provide coordination (Arnold et al. 2011, 75, Dijkzeul and De Hoog 2010, 13). In addition, "a province or the state can act on behalf of a water authority by means of resolutions or proceedings" (Arnold et al. 2011, 78). Perhaps, provincial governments' most significant influence on the coastal management process is their task of approving project plans:

> *A water authority can construct a civil-engineering structure or modify it by means of a project plan, which should provide a description of the structure and the way in which the construction or modification will be implemented. Major civil-engineering structures are subject to a project procedure, in any case for primary flood defense structures. (Arnold et al. 2011, 75)*

Construction or modification of a flood defense structure often requires applying for an integrated water permit at the competent authority. Such projects also involve the compilation of an environmental impact assessment. This involves the ex-ante evaluation of the environmental impact of a preferred solution and alternative solutions. Such an evaluation may also include a social cost-benefit analysis. Just like provincial governments, municipalities are officially not designated as water authorities, although they do have certain water management tasks unrelated to coastal management. Their main responsibilities relate to functions of coastal defense structures other than coastal safety and the spatial planning issues associated with coastal defense structures, i.e. adaptations of zoning plans ("bestemmingsplan"). In this general process, other actors to which coastal management may pertain – such as drinking water companies, nature NGO's or knowledge institutes – can only influence the decision-making process through the general public participation mechanisms in place. An example of this is that final project plans have to be deposited publicly at the competent authority for inspection by everyone.

Although the previously-described process structure for coastal management projects is the legal blueprint for those projects, it is by no means the only way such projects can be organized. A first distinction is between experimental and non-experimental projects. While the latter is often initiated and managed by water authorities under the Water Act, we shall see that experimental projects can be done by actors who are not water authorities. This is what happened in the Sand Motor and Houtribdijk pilot cases. Nevertheless, the legally prescribed process management structure has neither been followed in the Hondsbossche Duinen case. In any case, the non-exclusive provisions for tasks in water management leave enough space for actors to tailor processes to the needs of the specific context. For example, provincial and

municipal governments are not officially water authorities under the Water Act, but both still have tasks and responsibilities related to coastal management and may under specific circumstances take up the role of water authority as well. The empirical chapters will clarify some of the peculiarities of the three cases with regard to project management.

2.4 Summing up

Coastal management has always welcomed technological developments with open arms. Through the ages, mastering newly available materials has allowed the coastal society in the Netherlands to consolidate its settlements in flood-prone areas. In turn, in cases such as riverine dikes or the Eastern Scheldt River storm surge barrier applying new coastal management technologies has often resulted in a relocation and/or an aggravation of the flood protection problem. As will figure in the cases this research studies, at a certain point in time increasing societal pressures complicated the flood protection challenge even further, thereby shifting decision-making about coastal infrastructure from the technical into the political domain. In the consensual, pluralist policy-making tradition of the Netherlands, this has led to policy processes with stake holding actors exceeding the set of actors legally responsible for coastal management, and a multitude of interests, positions, perspectives and frames. In such a complex policy arena, sandy solutions such as Sand Motors seem to come right on cue due to their supposed multi-functionality. As this chapter has argued, the emergence of Sand Motors as new coastal management technologies is not surprising, though. This new episode in Dutch coastal management is not a radical departure from previous practice. In fact, if seen from a historical perspective, the Sand Motor is the continuation of the interplay between physical and societal pressures, and the response of coastal managers on the shifting playing field.

After having extended the problem background of this dissertation to include a brief history of coastal management in the Netherlands as well as an overview of the current policy arena, the next chapter discusses the Sand Motor's performance expectations as they emerged in the scientific debate. In general, coastal management options differ in the way they may contribute to

mitigating coastal squeeze. However, mega-nourishment schemes such as the Sand Motor, have been suggested as alternatives to relieve problems related to coastal squeeze, due to their alleged multifunctionality and the use of more natural materials. The following discussion juxtaposes contemporary scientific perspectives on the interplay between human settlement, environmental circumstances and technological progress. If you will, this is how scholars framed the Sand Motor before, during and shortly after its realization.

PERFORMANCE EXPECTATIONS OF SAND MOTORS – THE COASTAL SCIENCE FRAME[9]

9 This chapter is under review as a review article as: Aukes, E., K. Lulofs, & V. Vikolainen. “Performance expectations of Sand Motors: A review of advantages and disadvantages.” Changes relate to the numbering of paragraphs, figures and tables. "Performance expectations of the Sand Motors: A review of advantages and disadvantages." Changes relate to the numbering of paragraphs, figures and tables.

3.1 Abstract

New coastal management techniques ignite debates about their usability. Built in 2011, the Sand Motor pilot, an experimental large-scale sand nourishment, at the Dutch North Sea coast is such a new technique. Although research results about its performance are only beginning to emerge, experts have expressed and are expressing their performance expectations throughout the process. Performance expectations are voiced in terms of advantages and disadvantages, in comparison to other coastal management techniques. This literature review maps the advantages and disadvantages vis-à-vis small-scale sand nourishments and hard-engineering practices. We also compare the performance expectations to recent scientific results. Sources expected "nature development" and "recreation" to be main advantages of Sand Motors, but mentioned relatively few disadvantages. On forehand, the Sand Motors' safety performance was still a matter of doubt. Preliminary results suggest expectations regarding safety performance were unnecessarily pessimistic, while little can yet be said about nature and recreation. Poor data availability in the latter areas prevented a well-balanced cost-efficiency evaluation. Nevertheless, while scientific results will come in, experts' debate about advantages and disadvantages will go on, because norms and values play an important role in this debate about coastal management techniques.

3.2 Introduction

21st century coastal management faces new man-made challenges. With rising sea-levels and increasing population pressure in coastal areas, the protection of people and infrastructure from coastal flooding is ever so pressing. As if this challenge was not enough, demands on the functionality of coastal areas also increase. Whereas often traditional coastal management structures – so-called hard-engineering – only serve the purpose of safety, efforts are increasingly directed at including more functions in coastal management projects, including space for recreation, economic activities, nature or housing. The "Sand Motor" concept is believed to have the potential for incorporating multiple functions as desired by coastal management objectives.

A Sand Motor is a large volume of sand deposited at one spot, protecting the coast locally and feeding other locations alongshore by natural dispersion. It is intended to serve as an alternative for the sand nourishments used in the current Dutch coastal management approach. Under this approach, every 4-5 years on average, 'small' amounts of sand (max. 2 million m^3) are applied to the beaches at coastal stretches receding behind the 1990 reference. By depositing larger amounts of sand at a far lower frequency, ecological downsides of small-scale sand nourishments are supposed to be mitigated partially, while delivering additional services. A first experiment with the "Sand Motor" concept in the Netherlands was built in 2011 at the Dutch coast near The Hague, involving more than 20 million m^3 of sand applied to the beach (See cover foldout)[10]. Projected to last for at least 20 years, its performance is currently under evaluation.

Regardless of their several decades of experience with sand nourishments in general, Dutch coastal managers are only beginning to understand the advantages and disadvantages of Sand Motors. Many advantages and disadvantages voiced by the literature are, thus, expectations based on educated guesses and hydro-geomorphological models. The latter were originally unfit for the large scale, complex shapes and processes of Sand Motors. Although consensus exists about some general ideas, the literature is far from unanimous about how Sand Motors are expected to perform, i.e. their advantages and disadvantages.

Speaking of advantages and disadvantages always involves the comparison of two things[11]. For more information on the design of the Sand Motor see Stive et al. (2013). Hence, we focus this review on literature comparing the Sand Motor to small-scale sand nourishments, the method of choice in the current Dutch coastal management approach. We also review the smaller literature comparing Sand Motors to hard-engineering structures such as seawalls or non-natural constructions such as the Eastern Scheldt barrier. This literature is relevant for countries applying both hard and soft types of coastal protection methods. Owing to the relative novelty of the Sand Motor, few scientific publications have yet focused on this coastal management technique, which is why this review is the first of its kind. We answer the question: How, in terms of advantages and disadvantages, does the coastal management literature gauge the expected performance

10 For more information on the design of the Sand Motor see Stive et al. (2013). Figure on left cover foldout shows Sand Motor at the Dutch coast near The Hague, seen from the South. (Source: Rijkswaterstraat/ Jurriaan Brobbel).

11 According to the Collins Advanced Dictionary, "an advantage is a way in which one thing is better than another" (Sinclair 2009, 21).

of the Sand Motor concept vis-à-vis small-scale sand nourishments and to a lesser degree vis-à-vis hard-engineering practices? This review maps the field of advantages and disadvantages in the literature, provides a classification structure and evaluates the lessons that can be drawn from the debate in scientific publications, which accompanied the policy process of constructing the first Sand Motor worldwide.

These lessons are relevant for future applications of the Sand Motor concept elsewhere in the world, especially now that there is an increasing international interest and specific plans to execute Sand-Motor-inspired projects. At least three locations should be mentioned in this respect. In Sweden's municipality of Ystad, Scania, a gradual shift from hard to soft coastal protection solutions happens, where Dutch and Swedish experts exchange ideas and knowledge (Bontje et al. 2016). In Negril, Jamaica, media excessively cover local stakeholders' resistance against the governmental plan to build two large breakwaters (Issa 2015, Gardner 2016). There, local stakeholders showcase the Sand Motor as potential alternative for Negril. And, finally, in North-Norfolk, England, a coastal protection scheme nearing the final decision-making stage at the moment of writing could be in the order of 2 million m^3 sand with functional life of around 20 years. This is just one of nineteen potential sites identified in the UK for Sand-Motor-inspired 'Sandscaping' projects (Flikweert forthcoming, Thomas 2015).

The review has the following structure. First, we explain the selection of sources and how we classified the advantages and disadvantages extracted from the literature. Then, we describe the current state of Sand Motor evaluation, followed by the results of the review. We conclude with a discussion of the wider meaning of the results for the scientific debate as well as future policy processes.

3.3 Methodology

3.3.1 Source selection

Suitable sources were selected starting with a search on Scopus and Google Scholar (www.scopus.com, scholar.google.com; see Table 3.1 for search terms). The Sand Motor's name is used inconsistently among scholars, necessitating the search for both "Sand Motor" and "Sand Motor", and the Dutch pendant "Zandmotor".

The Sand Motor being a kind of evolved sand nourishment technique, we searched for literature with "sand nourishment", "mega-nourishment" and the Dutch "mega-suppletie". Although the Sand Motor is seen as an eco-engineering technique using sand, "sand AND eco-engineering" did not return useful hits.

Table 3.1 Search terms.

Search terms
Sand motor; Sand Motor; Zandmotor; Sand nourishment; Mega-nourishment; Mega-suppletie; Sand AND eco-engineering

Sources are both scientific, peer-reviewed publications and professional reports by consultancies in English and Dutch. The publication period was not limited, because we did not expect too many publications for the Sand Motor due to its recent development and global uniqueness. After this keyword search, we snowballed for other relevant sources from the sources we had already found. This process resulted in thirty-three sources.

3.3.2 Source topics

Table 3.2 Number of sources per comparison (rows show topics; columns show comparison techniques).

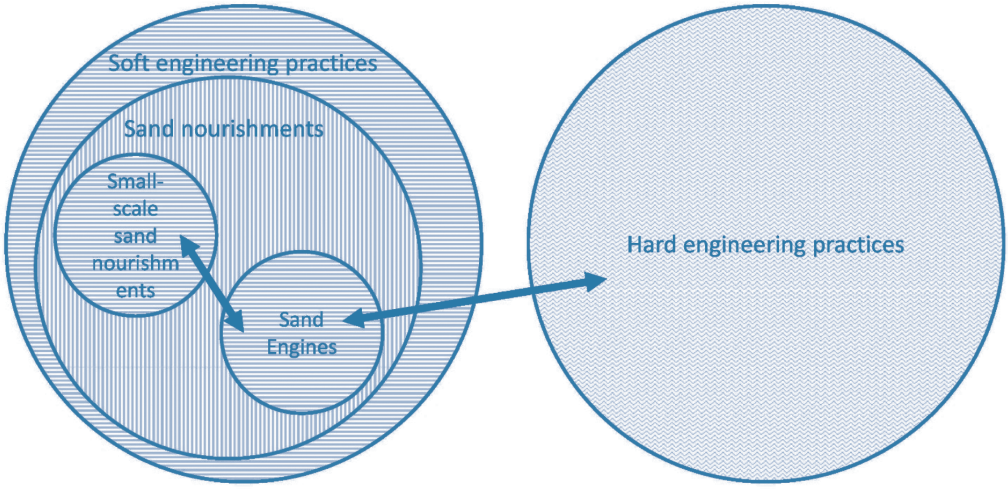
	Small-scale sand nourishments	Hard-engineering practices	
Sand nourishments	1	11	12
Sand Motor	16	4	20
	17	15	

Initially, we classified the sources according to topic, leading to the topics of "sand nourishments" in general and "Sand Motors". In line with the scope of this review we added the comparison categories: "hard-engineering practices" for traditional, struc-

tural coastal protection techniques and "small-scale sand nourishments" where sources compared their topic to the routine nourishment scheme existing in the Netherlands (Table 3.2). Unfortunately, few sources specifically formulated to which coastal protection technique they were comparing. Often, the comparison category had to be deduced from the surrounding text. Figure 3.2 shows the resulting comparisons, which we are going to discuss in this review. However, Sand Motors are a sub-subset of soft-engineering practices, while hard-engineering practices are a family of coastal protection practices. Methodologically, drawing comparative conclusions would be inappropriate.

Figure 3.2 Levels of comparison (not to scale).

Discarding the sources only discussing sand nourishments, left



us with the comparison of (a) the Sand Motor with small-scale sand nourishments (sixteen sources) and (b) the Sand Motor with hard-engineering practices (four sources). Although the numbers of sources diverge at first sight, the difference is nonetheless understandable. First, comparison with small-scale nourishments is natural, because it is the current Dutch coastal management approach. Second, the Dutch coast, for which the Sand Motor was designed originally, is a sand coast, in which hard-engineering practices have traditionally not been very popular. Hence, comparing the expected performance of Sand Motors to hard-engineering practices is not a natural choice for experts dealing with the Dutch coast. Nevertheless, this comparison is relevant for

countries where hard-engineering practices are more common and where Sand Motors extend the range of appropriate techniques. As Appendix I shows, we ended up with ten reports and ten peer-reviewed articles to investigate. Publications cover a period of eleven years from 2005-2016.

3.3.3 Classification

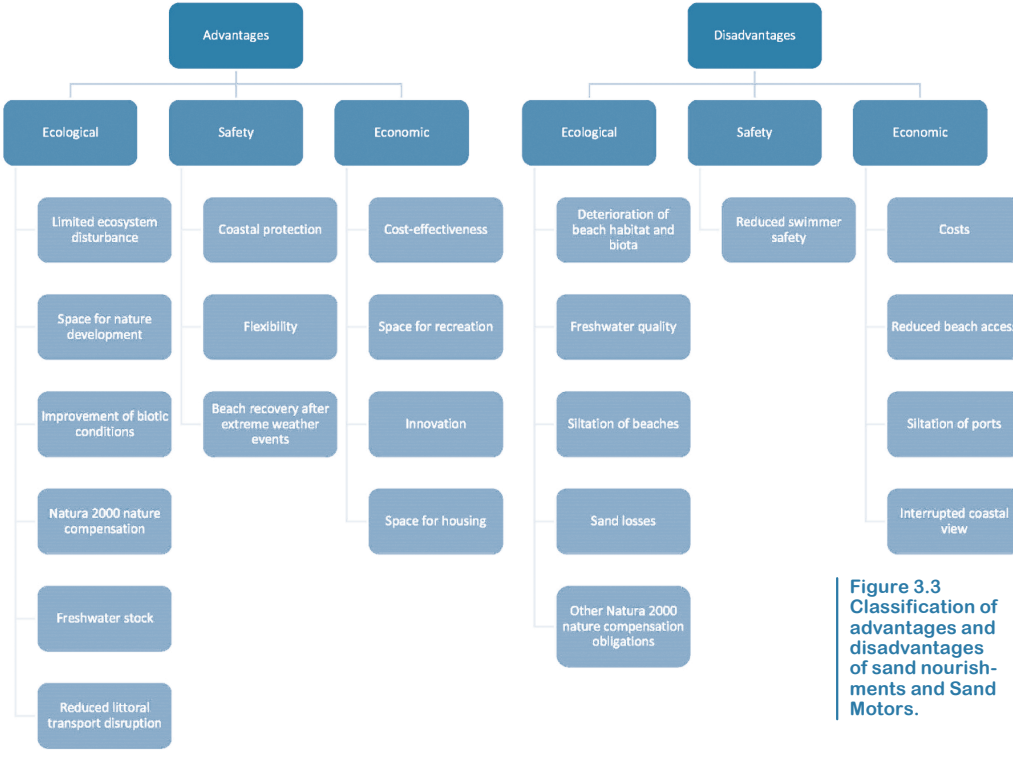


Figure 3.3 Classification of advantages and disadvantages of sand nourishments and Sand Motors.

For an overview of experts' performance expectations of the Sand Motor, we scanned the sources for the advantages and disadvantages they mentioned. We define advantages and disadvantages as value judgements, in which the characteristics of one coastal protection technique are compared to others. These comparisons are often not simply in terms of quantities. For example, the amount of sand applied to or in front of the beach is not in itself a discriminating criterion. Adding values, background, interests and goals, actors turn mere quantitative differences into an advantage or

disadvantage. If an actor is interested in long-term investments, a large amount of sand applied at once as in the Sand Motor concept may be an advantage. Other values, interests and backgrounds may lead to different perceptions of advantages and disadvantages. After listing all advantages and disadvantages from the literature, we aggregated the items into higher-level advantages and disadvantages wherever possible, because the original list was too disparate to be informative. Consequently, we broadly classified the list into ecological, safety and economic types of advantages and disadvantages (Figure 3.3; cf. Appendices II & III). By this aggregation, advantages and disadvantages of Sand Motors from the literature could be lifted to a more conceptual level.

3.4 Effectiveness of the Sand Motor experiment

Coastal protection has improved due to the Sand Motor by a shift of the erosion point and longshore sand dispersion (Oost et al. 2016, 13, De Schipper et al. 2016, 37). Taking into account a best-case scenario for sea-level rise (3mm p.a.), the Sand Motor now guarantees coastal protection for 50 years (Buitenkamp, Van den Brink, and Van Mastrigt 2016, 8). The sand budget of the Sand Motor is not decreasing as quickly as expected, which probably extends its lifespan (Buitenkamp, Van den Brink, and Van Mastrigt 2016, 8). The dune volume has, however, not increased as strongly as expected, at least partly due to sand entrapment in the water bodies in the Sand Motor. Although the variety in environments at the Dutch coast has increased due to the Sand Motor, it is still scarcely vegetated five years after construction (Oost et al. 2016, 16, Linnartz and Van der Mark 2016, 29). This is due to disturbance by recreation and (beach cleaning by) motorized vehicles (Linnartz and Van der Mark 2016, 29). Without specification, Oost et al. (2016) also suggest that certain thresholds may need to be reached for ecological development to pick up speed. Salinization of surrounding areas may decrease locally, because Sand Motors reduce "upward seepage of saline groundwater" (Huizer, Oude Essink, and Bierkens 2016, 3158). In addition, the "Sand Motor pilot has resulted in a landscape that is otherwise absent along the Holland coast and offers space for extensive recreation" (Oost et al. 2016, 19). Knowledge development and innovation has been achieved with several research projects linked

to the Sand Motor and research interest from all over the world. Nevertheless, a lack of nature and recreation data makes the Sand Motor's cost-efficiency continuously difficult to assess. Since its construction, the cost-efficiency balance has shifted away from feasibility, because by now sand has become more costly. However, as long as no possibility is found to include the other functions for which the Sand Motor was designed in a cost evaluation study, this is not a reliable cost calculation result.

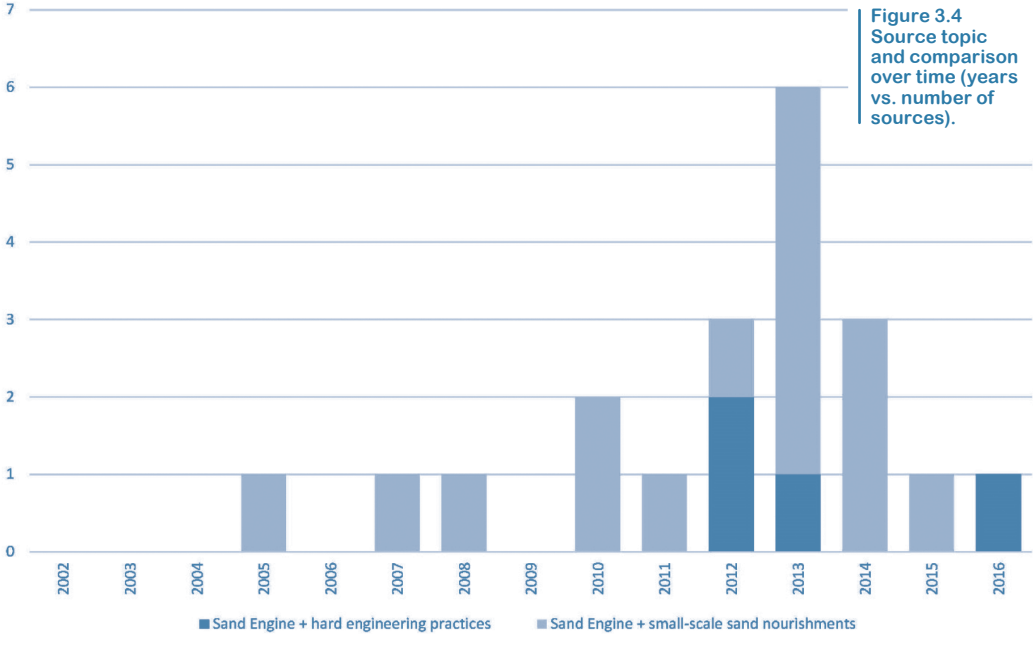


Figure 3.4 Source topic and comparison over time (years vs. number of sources).

3.5 Results

3.5.1 Overview

We describe what could be called 'frequencies' of the sources, before going into detail about the specific expected advantages and disadvantages of Sand Motors. A distribution of publications over time shows five publications – one conference paper, four reports – anticipating the actual construction in 2011 (Figure 3.4). Most Sand Motor publications and all peer-reviewed papers were published shortly after its construction with a peak in 2013. Throughout the study period, we see a growing interest in the Sand Motor. However, it is too early to speak of scientifically proven performance, because the evaluation projects are still ongoing.

In total we found fourteen categories of advantages and ten categories of disadvantages of Sand Motors over small-scale sand nourishments. Only seven advantages and six disadvantages were found when Sand Motors were compared to hard-engineering practices. In both comparison categories advantages outweigh disadvantages (Figure 3.5). While the five most mentioned advantages range between 50%-100%, none of the disadvantages is mentioned by more than half of the sources. It seems that regardless to which coastal protection technique the Sand Motor concept is compared, it is expected to have more advantages than disadvantages. It is debatable whether this imbalance represents a realistic expectation, a tendency to underestimate the disadvantages or a tendency to overestimate the advantages of Sand Motors. Given the extolling tone of some of the peer-reviewed publications, calling the Sand Motor a "boldly innovative" "paradigm shift" (Stive et al. 2013), and the uncertainty surrounding the concept, it is possible that the Sand Motor was presented more favorably than it may turn out to be.

Perhaps due to the rather low number of sources, a similar, though less outspoken image emerges in the comparison of Sand Motors with hard-engineering practices. The percentage of sources mentioning advantages exceeds that of disadvantages, but the general diversity of advantages and disadvantages is lower. In general, though, apart from few disadvantages, the literature expects the Sand Motor to have the potential to perform desirably on many different dimensions.

3.5.2 Performance expectations in-depth

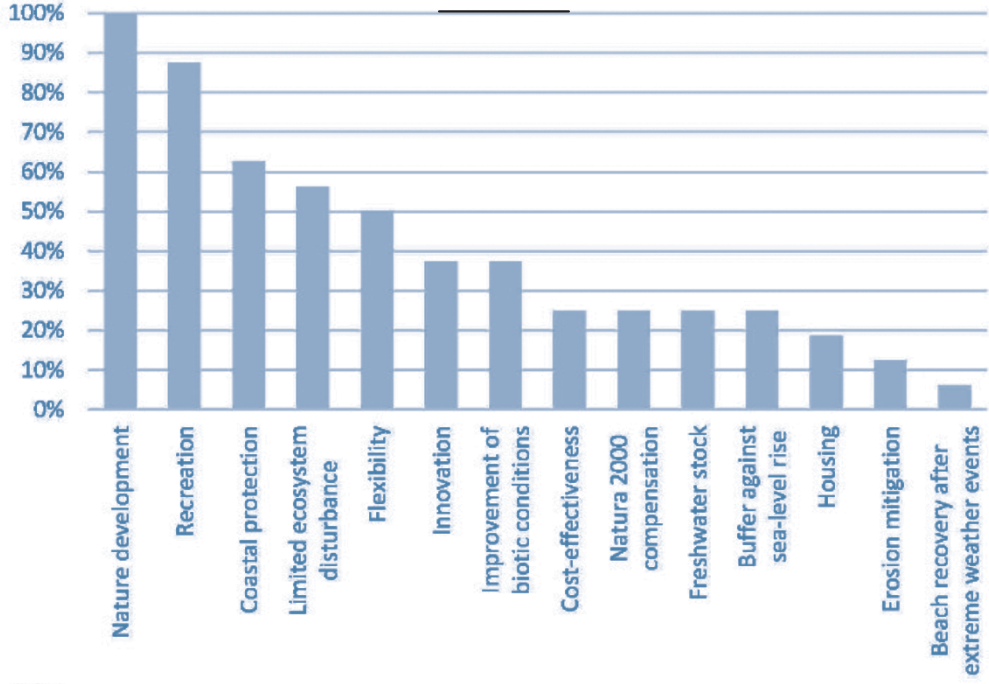
This section discusses experts' expectations towards the performance of Sand Motors in-depth. First, advantages and disadvantages are discussed. Second, we focus on how the perception of the Sand Motor concept and its treatment in the scientific debate have developed over time.

3.5.2.1 Advantages

Sources identify "nature development" and additional space for "recreation" as main advantages of Sand Motors. Mainly compared to small-scale sand nourishments, these very broad cate-

gories have two effects on the decision-making process. On the one hand, they are categories that actors cannot really be against, thereby increasing the acceptability of the solution. On the other hand, the two categories are inherently vague and undefined making progress measurement in these two categories difficult to monitor. This leads to doubts about whether the Sand Motor actually performs as expected.

During the policy process leading to the realisation of the Sand Motor pilot, nature development, space for recreation and coastal protection were the three ubiquitous advantages associated with the mega-nourishment technique. Seeing that many Dutch coastal management experts were involved in some way in that policy process, this threesome of advantages has become somewhat of a mantra when it comes to judging the desirability of Sand Motors. Nature development, recreation and coastal protection have been adduced overwhelmingly often, while the remainder of the advantages and disadvantages are spread broadly (Figure 3.5). Compared to small-scale sand nourishments, expectations were that the large scale of a Sand Motor would allow for a more varied ecosystem. In the proposed design, this variation was consciously intended by the creation of the hook shape with a dune lake separated from the sea water and the lagoon that would form inside the hook (Figure 3.1). With regards to recreation, it is a common-sensical argument that a larger scale nourishment also stimulates more beach activities such as walking the dog, playing in the lagoon or even educational events. For coastal protection, the expectation was that cost-efficiency of sand nourishments would sky-rocket through the economies-of-scale mechanism. Having said that, it should be noted that coastal protection is the least pervasive of the three, which is rather surprising given that safety was one of the original reasons for innovating coastal protection. It is possible that the protection performance of mega-nourishments is too uncertain, while nature development and recreational improvements may be estimated with more confidence. To a lesser extent, sources mention "limited ecosystem disturbance" and "flexibility" as advantages of these coastal protection techniques. Whereas the former links to the expected advantage of nature development, which was apparent in both types of comparisons, the latter relates to changing safety requirements and the adaptability of solutions to those requirements. It comes as no



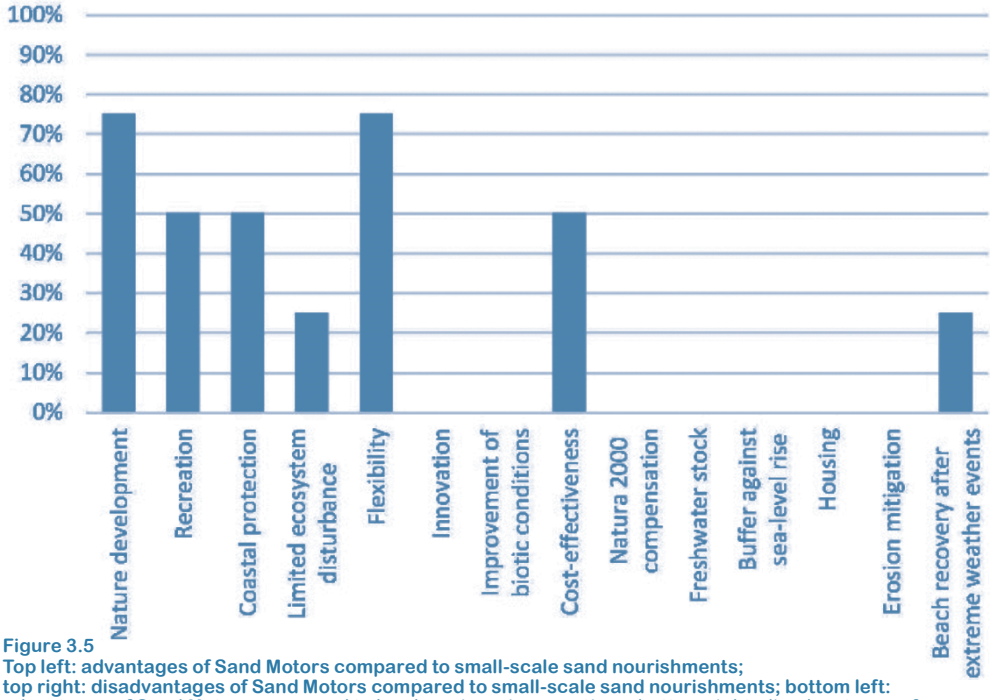
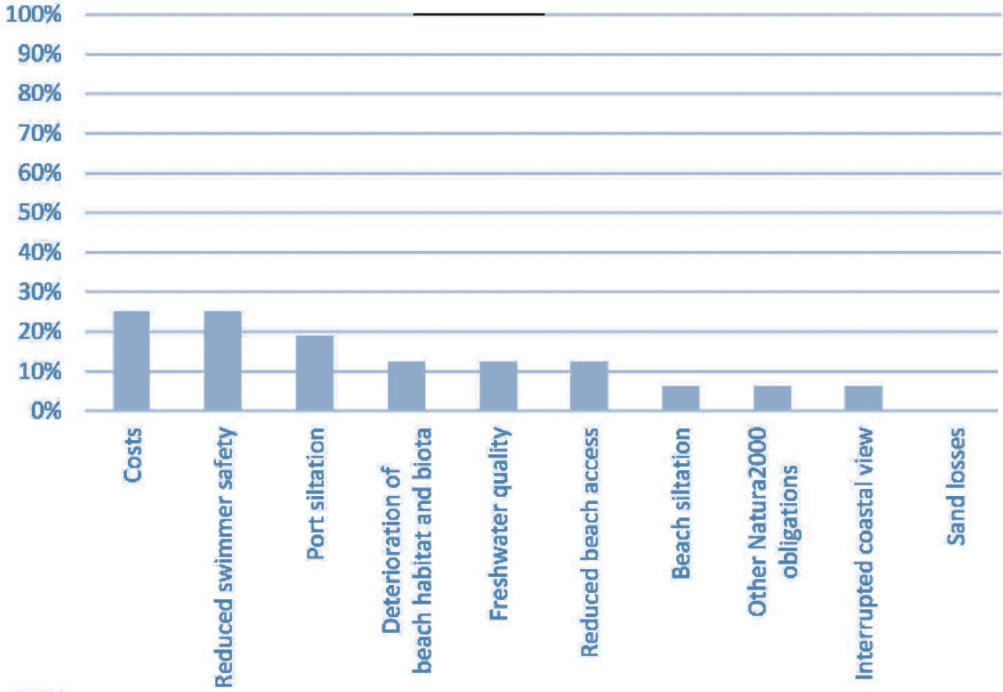
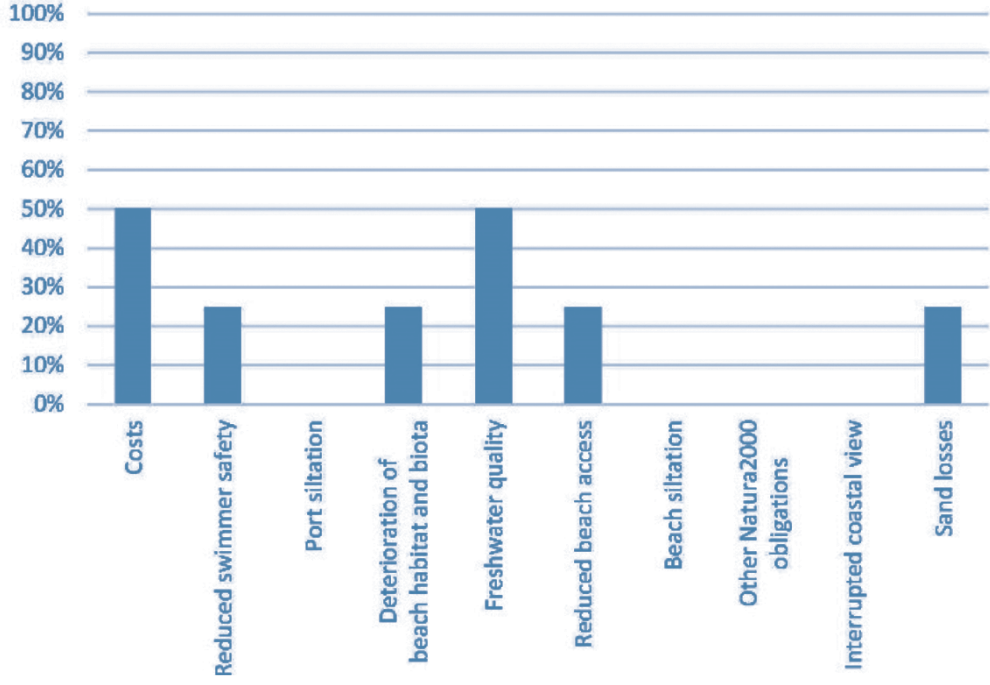


Figure 3.5
Top left: advantages of Sand Motors compared to small-scale sand nourishments; top right: disadvantages of Sand Motors compared to small-scale sand nourishments; bottom left: advantages of Sand Motors compared to hard-engineering practices; bottom right: disadvantages of Sand Motors compared to hard-engineering practices (all as percentage of sources quoting this advantage/disadvantage).


100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Costs
Reduced swimmer safety
Port siltation
Deterioration of beach habitat and biota
Freshwater quality
Reduced beach access
Beach siltation
Other Natura2000 obligations
Interrupted coastal view
Sand losses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Costs
Reduced swimmer safety
Port siltation
Deterioration of beach habitat and biota
Freshwater quality
Reduced beach access
Beach siltation
Other Natura2000 obligations
Interrupted coastal view
Sand losses

surprise that sources comparing Sand Motors to hard-engineering practices mention this advantage, given the often long-term investments and relative immutability of hard coastal protection solutions. Hence, although Sand Motors are, in general, expected to perform well in three functions, namely nature development, recreation and coastal protection, the caution and vagueness with which these advantages are voiced, testifies to the appropriateness of carrying out an experiment instead of immediately moving on to full-fledged coastal protection.

Ecological advantages. The subfield of ecological advantages contains six items, two of which, "limited ecosystem disturbance", "nature development", were already touched upon as major advantages of Sand Motors over both small-scale sand nourishments and hard-engineering practices in the literature. While sources comparing Sand Motors to hard-engineering practices do not expect any other ecological advantages, few sources go into more detail beyond claiming that Sand Motors enable space for nature development. Improving the "freshwater stock" is one of those expected ecological advantages (Van Slobbe et al. 2013, Bureau Landwijzer et al. 2012, Cleveringa et al. 2005). Sources expect an increasing fresh groundwater lens due to the expanded land mass. Two sources anticipate an "improvement of biotic conditions" as a result of such new coastal protection (Bureau Landwijzer et al. 2012, Stuyfzand, Arens, and Oost 2010). Finally, a few reports note the potential value of Sand Motors for nature compensation for other large-scale infrastructure projects under the European Natura2000 legislation (Cleveringa et al. 2005, Jonker and Van Veen 2008, Stronkhorst et al. 2010). Small-scale sand nourishments are usually not designed large enough to serve for nature development, which makes them impracticable for nature compensation. If, however, the nature development on large-scale sand nourishments will come close to the expectancy, Sand Motors may be able to serve this purpose. Given the Dutch policy of maintaining the 1990 coastline, beach nourishment is indispensable and if the expectations about its ecological impact turn out to be right, large-scale nourishments may be more useful to serve multiple goals as compared to its little brother.

Safety advantages. Besides the previously mentioned "coastal protection" and "flexibility", one source suggested Sand Motors as a solution for the so-called Weak Links in the Dutch coastline, a metaphor assigned to ten weak spots in the Dutch coast that needed quick improvement (Cleveringa et al. 2005). The advantage of Sand Motors over small-scale nourishments would be to nourish several weak spots at once. Whereas small-scale sand nourishments are designed only to nourish the spots where they are placed, a Sand Motor would serve a longer stretch of coastline. Another safety advantage was the expectation that a large sand deposit in front of or on the beach could help coastlines to recover after extreme weather events (Slim and Löffler 2007, Van Loon-Steensma et al. 2012). First, the coastline would not be attacked directly by extreme weather events from the seaside. Second, eroded areas could recover quicker by natural sand transport from the large-scale nourishment. Finally, a coastline with large-scale nourishments placed in front of it could create a buffer against sea-level rise (Jonker and Van Veen 2008, Stronkhorst et al. 2010, Mulder and Tonnon 2011, Van Slobbe 2010). Notwithstanding, the salience of the mentioned advantages in choosing to apply a large-scale sand nourishment should not distract from the observation that the diversity in safety advantages was much less as compared to expected ecological advantages. Moreover, with exception of the broader, vaguer categories of coastal protection and flexibility, the lower diversity of expected safety advantages was accompanied by few sources mentioning them. In sum, although improvements in safety performance as opposed to small-scale nourishments was one of the mantra-like advantages, it seemed to be quite uncertain when it comes to specific effects.

Economic advantages. While most sources estimate an increase in space for recreation, "cost-effectiveness" is much less acknowledged as a characteristic of Sand Motors (De Vriend, Van Koningsveld, and Aarninkhof 2014, Stive et al. 2013, Van Slobbe et al. 2013, Van Loon-Steensma et al. 2012). In an even more restricted sense, Sand Motors may only be cost-effective in their maintenance phase (Tangelder et al. 2013). Comparing to hard-engineering practices, Tangelder et al. (2013) follow the train of thought that it is easier and less costly to add a certain volume of sand to a Sand Motor to maintain it, than it is to adapt a sea wall

to increased wave behavior or a risen sea-level. This reluctance to expect cost-effectiveness may be linked to the uncertainty among coastal management scholars about the safety performance of Sand Motors. That is, if the safety performance is unclear, it is also uncertain, whether such coastal protection solutions deliver value for money. In fact, only three out of the twelve sources that mention coastal protection as an expected advantage, also expect Sand Motors to be cost-effective, of which only one source compares Sand Motors to its main competitor along the Dutch coast, small-scale sand nourishments (Stive et al. 2013, Tangelder et al. 2013, Van Loon-Steensma et al. 2012). It is not always clear, in terms of what sources deem Sand Motors to be cost-effective, given that three of the six mentioning it as an advantage do not expect improved coastal protection.

Although Sand Motors are generally seen – and during the policy process also promoted – as innovative techniques, "innovation" is not an overwhelmingly often quoted advantage, i.e. six times (Cleveringa et al. 2005, Jonker and Van Veen 2008, Lulofs and Duijn 2013, Hermans, Slinger, and Cunningham 2013, Mulder and Tonnon 2011, Stive et al. 2013). This mirrors the discussion among coastal managers regarding the innovativeness of Sand Motors. On the one hand, some say that Sand Motors are indeed innovative, because it is a form of making use of natural processes to help with coastal protection (De Vriend, Van Koningsveld, and Aarninkhof 2014). On the other hand, some coastal managers, e.g. from the Dutch public works agency, see mega-nourishments predominantly as a scale-up of a routine they have already been using for two decades. Besides a broad expectation of recreational benefits, albeit unspecified and difficult to measure, sources present a mixed picture when it comes to expected economic advantages.

3.5.2.2 Disadvantages

Except for three scientific articles (Hermans, Slinger, and Cunningham 2013, Van den Hoek, Brugnach, and Hoekstra 2012, Van der Nat et al. 2016), sources mentioning disadvantages are consulting reports (n=11). Two of those reports include more disadvantages than the others, both mentioning at least five disadvantages in all three categories (Lulofs and Duijn 2013, Stronkhorst et al. 2010). Another striking observation is the lower number of

disadvantages mentioned in the literature and their scarce mention among sources (Figure 3.5). Nine of the sources do not mention any disadvantage at all. Three disadvantages within the three subfields being mentioned at least four times stand out: "freshwater quality", "reduced swimmer safety" and "costs". The latter two were also voiced often during the policy process as the main points of attention.

Ecological disadvantages. Deterioration of beach habitat and biota often co-occurs with a rather sober outlook on the ecological advantages of Sand Motors. The spectrum ranges from one or two expected ecological advantages (Slim and Löffler 2007, Van Loon-Steensma et al. 2012) to an inclusive look on advantages and disadvantages (Cleveringa et al. 2005). Fears for the quality of freshwater are the most-quoted ecological disadvantages (Jonker and Van Veen 2008, Lulofs and Duijn 2013, Van den Hoek, Brugnach, and Hoekstra 2012, Van der Nat et al. 2016). With two sources in either comparison group, it is expected that the increasing freshwater lens and changes in the freshwater-saltwater divide may also result in inclusion of soil contaminations in water-collection areas. Three of the four sources mentioning this were published post-construction. Beach siltation, sand losses, and other Natura2000 obligations were all counted once and appeared in both comparison categories. Ecological disadvantages, the category with the highest diversity, are not often mentioned. They represent expectations that have either not yet been proven or that have been dealt with appropriately (in the case of freshwater quality).

Safety disadvantages. As can be expected, most sources that are concerned about swimmer safety in new coastal protection techniques, also acknowledge the increased space for recreation (Hermans, Slinger, and Cunningham 2013, Jonker and Van Veen 2008, Lulofs and Duijn 2013, Stronkhorst et al. 2010). The expectation is that a larger recreation area will attract more swimmers. Combined with the unknown currents produced by the non-linear shape of the Sand Motor protruding into the sea and disturbing longshore currents, this could create many dangerous situations. In addition, two out of five sources expecting future problems with swimmer safety do not mention that coastal protection could be

an advantage of Sand Motors. Implicitly, these sources question the necessity of putting swimmers in danger without increased safety performance compensating for this risk (Stronkhorst et al. 2010, Van den Hoek, Brugnach, and Hoekstra 2012). We have previously seen that many sources indeed expect that Sand Motors perform well in terms of coastal protection as compared to small-scale sand nourishments and that they benefit from other safety advantages, too. Swimmer safety is the only – admittedly rare – disadvantage observed in this category (n=5). Nevertheless, in the Dutch Sand Motor case, close collaboration with the coastal guards was initiated to improve the safety situation.

Economic disadvantages. Expected "costs" of project alternatives influence whether actors frame innovative techniques as desirable. But regarding costs as disadvantages and coastal protection as an advantage still go together (Bureau Landwijzer et al. 2012, Lulofs and Duijn 2013, Stronkhorst et al. 2010, Tangelder et al. 2013, Van Loon-Steensma et al. 2012, Hermans, Slinger, and Cunningham 2013). However, if coastal protection comes at too high costs, the cost-effectiveness of the project is impaired (Bureau Landwijzer et al. 2012, Lulofs and Duijn 2013, Stronkhorst et al. 2010, Van Loon-Steensma et al. 2012, Hermans, Slinger, and Cunningham 2013). Literature indicates that project phases may have to be differentiated, e.g. into investment and maintenance (Tangelder et al. 2013). Cost-effectiveness may be high in one project phase and low in another. In the case of Sand Motors compared to hard-engineering practices, initial investment costs may be high, while maintenance is more cost-effective (Tangelder et al. 2013). What we do see, though, is that the expectation of high costs is often coupled to challenging the innovative capacity of Sand Motors. Four of six sources stating the high cost of Sand Motors doubt their innovativeness (Bureau Landwijzer et al. 2012, Stronkhorst et al. 2010, Tangelder et al. 2013, Van Loon-Steensma et al. 2012). Sources in both comparison categories show this dilemma. Other less present economic disadvantages are reduced beach access, which pertains mainly to the duration of the construction period, port siltation and an interrupted coastal view.

3.5.2.3 Debate over time

Throughout the study period the three major advantages are constantly present. The same goes for flexibility. Although already mentioned in 2005 (Cleveringa et al. 2005), the advantage of a limited ecosystem disturbance only picked up speed towards the end of the study period, from 2012 on (Bureau Landwijzer et al. 2012, Lulofs and Duijn 2013, Tangelder et al. 2013, Vikolainen 2013, De Vriend, Van Koningsveld, and Aarninkhof 2014, Hermans, Slinger, and Cunningham 2013, Hill 2015, Van Wesenbeeck et al. 2014). Although the potential costs had been mentioned as a disadvantage for the first time in 2010 (Stronkhorst et al. 2010), from 2012 onwards both the cost-effectiveness advantage and the costs disadvantage appeared more frequently (Bureau Landwijzer et al. 2012, Lulofs and Duijn 2013, Tangelder et al. 2013, Van Loon-Steensma et al. 2012, De Vriend, Van Koningsveld, and Aarninkhof 2014, Hermans, Slinger, and Cunningham 2013, Stive et al. 2013, Van Slobbe et al. 2013). The temporal appearance of the advocacy of Sand Motors as Natura2000 nature compensation measures coincides with the large-scale infrastructural projects the Netherlands witnessed in the 2000s, most notably the expansion of the Rotterdam harbor area. In the long term, Sand Motors could increase dunes to expand habitat areas. Once these large-scale infrastructural projects were completed, the prospective advantage of nature compensation also receded (Cleveringa et al. 2005, Jonker and Van Veen 2008, Stronkhorst et al. 2010). Here, the long-term scale of nature development by means of Sand Motors and its inability to deliver this development in the short term clashed with the short-term orientation of social and political needs. Deterioration of beach habitat and biota ceased to be an argument against Sand Motors in 2012.

Overall, we see a reduction in diversity of advantages over time. For example, up to 2012, most ecological advantages had been mentioned. Gradually, all advantages, except for limited ecosystem disturbance and nature development disappeared. There is a similar picture for safety advantages. Up until 2011 all were mentioned, while afterwards only coastal protection and flexibility remained. In the category of economic advantages, this process sets in, in 2013. After this point in time, only cost-effectiveness and recreation were voiced as advantages. The picture is

much more mixed for disadvantages. While the development in the category of economic advantages parallels that of the advantages, ecological disadvantages were mentioned scarcely over time. It is striking that after 2013 the only disadvantage that was mentioned is freshwater quality. The five most recent sources comparing Sand Motors to small-scale sand nourishments actually do not mention any disadvantages at all, while generous on the advantages. Over time, we see a narrowing of the debate on the overarching advantages and a more and more positive expectation for the Sand Motor concept.

3.6 Discussion and conclusions

The observations in this review trigger several thoughts. There are conclusions to be drawn on the diversity and content of the advantages and disadvantages, the development of the debate over time as well as the comparisons of Sand Motors with small-scale sand nourishments and hard-engineering practices, respectively. Finally, we compare the literature's expectations to the first scientific results and attempt an outlook on usability in other countries.

Three major expected advantages and relatively less expected disadvantages can be observed in the literature that compares Sand Motors to small-scale sand nourishments. In general, experts advocate the Sand Motor concept as a coastal management technique, but they are hesitant to call them coastal protection techniques. Until their safety performance is proven, there is too high uncertainty in this field. This caveat may be dealt with through the evaluation projects.

We find that these three advantages are rather abstract and often remain unspecified in the literature. Only few sources discuss them on a more concrete level. More specific advantages are cited, but are only shared by relatively few sources. For example, for now, there is no unanimity regarding ecological advantages of Sand Motors. Similar things may be said for the other advantage categories. Still, sources emanate the hunch that Sand Motors have more positive effects on nature, safety and economic aspects compared to small-scale sand nourishments.

The example of the three major advantages also reveals how the scientific debate and policy processes interact with each other over time. Although what we present here is not 'proof' of a mutual

relationship, it is remarkable, to say the least, that both arenas simultaneously use the mantra-like threesome of nature, safety and recreation. Two observations stand out. First, we see the academic debate focusing on the more overarching, but also the most generally appealing, advantages over time. This development follows the policy debate, which finds itself in a transition period between the preliminary discussions about expected advantages and the outcomes of the scientific evaluation projects which can only be presented with a certain time lag. Especially policymakers and involved market parties are desperate for positive results due to costs and efforts. Disadvantages imitate a pattern in line with the debate about advantages. While most disadvantages of Sand Motors compared to small-scale sand nourishments were voiced before the construction, i.e. in the design phase characterized by expert discussions, less and less were mentioned afterwards. Again, emulating the policy debate, experts were waiting for scientific results that would underpin the claim of the multi-functional coastal management panacea that was supposed to be found.

Already from the outset, it was clear that there were more sources comparing Sand Motors to small-scale sand nourishments vis-à-vis sources comparing them to hard-engineering practices. Regardless of the numerical difference, we see similar patterns in the distribution of advantages and disadvantages in both comparison categories, both showing the three major advantages and a dispersed citing of disadvantages. However, expanding research dealing with the comparison between Sand Motors and hard-engineering practices is useful for a more complete picture of expected Sand Motor performance, given the diverse types of coastal systems worldwide. From that perspective, the number of sources comparing large-scale and small-scale sand nourishments is not surprising, as the Dutch coast is a sandy system and the core coastal management technique are small-scale sand nourishments. As understandable as the state of the literature is, there are different kinds of coastal systems globally with lower degrees of sand in them, in which hard-engineering practices might be much more suitable. So, a more thorough investigation of advantages and disadvantages of Sand Motors compared to hard-engineering practices would balance out the currently somewhat shaky body of evidence in this comparison category. Looking at the first scientific results, some of the literature's performance expectations have turn out to be realistic, while others

did not find footing in evidence. From the three major objectives, coastal protection was expected least by sources. However, the first scientific evidence describes that the Sand Motor is actually protecting its location and reinforces others, too. There has even been an extreme weather event, which has been measured extensively, but no results have been published, yet. Given a very conservative level of sea-level rise, the coastal protection lifespan of the Sand Motor could even be extended with a few decades from twenty to fifty. Since its realization in 2011, it could not yet be tested whether the Sand Motor is more efficient in flexibility terms, but a less conservative sea-level rise scenario could lead to re-nourishment of the Sand Motor. Smaller-scale swimmer safety issues as expected by some sources were taken up immediately and were dealt with in collaboration with the coast guards. The ecological expectations of a varied ecosystem have been realized. However, this is not yet due to dune expansion, which is falling behind expectations. Other ecological factors have not yet resulted in research results, but will be necessary to improve the data gap for cost-efficiency analysis of the Sand Motor (see below). Freshwater is an ambiguous topic in the expectations, but first conclusions point towards less salinization of surrounding areas as well as a potential increase in fresh groundwater resources. So, the disadvantages for freshwater quality expected by some sources may be at least partly unwarranted. Nevertheless, the experience with the Sand Motor shows that this is an important topic to take into account in future projects due to potentially moving groundwater divided. The innovativeness of the Sand Motor is still debated and depends on the perspective taken. But knowledge development is ongoing as emerging research results and evaluation reports prove. This objective of the Sand Motor project can be cautiously claimed to be achieved. Although the recreational benefits of a larger beach area seemed straightforward to many of the sources, no scientific research has yet contributed to filling this data gap. No conclusions about changes in the recreational habits of beach users can be drawn. In retrospect, the lack of ecological and recreational data contributes to the Sand Motor's poor performance in ex-post cost-efficiency calculations. If the sand price is the only factor taken into account with no benefits to match those costs, the Sand Motor will have a hard time. Rather, if nature development and recreational gains are part of the objectives, as they

were with the Sand Motor, any evaluative cost-efficiency calculation is invalid without a robust measure of the two.

The seemingly low priority of cost-efficiency of the Sand Motor on forehand stands out for international stakeholders considering the application of the concept in their countries. Uncertainty, whether Sand Motors will be able to deliver value for money, may turn out to be an important hurdle of getting it shortlisted as a coastal management option outside the Netherlands, where a decision to construct a project of comparable size and nature should be based on more than just a hunch that Sand Motors have more positive effects on nature, safety and economic aspects and a desire to experiment, but on more robust data. In the UK, for example, it will have to be the best solution locally, with a competitive business case to generate funding, and with acceptable uncertainty to convince decision makers (Flikweert forthcoming). Abstract and unspecified advantages that we found in the literature sources will therefore not suffice, and there may be more technical scrutiny in the UK to answer the question what if a Sand Motor behaved differently than expected.

In sum, this review classifies expected advantages and disadvantages into ecological, safety and economic categories, serving as an organizing tool for future research results to aid the policy debate. In addition, this may be especially helpful, because the review once again illustrates the differences in perceptions of experts, in this case of Sand Motors, thereby highlighting the necessity of a shared communication framework. Naturally, experts' perceptions are imbued with their work domain and the organization which they work for. However, the values experts hold also frame what they see as advantages and what they see as disadvantages.

THEORETICAL FRAMEWORK

Long-time outsider Goffman and his genuine theoretical approach have increasingly been discovered after the publication of his masterpiece Frame Analysis (1977) – and even more so after his death in 1982.

(Hettlage 2007)

4.1 Introduction

Complex policy settings, as are central to this thesis – coastal management in urbanizing coastal areas characterized by challenges of coastal squeeze – have the potential to lead to conflicts of meaning. They often feature actors from different domains of public life, including policy-makers and civil servants from different governance levels, but also professionals with specific expertise and members of civil society claiming a participatory role in decision-making processes. All of these actors have their own baggage with upbringing, education, political outlook (Smith et al. 2016) and disciplinary background resulting in a diversity of perspectives on a policy subject. Studying this diversity and its potential for misunderstanding and conflict, a frame perspective chooses to investigate meaning-making among participants in the complex policy settings under scrutiny. With origins in symbolic interactionism and formal sociology, the frame perspective offers a view on policy settings and conflicts in decision-making contexts that is tailored to individual actors and takes into account their interaction with other actors. In other words, the frame perspective enables an agency-oriented study of political behavior that has an eye for the institutional structure within which policy actors are embedded.

About half a century ago, the concept of frames as a perception-shaping structure was successively coined by two behavioral sociologists. First mention is attributed to Gregory Bateson writing about a state of play among the man apes he studied (Bateson 1954/1987). It was subsequently picked up by Erving Goffman and led to his seminal work on Frame Analysis (Goffman 1974/1986). Goffman is perceived to be the first to deconstruct the concept, providing it with a theoretical basis (Manning 1980, 283n23). By now, frames are an established term both in mainstream sociology as well as in its more interpretivist strands. The frame concept continually gained traction and found its way into the field of policy and political sciences as early as the 1980's (see below). The concept was further developed by, among others, Tversky and Kahneman (1981), (Schön and Rein 1994, author-year), and also figured prominently in what has come to be known as the "argumentative turn" (Fischer 2012, Fischer and Forester 1993).

For a better understanding of where the conceptualization of frames and framing as formulated in this dissertation originates, it is useful to reiterate its history. In what follows, I recapitulate Bateson's and Goffman's original work on frames, before moving on to subsequent elaborations and transformations of the concept. I will also briefly touch on a stream of framing literature less relevant for this dissertation, but nonetheless valuable for positioning the present work in its theoretical domain.

4.2 Picture frames and cameras a.k.a. "What is it that's going on here?"

Observing a few man apes at the zoo, Bateson noticed that they understood perfectly when a biting act did not actually mean biting, but playing. He found that somehow, apes are able to attach a different meaning to a known act and communicating this meaning successfully. In Bateson's perspective, frames are exclusive and inclusive sets of statements and actions that help to distinguish between what he calls primary and secondary processes. Frames may remain sub-conscious, but may be verbally expressed consciously as well. For example, the statement "This is coastal development and this is not coastal development" discriminates between certain design elements that are judged as important and those that are unimportant, irrelevant or undesirable. Comparing these processes to the function of a picture frame, Bateson describes how a frame organizes what is within it, discriminates it from irrelevant information outside of it and gives it meaning (Bateson 1954/1987, 187).

Goffman on his part – notoriously known and seeing himself as a conceptualizer – took up the idea of the frame and fleshed it out further. His main concern was not the philosophical 'what is reality? What is real?', but a more practical question of 'how do we perceive that something is real?'. Bateson's idea of frames came in useful to tackle this problem. His comparison of frames to a camera pointing at a subject of importance resembles the dependence of the subject on the viewer, as had become an accepted view in the philosophy of science. In accepting this viewer-subject dependence, Goffman also acknowledged the existence of individual sub-realities: "each of these […] has 'its own special and separate style of existence,' and 'each world, whilst it is attended to, is real

after its own fashion'" (Goffman 1974/1986, 2; emphasis in the original). Before actually elaborating his view about the elements and processes making up these individual sub-realities, Goffman states that frames mediate a certain unknowable, independent reality into aspects which we perceive as real. Because of his assumption of the existence of individual sub-realities, he marvels about "the easy way in which it is assumed that participants in an activity can be terminologically identified and referred to without issue" (Goffman 1974/1986, 10). He contends that communicating about an individual sub-reality in a certain way may become lost in translation, when terminologies do not correspond to each other. Due to this potential for miscommunication, Goffman makes "What is it that's going on here?" the core question to be answered in everyday life, but also in research settings (Goffman 1974/1986, 8). The 'frame' is the concept that grasps the camera used by individuals and which helps us to understand interaction situations with unexpected outcome or which can be said to be going wrong, based on an understanding of what participants in the interaction seem to be perceiving as real. Hence, he defines 'frames' as "definitions of a situation […] built up in accordance with principles of organization which govern events – at least social ones – and our subjective involvement in them" (Goffman 1974/1986, 10). The definition is cautious in tone, limiting the scope of frames to social events. Moreover, individuals are seen interrelated with events. Omitting explicit mention of interactions between individuals or rather the framing of individuals by individuals, the definition merely indicates a kind of agent-structure interaction. Here, Goffman's alleged inheritance of more structure-oriented sociologists such as Durkheim shines through (Manning 1980, 262). However, it hints at the existence of regularities – "principles of organization" – in the construction of frames, thereby precluding that frames may exhibit characteristics unique to the frame-bearer. Thus, although the acknowledgement of individual sub-realities and the chosen metaphor to denote frames would point to a dissolution of the subject-object relation, Goffman's frame definition moves away again from that more interpretivist view.

So, how does this process of defining a situation based on principles of organization take place? To elaborate this, Goffman starts from the premise that there must be some basic sense-making of the world around us or the social events in question.

This "primary framework" of interpretation "[renders] what would otherwise be a meaningless aspect of the scene into something that is meaningful" (Goffman 1974/1986, 21). From this definition, it is not clear whether Goffman envisions this process as a conscious or unconscious one. On the one hand, there seems to be an active part involved, as "the type of framework we employ provides a way of describing the event to which it is applied" (Goffman 1974/1986, 24; emphasis added). On the other hand, there seems to be a connection of definitions of situations with preconceptions or prejudices[12], which indicates a much more passive, subtle process:

It seems that we can hardly glance at anything without applying a primary framework, thereby forming conjectures as to what occurred before and expectations of what is likely to happen now. A readiness merely to glance at something and then to shift attention to other things apparently is not produced solely by a lack of concern; glancing itself seems to be made possible by the quick confirmation that viewers can obtain, thus ensuring that anticipated perspectives apply. (Goffman 1974/1986, 38; emphasis in the original)

A primary framework as described here links the situation to be defined to the situation's and the observer's past through "conjectures as to what occurred before", but also reaches into the future by "expectations of what is likely to happen now". By comparing the perceived situation with previous experience ("anticipated perspectives"), individuals make judgements about the meaning of particular elements constituting a situation. Previous experience, then, enables individuals to establish connections between those formerly disparate elements, and to create an understandable context. By this process of (a) embedding previously disparate elements of a situation in time and (b) associating meaningful elements with each other based on previous experience, framing makes sense of situations, as it were. As Goffman describes,

Observers actively project their frames of reference into the world immediately around them, and one fails to see their so doing only because events ordinarily confirm these projections, causing the assumptions to disappear into the smooth flow of activity. (Goffman 1974/1986, 39)

12 Not with the pejorative connotation it often has, but in the way Gadamer (2010) reiterates the construction of the German word 'Vor-Urteil', meaning an ex ante judgement and nothing more. Whereas the pejorative connotation hails from the fear of bias, Gadamer argues that pre-judgement is inherent to humans and therefore impossible to avoid, when making sense of events or situations.

Hence, in what could be classified as 'normal' or 'everyday' situations, sense-making is usually not problematic. Given the multitude of situations to be interpreted in everyday life, frames rarely conflict with each other, testifying to the general proficiency of individuals in making sense. Primary frameworks, in sum, describe the fundamental meaning attributed to a situation by individuals.

Originally, though, both Goffman and Bateson had taken up the frame concept, exactly because they observed that individuals are able to transform this meaning in their communication with others. Goffman called these additional states of meaning "keys", defined as a "set of conventions by which a given activity, one already meaningful in terms of some primary framework, is transformed into something patterned on this activity but seen by the participants to be something quite else" (Goffman 1974/1986, 43). The presence of a key is marked by brackets, which Goffman compares to the wooden part of a picture frame or the typical routines involving curtains and lights signifying the beginning of a theatre performance or movie showing. Such brackets may signify the temporal as well as the spatial limits of a key. The special nature of a key is that while an activity – gesture or speech act – stays virtually the same, it has a considerable change in meaning. Goffman's set of five general keys consists of

- *ceremonials, including among others marriage and funeral rituals,*
- *contests, including all kinds of sports,*
- *make-believe, including playfulness, daydreaming, and dramatic scriptings,*
- *regroundings, including among others apprenticeship or participant observation, and*
- *technical redoings, including practice, demonstration, re-enactment, role-playing and experimentation.*

This range of keys covers many typical everyday activities. Most, if not all, can even figure as bracketed episodes in one conversation. Given this wealth of what Goffman also calls 'laminations' of meaning on top of the original, pure so to speak meaning attributed to a situation, "the absence of laminations is to be seen, then, as something worth seeing" (Goffman 1974/1986, 565). Thus, not only the keyings as alterations of the basic sense-making, but

also the instances, in which the raw primary framework comes to light are relevant for study. Especially the variation in conscious and sub-conscious framing over time and topic becomes a phenomenon of interest. Goffman acknowledges that framing can be put to use consciously in what he calls 'fabrications', representing the "intentional effort of one or more individuals to manage activity so that a party of one or more others will be induced to have a false belief about what it is that is going on" (Goffman 1974/1986, 83). Although Goffman elaborates the concept of fabrications more in detail, for the purpose of this dissertation, it is sufficient to add that the rather negative connotation of fabrications – people being induced into false belief – still leaves open the possibility of "benign" fabrications alongside "exploitative" ones (Goffman 1974/1986, 87, 103).

4.3 Who stands on Goffman's and Bateson's shoulders and how?

Since Goffman and Bateson, the frame concept is burgeoning (Scheff 2005, 369, Benford and Snow 2000, 611). Research papers using the concept can be found in international relations (Schatz and Levine 2010), sociology (Young 2010), spatial planning (Ernste 2012), media and communication studies (Scheufele 1999, Snow, Vliegenthart, and Corrigall-Brown 2007, Van Hulst et al. 2014), and many subfields of policy studies (Candel et al. 2014, Klüver and Mahoney 2015, Scholten and Van Nispen 2008). Framing has also received enthusiastic attention in the field of interpretive policy analysis (Straus 2010, Van Gorp 2007, Van Hulst and Yanow 2014, Van Lieshout et al. 2014). With regards to the topic of the present dissertation research, it has found application to research in climate change (Blue 2015, Dewulf 2013, Fletcher 2009, Fiss and Hirsch 2005, Fünfgeld and McEvoy 2011, Nie 2003, Vink et al. 2013, Van Buuren, Vink, and Warner 2014) as well as water and coastal management (Wesselink and Warner 2010, Dewulf et al. 2007, Dewulf et al. 2011, Isendahl et al. 2009, Scrase and Sheate 2005, Freitag 2014, Krogman 1996). Throughout the past decades, the number of published research articles have already allowed for specialized review articles, e.g. in the communication sciences (Borah 2011), social movement studies (Benford and Snow 2000), and management and organization sciences (Cornelissen and Werner 2014). However, the concept also suffers from a conceptual

fragmentation which has already been lamented by Entman (1993).

Broadly speaking, after Goffman and Bateson, approaches to the conceptualization of framing were influenced by two distinct sets of collaborators. Speaking of two separate 'schools' of framing would not be justified, because there are plentiful interconnections also between later works on framing. However, much contemporary framing work quotes one of the following two collaborations or a mix of both lines of thinking as their conceptual grounding. The first line of thinking is the policy studies oriented vein of Schön and Rein (1994, 1996), which plays a larger role in the more interpretive strands of contemporary framing research. Basing themselves mainly on Goffman and their own earlier work, Schön and Rein (1994, 23) see frames as "underlying structures of belief, perception, and appreciation". They state that frames are the causes of "intractable policy controversies" as opposed to "policy disagreements" which relate to uncertainty about what the facts in the situation are. From their point of view, frames can be found in four different, mutually compatible types: a scaffolding, a boundary, a schema of interpretation, and a narrative (Rein and Schön 1996, 88). All four types focus on different aspects of frames, and also expect different effects. The idea of frames as scaffoldings conjures the image of stability, regularity, and structure. This image also conveys the relative immutability of frames and the origin of the difficulty for individuals to solve intractable policy controversies, because seeing a problem from someone else's point of view is hard. Frames as boundaries and picture frames had already been introduced by Bateson, but is now further developed. A frame in the boundary sense helps individuals to focus on relevant elements of a policy situation. Similarly, frames as schemata of interpretation define the meaningfulness of elements of the world and help to organize them (cf. Snow et al. 1986, 464). Finally, as a narrative, frames define problems and the scope of solutions to those problems (cf. Stone 2002). These views of frames are very much cognitive in nature. Furthermore, they are closely related to the concepts of meaning and meaning-making. This closeness to meaning and cognition is a factor in Schön and Rein's popularity among interpretive researchers.

The other stream of framing theorizing is based on Tversky and Kahneman's (1981, 1984) work in the field of psychology and is more rational choice informed (cf. Ernste 2012). Due to this rational choice inclination of this stream of frame theory, it is unsurprising

that it has gained a foothold in the domains such as psychology and media and communication studies. Tversky and Kahneman's frame definition is similar to Schön and Rein's schema of interpretation type, in that frames "refer to the […] conception of the acts, outcomes, and contingencies associated with a particular choice" (Tversky and Kahneman 1981, 453). Acknowledging that the same situation may be framed in different ways, in this line of thought the content of a frame depends on two factors, namely problem definition and individual characteristics. A considerable difference between the two lines of thought is the exchangeability of frames for individuals. While Schön and Rein argue that frames are difficult to change, the active character of Tversky and Kahneman's terms, i.e. frames are adopted by individuals (Tversky and Kahneman 1981, 453), suggests that frames are more like a set of glasses with different shades that can be put on by choice or free will. This also corresponds with their claim that frames overlay individuals' 'real' values and may compel them to make choices based on a frame inconsistent with their 'actual' values. Frames are seen as "perceptual illusions" (1984, 343) and "imperfections of human perception and decision" (1981, 453), i.e. a distortion of perception, instead of generic human sense-making devices as the other line of thought would contend. There is friction in this definition hailing from the parallel assumptions of frames as constructed from individual characteristics, such as norms and habits, and frames as external to the individual and adoptable. These two assumptions differ in the way they conceptualize the separation between values and frames. While there is a strong link between values and frames in the first assumption, the second assumption dissolves this link and presents frames as interchangeable lenses.

Entman's (1993) frequently mentioned definition of framing bridges the two lines of thought. It focuses on the selective character of frames – as the picture frame metaphor does – and takes framing into the active setting of communicating messages:

Framing essentially involves selection and salience. To frame is to select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation for the item described. (Entman 1993, 52; emphasis in the original)

Social movements research is another field of study in which framing has acquired a strong foothold, thanks to the work of William Gamson, Robert Benford, and David Snow. In his earlier work, Gamson focused on the role of linguistics (Gamson and Lasch, 1983 in: Van Hulst et al. 2014, 457) for revealing frames and narrative theory (Gamson and Modigliani, 1987 in: Scheufele 1999, 106) for constructing them. Building on this, he developed framing as a communicative process leading to shared meaning (Gamson, 1992 in: Gallo-Cruz 2012, 22). The collective character of framing as such a communicative process also raised the issue of the relationship between individual cognition and culture, for which framing was proposed as a mesolevel concept (Gamson, Croteau, Hoynes, & Sasson, 1992 in: Van Gorp 2007, 61). As Snow et al. (1986) argued, the linguistic character of framing does not only result in cognitively making sense of the world, but it may also be applied actively to "mobilize potential adherents and constituents, to garner bystander support, and to demobilize antagonists" (Snow and Benford, 1988 in: Gallo-Cruz 2012, 22). In concordance with Gamson, framing is then a collective act of making meaning of reality. In this context of mobilization and demobilization of people, Benford also introduces the concept of counterframing, which involves the specific targeting of other interest groups' frames through framing in order to "rebut, undermine, or neutralize a person's or group's myths, versions of reality, or interpretive frameworks" (Benford, 1997 in: Gallo-Cruz 2012, 22). This marks an action-oriented approach to framing geared towards influencing other people or groups. Conversely, their Goffmanian definition of frames is much more cognitive in nature and was picked up by Schön and Rein later on, as previously mentioned. Frames are, thus, "'schemata of interpretation' that enable individuals "to locate, perceive, identify, and label" occurrences within their life space and the world at large" (Snow et al. 1986, 464). The interlinkages between protagonists in the framing literature can thus be taken to be manifold and sometimes confusing.

Scholars have proposed several ways to structure and organize the existing theorizing in the field of framing. For one, Dewulf et al. (2009) theorize the paradigmatic split between cognitive and interactional approaches. There is a basic ontological difference between the two. While in cognitive fram-

ing, frames are taken to be individual constructions of reality, in interactional framing, frames are socially co-constructed representations. Dewulf et al. (2009) also link this ontological difference to epistemological understandings. In the cognitive perspective, researchers seek to reconstruct the frames of individuals or groups. In the interactional perspective, the focus is much more on the co-construction of frames and relies more heavily on interactional data. This paradigmatic division links to an approach proposed in media sciences, where Scheufele and Tewksbury (2007) distinguish between framing as a macro-construct and framing as a micro-construct. As a macro-construct, framing involves the presentation of "information in a way that resonates with existing underlying schemas among the […] audience", while the micro-construct aligns with the cognitive process of frame construction Scheufele and Tewksbury (2007). Instead, Shim et al. (2015) focus on the repercussions on methods by separating qualitative from quantitative ways of frame analysis. They find the differences to be related to inductive and deductive ways of reasoning, respectively. From their perspective, quantitative frame analysis uses techniques such as quantitative text analysis to derive frames through statistical analysis. Qualitative frame analysis, on the other hand, would rely on discourse analysis and be more descriptive in nature. Another approach is offered by Cornelissen and Werner (2014) who classify existing framing concepts according to their level of analysis. At the micro-level, concepts such as cognitive frame, frame of reference and framing effects are situated. This level mainly accommodates those concepts that relate to the construction of meaning on the individual level. The mesolevel – including strategic frame, strategic framing, technological frame, and collective action frame – involves frames "within organizations, and on the tactics and repertoires of action of social movements" (Cornelissen and Werner 2014, 196). The macro-level hosts more abstract concepts, such as field frame, institutional frame, and frame contests/frame alignments. These concepts relate to cultural perspectives on the societal level which exceed the organizational level.

4.4 Summing up

The framing literature hosts a broad spectrum of approaches. I hope to have shown that the field can be seen as an amalgamation of cognitive studies, interactional approaches, linguistics and discourse approaches. As a concept, it fits well with fields of research in which individuals interact, such as policy studies, politics, conflict studies, development studies etc. In empirical applications, this versatility has led to many different approaches with a core of a handful of sources, the specific selection of which depends on the research domain. In retrospect, attempts have been made to systematize the field along several dimensions, including ontology (multiple realities vs. single, co-constructed reality), epistemology (cognitive/individual data vs. interactional data), methods (qualitative-inductive vs. quantitative-deductive) and the level of analysis (individual vs. organizational/institutional vs. cultural/societal). While in general these dimensions overlap, the specific attempts are difficult to reconcile, due to incongruences between the methodological commitments of the authors, the extent of which cannot be explored at present. Furthermore, the smorgasbord of patchwork concepts observable in the literature is not in itself problematic. As I see it, the conceptual multiplicity of the framing concept is among others due to the constitution of framing and frames as generic mechanisms of human being in the world, which are simply difficult to observe directly. As Scheff (2005, 369) argues, this difficulty of observing cognitive frames may have boosted the development of the interactional approaches to framing. Although the difficulty of conceptualizing the frame/framing concept may feel somewhat unsatisfactory and the resulting occasional vagueness may occur to some as undesirable, these should not be taken as reasons to avoid the concept. Rather, the individuality and contextuality of the research setting and the people involved in it call for individualized concepts tailored to the research subject.

In the present dissertation research, it is not the research subject, but a way of uncovering meaning-making in the empirical cases. As such, it is a sensitizing or heuristic concept for tracing the changes in meaning-making among policy relevant actors. As a consequence, the role framing plays in the research is different from the study of a phenomenon, say the definition, presence,

or extent of the concept of democracy, in a certain research setting. The framing concept is, in that sense, the means to an end, not the end itself. By using the framing concept, an interpretivist approach is taken, which does not so much focus on individuals' interpretation of concepts, but the way in which this meaning influences policy-making. To conclude, in this dissertation, framing is seen as a methodological concept. In the following chapter, I elaborate, how this theoretical background is linked to the methodological commitments and the methods applied in this research.

METHODOLOGY

“Nicht die ‘sachlichen’ Zusammenhänge der ‘Dinge‘,
sondern die gedanklichen Zusammenhänge
der Probleme liegen den Arbeitsgebieten
der Wissenschaften zugrunde.“

Weber, 1904

„[Der Geisteswissenschaften] Gegenstand ist der
Mensch und was er von sich weiß. Er weiß sich aber als ein
Handelnder, und das Wissen, das er dergestalt von sich hat, will
nicht feststellen, was ist. Der Handelnde hat es vielmehr mit
solchem zu tun, das nicht immer so ist wie es ist, sondern auch
anders sein kann. In ihm entdeckt er, wo er handelnd einzugreif-
en hat. Sein Wissen soll sein Tun leiten.“

Gadamer, 1960

5.1 Introduction: Philosophical commitments and methods

With the rise in popularity of article-based dissertations, a section about philosophical commitments has more and more become a choice of the PhD candidate. Before I begin elaborating my approach to policy analysis, I want to make a plea in favor of philosophical foundations sections in doctoral dissertations. In my opinion, having such a section is desirable for several reasons. Firstly, such a section shows that a PhD candidate is consciously reflecting on his research practice. Secondly, a foundations section is relevant for understanding the perspectives applied in the articles following in the dissertation; it elucidates the methodological choices made in the articles. While it is useful to know the ontological-epistemological backgrounds of the dissertation in general, there is also a specific argument to make. This specific argument pertains to the large variation between ontological-epistemological viewpoints that may be taken. Due to this variation, a particular methodological choice may not always be obvious to everyone, especially to researchers with a radically different ontological-epistemological stance. So, it will be difficult for scholars unfamiliar with the selected approach to understand methodological choices, if a PhD candidate chooses not to include a foundations section.

In the following, I elaborate my understanding of interpretivist analysis. First, I reiterate my own scientific biography to explain how my philosophical commitments formed. Then, my current ontological-epistemological commitments will be spelled out.

5.1.1 Biographical sketch

Public administration/political sciences is not my scientific field of origin. Rather, I would consider myself an environmental social scientist. For me, environmental issues are always related to socio-economic or policy/politics issues. Environmental problems come into existence, because of human interaction with the environment. In turn, nature and the environment reflect our interactions with it; a kind of political ecologist perspective, if you will…

This perspective has its source in my Bachelor studies in environmental sciences. I followed a broad course program, in which students were prepared for majoring in one of three directions,

i.e. environmental policy and management, environmental technology, and environmental systems analysis. While my eventual major was the social scientific direction, we became prepared to understand environmental issues in their broadest guise, be it from a chemical, ecological or policy standpoint. During the later periods of my Bachelor and my Master studies my interest focused more on social-theoretical courses. I was familiarized with discourse coalitions and ecological modernization theory. Moreover, I was interested in grand theories of modernization, e.g. by Giddens, Beck and the like. This was accompanied by courses in research methods and statistics. But I began doubting aspects of those latter fields, such as the linearity in research stages, quality evaluation of qualitative research based on positivistic criteria and the variable- and hypothesis-orientation inherent to statistics. I was also puzzled by the fact that researchers would pass over weaknesses in research quality instead of being honest about them and relating them to the inevitable reality of doing research. At the time, I could not, however, accommodate the unease I developed with the straitjacket of those research traditions. Had I known about narrative interviewing or phenomenological analysis, I would have had an approach to my study on everyday life in modernity that would have yielded more interesting results with regard to my research participants' lived experience.

Nonetheless, still fascinated by social sciences – with reservations – I began a PhD. Environmental discourse analysis was a concept that stuck and it seemed a perfect theoretical approach to my PhD dissertation topic which originally addressed how policy actors in coastal management projects perceived costs and benefits of innovative management solutions. A year or so into my (four-year) PhD program, I presented my research ideas including my planned discourse analysis to a course at my graduate school, the Netherlands Institute of Government. Detecting a slight mismatch between the topic and level of analysis, the teacher suggested I consider switching to framing theory instead. I do not remember the arguments, but I thankfully picked up this nod in another direction. A while later, when I had decided to drop discourse analysis and focus on framing, another graduate school course on general methodology, in which the basics of interpretive research were taught as an approach equivalent to more positivistic approaches, confirmed my choice. Since then, I have indulged

in the context-orientation and richness of interpretive studies, reading Dilthey (1970), Gadamer (2010), Weber (1988b), Geertz (2000), different strands of anthropology (Lévi-Strauss 1974, Evans-Pritchard 1950) and into recent interpretive contributions by Wagenaar (2011), Flyvbjerg (2001), and Yanow and Schwartz-Shea (2012, 2014a). After tutorials in the history and practice of interpretive research I feel more and more at home in the field. Nonetheless, it is noticeable that interpretive research demands patience and experience in both field work and text work phases. I concur with Hendrik Wagenaar who holds that methods cannot be learnt like a recipe, but need to be experienced only to be truly known after the fact. In that sense, interpretive research and the learning of it is a continuous trip in which questions are thrown up like mountains to be crossed, only to see that there are more mountains behind the first. This trip certainly does not end with defending a PhD dissertation. Rather, the trip is just beginning.

5.1.2 Ontological-epistemological commitments

Before making a choice of how to study a research subject, that very subject has to be defined. But a discussion about the structure of the research subject is difficult to separate from how we as human beings perceive that subject, be it social or natural. Hence, the following discussion about the structure of the research subject will relate to how the research subject can be known, wherever necessary.

For the social sciences, it makes sense to speak of social reality as distinct from natural reality, which I term the domain of natural scientists. The entities in natural reality are assumed to be independent from the scientist as their observer, i.e. in natural reality, the research objects are ontologically objective (Searle 1995, 8). In addition, natural scientists are most interested in the intrinsic features of the research objects. So, natural reality is composed of ontologically objective entities with intrinsic features. However, social reality has a different structure than natural reality. In social reality, entities may not only have their intrinsic features, but also carry observer-relative features. For example, a stone is intrinsically a stone at the same time that it is observer-relatively a paperweight. In addition, many entities in social reality – such as democracy, institutions, or political parties – are not ontologi-

cally objective, because they would not exist outside of us human beings. In other words, from my point of view, social reality is the totality of observer-relative entities with observer-relative features and their relationships, which organize and guide the behavior of human beings in interaction with other human beings and non-human entities. The facts that there are ontologically subjective entities in the world and that ontologically objective entities may gain observer-related features also means that social reality is constructed by human beings. It does not exist independent from us. That is to say, there are entities in social reality which are dependent on the observer. Although the structure of social reality is invisible, as Searle (1995, 4) asserts, this does not mean that all its elements are invisible, i.e. material objects are naturally a part of social structure. Rather, material objects in social reality – also those that are in principle ontologically objective – gain observer-relative features in addition to their intrinsic characteristics. Hence, material objects are bestowed with meaning, and in so doing, they are reconstructed as part of social reality. Just the same, there are epistemically objective judgements and ontologically objective entities, which are independent of the individual.

Once individuals begin to act in this world of observer-relative entities, they have to deal with the structures that are generated by re-enactment and reconstruction of social[13] and institutional facts[14]. With Wagenaar, agency is the constant dealing of individuals with the intentions and meanings of other entities. Whenever we do something, from going to work to proposing legislation, the world 'talks back', i.e. it may respond with unforeseen reactions (Wagenaar 2012). Acting in the social world for individuals, then means striving for "alignments and temporary stabilizations between our accounts of the world and its various forms of agency" (Wagenaar 2012, 93). The structure of social reality, composed of all sorts of observer-relative entities, is thus real and enabling, not rigid and unchangeable. Rather, social reality's structure is made of responsive social and institutional facts reacting in certain ways depending on the way they are approached. Individuals, on their own terms, act in accordance to expected reactions from the surrounding structures. In addition to being composed of observer-relative entities, human beings may act in this world by dealing with unknown responses from its socio-institutional environment. This view of social reality allows

13 Searle: "'social fact' to refer to any fact involving collective intentionality. So, for example, the fact that two people are going for a walk together is a social fact." (Searle 1995, 26)

14 Searle: "Institutional facts are so called because they require human institutions for their existence." (Searle 1995, 2)

for epistemically subjective interpretations of certain aspects of that reality and the acting upon them, making it a form of social constructivism, but it does not open the door to the untenable idealist position that all reality occurs in our minds.

So, how can such a constructed social reality be studied? How can the processes leading to that construction be studied? A constructed social reality calls for the interpretation of meaning and its making, which positions this research in the tradition of the Verstehende Wissenschaften, i.e. interpretivism.[15] Originating in the Geisteswissenschaften, among others in theology and human sciences, this approach opposes the naturalist idea of taking the structure of social reality to be similar to natural reality, with the consequence of studying it in the same way as one would study natural reality. Instead, interpretivism intends to study social reality by focusing on understanding the meaning of social facts and their coming about in terms of meaning-making (Schwartz-Shea and Yanow 2012, 42). Both the concepts of 'meaning' and 'understanding' need to be clarified. First, 'meaning' can be defined as the epistemically subjective sense an individual attributes to an entity (Weber 1988c, 542, cf. Searle 1995). Second, 'understanding' can be defined as the interpretive capture of meaning (Weber 1988c, 548). This definition contrasts with the goal of causal explanation, which is at home in the variable-oriented positivist research domain, although Weber attests that their different starting points make understanding and explaining the two ends of a continuum (Weber 1988d, 436).[16]

An important aspect of getting at this epistemically subjective meaning is focusing on other people's language, before comparing this language with the researcher's own language (Evans-Pritchard 1950, 122). Weber joins in this position, pointing out that "meaningful judgement of the other's will can only come from an individual's own world view, combatting the other's ideal from the grounds of one's own ideal" (Weber 1988a, 157). Such a conversation with strangers, i.e. others, cannot lead to an assimilation of the emotional state or a complete and profound interpretation of a person or author, but merely to empathize with "the perspective from which the other has won his opinion" (Gadamer 2010, 297). Indeed, the results of interpretive research are "our own constructions of other people's constructions of what they […] are up to" (Geertz 1973, 9).[17]

15 The following is not an exhaustive discussion of the points of divergence between the positivist and interpretivist methodologies. Instead, I highlight those aspects, which are necessary for the reader to understand the philosophical backdrop of the dissertation research. Hence, this section is not meant as an all-encompassing philosophical discussion, but, as it were, as a methodological frame, through which the research needs to be seen

16 The difference, which an interpretivist perspective makes as opposed to positivist methodologies, has taken a central spot in Dvora Yanow's work on interpretive philosophy and methodology (Haverland and Yanow 2012, Yanow 2014a, Schwartz-Shea and Yanow 2012)

17 In this sense, the interpretive, Verstehen tradition and the hermeneutical perspective in the social sciences are comparable positions.

Theorizing and causality also play different roles in interpretive research than in positivist informed research. Interpretivists do not follow linear ways of causal reasoning. Instead, it is a circular movement, sometimes called abduction, that leads a scholar to "guess at meanings, assessing the guesses, and drawing explanatory conclusions from the better guesses" up to the point that all details fit the whole (Gadamer 2010, Geertz 1973). In other words, "developed inductively or abductively, theory can be assessed against particular research contexts, as a potential resource for understanding, rather than as an apparatus of causal, predictive laws" (Yanow and Schwartz-Shea 2014b, xix). Hence, one aim of interpretive research is not to uncover those causal laws, but to find patterns in meaning-making instead, which are always mediated by situative context. The different theoretical lenses applied in the empirical settings are cases in point for the way in which abductive reasoning shaped my own interpretations and led to plausible interpretations. The type of causality guiding interpretive research entails looking for the reasons for people to "respond to their world as they do" in the light of "human meaning making […] as 'constitutive of actions'" (Schwartz-Shea 2014, 141). This so-called constitutive causality is interchangeable with socialization and culture, because these form "our consciousness of self and society" (Schwartz-Shea 2014, 141).

Such a view on causality coupled with the intense contextuality of interpretive research has consequences for the generalization of findings. The contextuality of interpretive research inhibits the researcher to transfer the understandings from one setting to another, because the constitutively causal patterns found are specific to the settings studied by the researcher. Furthermore, the interpretive researcher has substantive knowledge about the studied settings, but not about settings to which others may intend to apply the findings to. Hence, differences of constitutively causal patterns across cases impede meaningful generalization. Such generalization of interpretive research would not exceed speculation. But this does not preclude experts to learn from other settings. If anything, this elaboration shifts the responsibility of transferring findings to other settings to "the person who seeks to 'transfer' those findings to the new setting, rather than the researcher engaged in the initial study" (Schwartz-Shea 2014, 141).

18 As Yanow (2014b, 145) explains, interpretive researchers are very much aware of the fact that doing research already means the constant comparison of researchers' a priori knowledge with what they encounter in the field.

Understood in this way, doing interpretive research also changes the function of comparative research[18]. The use of comparing cases is, then, not to abstract general laws of causal processes that are valid for all cases in the population. Instead, a comparison of cases with an interpretive methodology entails mapping the respective ways of meaning-making and presenting them side-by-side. Within their context, these cases may represent differences in meaning-making. The similarities and differences thus found can be discussed taking into account their respective situatedness. In other words, findings of an interpretive case comparison are useless without their context and grounding in their specific setting is paramount. The tenet of abductive understanding also has implications for comparative interpretive research, which are also visible in this dissertation. Within a single case, a certain meaning-making variant may be dominant and yielding the most plausible understanding of what is going on in the case. In other cases, the dominant way of meaning-making can differ. For example, in the empirical cases in this dissertation, the abductive process found different ways of policy framing to be the dominant meaning-making pattern. In this way, the most plausible understanding of the case emerged from the field (Yanow 2014b, 144). For the comparative chapter, other forms of policy framing, which are also present in the cases, but not dominant, were added to the analysis of the original empirical case, to complement the synopsis.

In brief, interpretively studying a constructed social reality entails understanding the epistemically subjective meaning individuals attribute to entities in social reality and understanding how it is that attributed meaning comes to be. Interpretive study of constructed social reality aims at finding patterns that emerge from the field. In this field of study comparing cases follows its own logic.

5.1.3 Consequences for methods

Methods of data generation and analysis follow from the philosophical commitments of the researcher. Moreover, for understanding a constructed social reality from an interpretivist viewpoint, the methods employed need to map for exposure and intertextuality – two core objectives of interpretive policy analysis. Figure 5.1 gives an illustration of what mapping for exposure

means. It is grounded in the multiplicity of interviewees' realities and the probability that they perceive things differently. Starting with one interview (or source in general), the interviewer can only capture one interpretation of the research subject in question. Consecutively, more interviewees' interpretations are added to enrich the interviewer's interpretation of the research subject. In Figure 5.1, we already have quite a good overview of the research subject with five perspectives from different angles. The right-hand bottom corner of the triangle is still underexposed, which means that the image the interpretive researcher has of the research subject is not complete, yet. From a certain point on, every added interviewees' perspective nuances the interpretations reconstructed by the researcher. While there may be an epistemically objective narrative to be distilled from the interviewees' interpretations, their epistemically subjective judgements cannot be reduced to that narrative. Interviewees' epistemically subjective judgements have a right and value of their own.

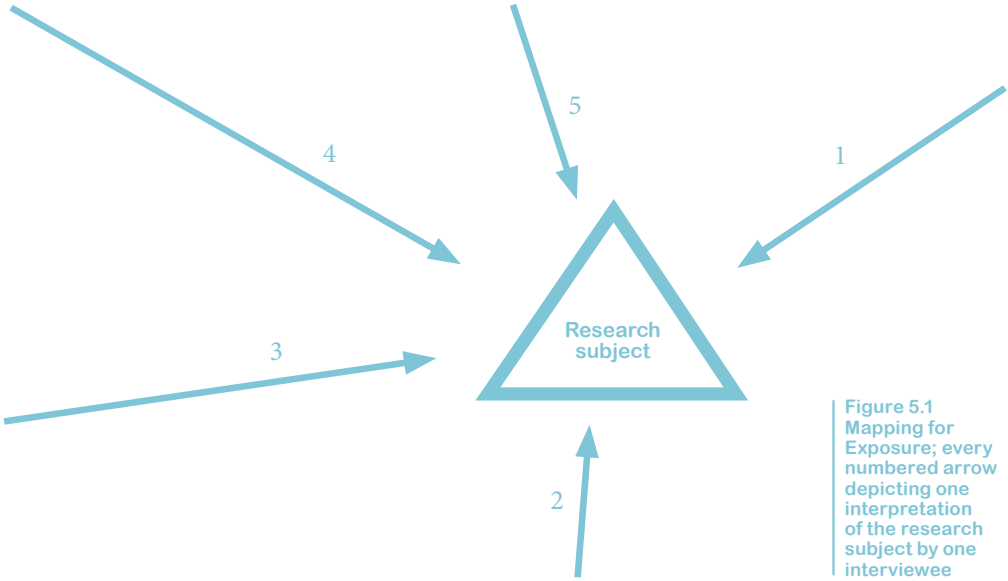


Figure 5.1 Mapping for Exposure; every numbered arrow depicting one interpretation of the research subject by one interviewee

Intertextuality, on the other hand, is the interpretive analogue of triangulation. The concept has its origin in linguistics and hermeneutics, but has been expanded to include all types of data. Intertextuality refers to the "ways in which different types of data draw on ('cite') material from other kinds of data, such that the researcher can 'read across' them in interpreting meaning"

(Schwartz-Shea and Yanow 2012, 86). In other words, mapping intertextuality means revealing textual as well as more abstract conceptual linkages between entities involved in the research subject. Moreover, it not only reveals the actual linkages between sources, but, by the way of formulation, intertextual data fragments also reveal their "attitude towards the other perspective" (Wagenaar 2011, 164). Whereas mapping for exposure reveals the multiplicity of interpretations of the research subject, intertextuality maps the linkages between these interpretations.

Furthermore, interpretive scholars develop specific quality standards for their research. A notable example of such quality standards, which will subsequently be retraced, has been outlined by Schwartz-Shea (2014). However, the acknowledgment of other research domains' evaluative criteria is not a self-evident process. Researchers' socialization in certain research cultures may lead to entrenchment in those paradigms. An openness to the possibility of other ways of making knowledge claims is, therefore, a prerequisite for any researcher in the social sciences. Hence, to understand what evaluative work the interpretive criteria do, recalling the focus and aim of interpretive research is necessary: to "understand human meaning making" while "maintaining a sensitivity to the 'form' of the data" (123). Interpretive researchers are, thus, interested in revealing the negotiated and constructed meanings around a certain research subject by studying data from different sources as these "encode and enact different human practices" (123). Doing justice to the contextual character of interpretive research also entails the impossibility of defining universal, everlasting evaluative criteria (130). The acknowledgement of the contextuality of human meaning-making implies that evaluative criteria must always adapt to "new thinking, new practices, and changing research priorities" (130).

Seven evaluative criteria for interpretive research have been put forward: four more general in nature, and three relating to the practice of research. 'Trustworthiness', as the first criterion, means the duality of systematicity in analysis complemented with an attitude of doubt "allowing the potential revisability of their research results" (131). Not only is this epistemologically different from positivist science, but there is also an ontological difference: "'Trustworthiness' not 'truth' is a key semantic difference: The latter assumes an objective reality; the former moves

the process into the social world" (132). The other general criteria include researcher reflexivity, triangulation or intertextuality of data and thick description. First, reflexivity is an attitude of openness and attentiveness to the positionality of the researcher himself throughout the research process. It is supposed to counter the "third-person, omniscient exposition – the 'view from nowhere' […], the 'god trick'" which is inherent to the subject-object distinction (133). Second, intertextuality has been discussed previously. Third, the criterion of thick description demands a high level of detail of the study to substantiate the researcher's interpretation. Such level of detail should enable the researcher to reveal and the reader to understand "the lived experiences of the people they study" (132). This dissertation accommodates different versions of project descriptions, all with different depths of layers of meaning. The project descriptions in the appendices include most layers of meaning. In the empirical chapters, those exhaustive project descriptions were trimmed down to reveal the dominant layers of meaning-making. As has been previously-mentioned, which layers are most dominant in every case depended on the setting.

The three practice-related criteria include informant feedback, audit trail and conscious examination of negative cases. First, informant feedbacks are "specific ways that researchers test their own meaning making by going back to, and asking for feedback from, those studied for an assessment of whether the researcher has 'got it right'" (135). This does not mean that research participants' meanings are epistemically objective. But it enables bringing light to contradictions between the accounts of different participants, as well as adding to the attitude of doubt. Second, an audit trail serves the systematicity of the research. It "refers to a set of practices for documenting study procedures, enabling the researcher to respond to the question 'How exactly did you do this research?'" (136). The ultimate goal of such a trail is maximizing the transparency of the research to be able "to make linkages among researcher decisions, evidence generated, and inferences drawn" (137). For document analysis, this audit trail may comprise how the documents were chosen and what their status is. For interviews, the information can consist of who was interviewed, how long and where they were interviewed, interviewing and transcription techniques, the total number of interviews, etc. (137).[19] Third, through negative case analysis, the researcher does

19 For an audit trail of the interviews, see Appendix XI. Interviewee name and job description have been anonymised. If necessary, the full audio and transcript files as well as a more explicit interview journal can be requested. These files are stored on a secure data management server, which is accessible by password only.

not avoid contradicting information in favor of confirmatory evidence. It is "to make sense of interactions observed in the field, of patterns he or she is seeing documents or interviews, and/or of possible inconsistencies resulting from intertextual readings of evidence" (139). Thinking about inconsistencies in the generated evidence is a process towards coherence of the interpretation. Taken together, these seven criteria form an evaluative framework for thorough interpretive research.

20 See Yanow and Schwartz-Shea (2014b) for an overview of the methods that may be used for interpretive research purposes.

As previously-mentioned, philosophical commitments precede the choice of methods. But philosophical commitments also preclude certain kinds of methods and favor others[20]. Hence, this dissertation uses a case comparison approach based on qualitative interviews and qualitative content analysis to uncover the meaning-making processes and patterns at play in the cases.

5.2 Methods

In this section, I describe the methods choices at the basis of this research. The section is divided into three parts. First, I describe the case study approach. This description begins with how I gained access to the three cases that enabled me to generate data and ends with an explanation of the comparative method applied in Chapter 9. After describing the case method, I turn to the data generation method. This subsection combines a reflection on the qualitative interview as a data generation method and explains the development of the interview guide used in the cases. This section concludes with the data analysis method.

5.2.1 Case research: a matter of access

Case research is a common approach to studying social and policy phenomena in positivist-qualitative as well as interpretivist research. It can even be said that virtually every social scientific study is a case study or can be conceived as a case study, often from a variety of viewpoints. At a minimum, every study is a case study because it is an analysis of social phenomena specific to time and place. (Ragin 1992, 2).

The fact that cases are so popular in social sciences has at least two reasons. First and foremost, the advantages of case studies align well with the objectives of social research in general and

interpretive research in particular. Especially the substantive, situated knowledge gained with case research enables the contextual study of meaning as well as its production. Second, the discussion of what a case is, is not settled in social scientific debate, leading to a widespread use of the concept relating to many different research subjects. Actually, the concept of 'case' can be used for a research subject at any level of analysis and any spatiotemporal dimension. It is not for nothing that clarification of this conceptual vagueness is frequently attempted (Ragin and Becker 1992, Schwartz-Shea and Yanow 2012). Pending the definitive conclusion of the concept formation of 'case', I take the social phenomena specific to time and place studied in this dissertation to be subtypes of a core concept (see Appendix X for a tabular, conceptual explanation of full and diminished subtypes of a core concept).

Table 5.1 Conceptual relations between the cases studied in this dissertation.

		Defining properties				
		Innovative	Sand	Large-scale	Resedimentation	Non-experimental
Concept type	Concept					
Core concept	Mega-nourishment scheme	X	X	X		
Full Subtype	Sand Motor	X	X	X	X	
	Hondsbossche Duinen	X	X	X		X
Diminished Subtype	Houtribdijk pilot	X	X			

The core concept of which the studied cases are subtypes is the 'mega-nourishment scheme'. I take mega-nourishment schemes to have three defining properties (Table 5.1). First, they are 'innovative' coastal management solutions, because they have never been used as such. In other parts of the world, mega-nourishments schemes have been applied mainly as land reclamation.

Conversely, this research focuses on the use of mega-nourishment schemes for coastal protection. Second, a defining property of mega-nourishment schemes is the use of 'sand' as the main construction material. This contrasts with other large-scale coastal protection solutions such as the Deltaworks, which have mainly relied on steel and concrete. Sand as a construction material increases the potential of coastal management solutions to fit more smoothly into its environment. A third defining property of mega-nourishment schemes is their 'large scale'. As opposed to the routine coastal management scheme in force in the Netherlands, which uses annual nourishments of volumes up to 5 Mm^3, mega-nourishment schemes are typically much larger with regard to the volume of sand applied to the beach as well as to the envisaged period of functionality.

Two kinds of subtypes can be defined for the core concept. The first is the full subtype or "classical category" (Collier and Mahon 1993, 849), which is based on Sartori's (1970) work on concept formation. Full subtypes are, then, characterized by the fact that some of their defining properties "occur in addition to those of the [core concept]" (Collier and Mahon 1993, 849). For example, in the case of the Sand Motor, the additional defining property is the fact that sand is supposed to wash away and 'resediment' at other stretches of beach (Table 5.1). This is also part and parcel of the Building with Nature aspect of the Sand Motor project. In comparison, the other full subtype of mega-nourishment schemes – the Hondsbossche Duinen project – does not make use of resedimentation (sand is supposed to stay trapped at the location), and is a non-experimental project (Table 5.1). In the logic of full subtypes, the presence of the basic defining properties categorizes these projects as full subtypes of mega-nourishment schemes, but both are clearly differentiated from each other through the presence and absence of the respective additional defining properties. As Collier and Mahon (1993) reviewed Sartori's method of concept formation, they realized that there were concepts which could not be categorized as full subtypes of core concepts, but which nonetheless shared some of their defining properties. They came up with "radial categories" or diminished subtypes as the second kind of subtype. Whereas full subtypes include defining properties in excess of those of the core concept, diminished subtypes miss some of the defining properties of the core con-

cept (Collier and Mahon 1993, 849)[21]. The case in this dissertation which resembles such a diminished subtype is the Houtribdijk pilot case (Table 5.1). As opposed to mega-nourishment schemes, the Houtribdijk pilot lacks the large-scale character. Both kinds of subtypes have repercussions on the knowledge that is generated and what this knowledge means in context (see subsection 5.2.1.2.). Hence, in answering the research questions – especially question B.1. (Chapter 1) – in Chapter 10, attention is directed towards the distinction between diminished and full subtypes of mega-nourishment schemes and how these may be similar or different.

Although the research proposal formulated at the beginning of this research project already defined the scope of cases which would be relevant to answering the research questions, it took into account the problem of access only indirectly. Access to settings and people is an important aspect of case research, to some even more important than a systematic ex ante definition of a case population (Schwartz-Shea and Yanow 2012, 70). What use is a case definition, if the researcher cannot gain access to any instances to which the definition applies? Hence, for interpretive researchers "choices of cases and access are often intertwined" (Schwartz-Shea and Yanow 2012, 70). In consequence, the set of cases in interpretive research – if it involves more than one – develops along the way. Every time access is granted to a research subject the interpretive researcher makes a decision to pursue the lead. The choice depends on how promising the case seems in contributing to answering the research question. And so it happened in this dissertation research, too. However, this also means, that it is not always known on forehand, how a case may contribute to understanding the research problem. Rather, as Ragin (1992) notes, "what it is a case of will coalesce gradually, sometimes catalytically, and the final realization of the case's nature may be the most important part of the interaction between ideas and evidence" (Ragin 1992, 6; emphasis in the original). The specific circumstances under which I gained or was granted access to the three cases are discussed in the following (subsection 5.2.1.1).

21 The relationship diminished subtypes have with their core concepts is similar to the one cases have with Weber's ideal type (Weber 1988a, 191). However, contrary to ideal types which may not be found in reality due to their conceptual purity, core concepts can very well be observable.

5.2.1.1 Access

In this subsection, the development of access to the three cases will be outlined. I will describe how access came about, including

how the first contact occurred and how access developed subsequently. The Sand Motor case is the core case of the NatureCoast project the author is involved in. The project structure with frequent meetings with practitioners enabled and simplified coming into contact with relevant respondents. However, as this was a compulsory case in the research project, I first tried to find cases which could potentially be compared to the Sand Motor. Initially, my proposed research also included following a current research process, in which mega-nourishment schemes belonged to the set of options on the table. In addition, I was looking for cases, in which mega-nourishment schemes had been decided against, as a kind of negative case. I contacted coastal management experts from governmental organizations as well as research institutes to ask them for access to such cases. Unfortunately, what turned out to be the only mega-nourishment scheme planned at the time – the Hondsbossche Duinen project – was already in its realization phase, when my research began. It was neither possible to find and study projects where mega-nourishment schemes were decided against.

At a certain point, one of my supervisors was in the process of negotiating evaluation studies for two innovative coastal management projects. The innovation program of the Dutch public works agency wanted to know, how stakeholder management and participatory processes were dealt with in those projects. My supervisor negotiated access to these projects for me as well as the option of including my own research perspective (see subsection 5.2.2.2). These cases were the Hondsbossche Duinen case at the North Sea coast in the province of North-Holland and the Houtribdijk pilot at the Houtribdijk seawall, which cuts through the inland lake Ijsselmeer and connects the provinces of Flevoland and North-Holland with each other (Cases are discussed extensively in the empirical chapters; for exhaustive case descriptions see Appendices VII-IX).

In the Hondsbossche Duinen case, the contact person of the innovation program arranged a meeting with the stakeholder managers of the North-Holland water board "Hoogheemraadschap Hollands Noorderkwartier" to discuss the further organization of the research. The two stakeholder managers provided me with names from the different organizations involved in the process, which could be interesting to hear a perspective of. These potential

respondents came from the regional public works agency, municipalities and the water board itself and included infrastructural policy makers from municipal, provincial and ministerial level, a mayor, project managers, and stakeholder managers. Although I probed for additional potential respondents in the ensuing interviews, only few were added to the initial list provided by the water board. Most people were enthusiastic and very willing to talk about their involvement and perspective about the project.

For the Houtribdijk pilot, the contact person at the innovation program provided me with the name of the project manager to start my inquiry with. In an interview with the project manager who was at the time employed by a Dutch consultancy company, he listed other names of people, who would be relevant to hear. He also brought me into contact with them. In this set of interviews, access was more difficult to attain as I had in mind. One respondent wished to receive the interview questions on forehand and responded with her answers in an e-mail, because she did not feel expert enough to answer any of them very well. Another respondent wanted to be interviewed while driving home from work, which was difficult for the recording of the interview. This failed, so the interview transcript is based on manual annotations only. Finally, another respondent was working on answering parliamentary questions, so he could be called at any time during the face-to-face interview, which was distracting.

5.2.1.2 Comparison

Cross-case analysis has been proposed as a useful way of understanding cases (Miles and Huberman 1994, 173). However, an interpretivist approach to cross-case analysis takes different shape than the positivist inclined researcher is used to. Given the research subject – studying the meaning-making in innovative Dutch coastal management projects – a number of reasons prevent a comparative analysis in the positivist sense. First, meaning is inseparable from its context of production, which explains the basic focus of interpretive analysis on studying meaning-making in context. As a result, meaning made in one context will not mean the same in another context with different participants and histories. Second, generalizing project characteristics from their temporal-linguistic context for comparison supposes the possi-

bility of universally valid conclusions. This ignores the specificities of cases and the importance of the whole context to the part of the project. This hermeneutic view also pertains to the outcome of a Dutch coastal management case. The outcome occurred because of the specific context of the case. Although patterns may be distinguishable, these cannot be molded into absolute, general laws. Hence, a conceptual comparison of cases needs to take into account the case context at all times. Losing sight of context means the inability of studying meaning. So in what way can interpretivists come to general perspectives, if that be their objective? Adcock (2006) advocates an approach proposed by Clifford Geertz among others, which involves abstracting the problem which cases deal with, instead of the outcomes and purported causal mechanisms at play. From this perspective, the aim of comparing and generalizing from cases is revealing particular alternative responses to some general problem (Adcock 2006, 92). Additionally, if that general problem is clear, readers can use comparative information to "assess the relevance of the research to their own settings" (Schwartz-Shea and Yanow 2012, 48).

Thus, the empirical chapters are followed by an overview chapter comparing three cases, which are subtypes of mega-nourishment schemes (Chapter 9). The general problem these cases respond to is the challenge for societies to protect itself from the adverse effects of its natural environment. Together with the additional challenge of climate change adaptation, this general problem is expressed by the concept of coastal squeeze (Chapter 1). I have tried to do the contextual condition of meaning-making justice in the case comparison of Chapter 9. The empirical Chapters 6-8 follow an abductive approach, i.e. finding the most plausible understanding of what happened in the projects by iterating between data and understandings of the prevalent meaning-making mechanisms at play in the projects. On the other hand, the comparative chapter takes a different approach. It expands the analyses of the empirical chapters to the other projects to see how the other policy framing perspectives figured in them. For example, Chapter 6 analyses the framing foci in the Hondsbossche Duinen project, because the static policy frames of policy-relevant actors were the most striking aspect of meaning-making (see section 9.4.1). For the comparative chapter, I used the case descriptions of the other cases to find the framing foci in the other cases. In a similar way,

I expanded the analyses about meta-properties of policy framing (see section 9.4.2), properties of the framing performer (see section 9.4.3) and activity (see section 9.4.4), as well as the collective effects of policy framing (see section 9.4.5). For the aspects of framing scale transcendence and properties of the framing activity, the comparison is supported by a tabular visualization of the uncovered processes.

5.2.2 Data generation

For all three projects, the data were generated by means of semi-structured qualitative interviews. I deliberately use the notion of data generation instead of collection. The distinction emphasizes my understanding of social-scientific data as not lying around in the world for us scientists to harvest (Schwartz-Shea and Yanow 2012, 78). Instead, those aspects of the social world surrounding us as social scientists, which we come to name data, are the result of perceptual processes. Only through the formulation of research problems do we come to see aspects of the social world as data for us to be interpreted for understanding. Pre-existent knowledge and literature study shapes our definition of what social artifacts and relationships will be data in the course of the research. This section ensues with the background for choosing qualitative interviews as main data generation method, which is followed by an elaboration of the construction of the interview guideline used throughout the case research.

5.2.2.1 The qualitative interview

The aims of qualitative interviews are, among others, to get detailed descriptions as well as respondents' different interpretations about the research subject (Weiss 1994, 9). Major advantages of the qualitative interview as a data generation method are the in-depth knowledge that is gained with it and the fact that it enables a glimpse of interviewees' perspectives (Charmaz 2006, 25). It is merely a glimpse of the interviewees' perspectives, because we always interpret the interviewees' responses with our own history and experience of meaning-making, originating in the varying education, socialization and interests, i.e. a varying lifeworld. In addition, the knowledge which the interviewee

shares is co-constructed. This means that it is the interviewer's questions which trigger the formation of the thoughts of the interviewee and there is a possibility that the interviewer had not yet formed these thoughts in this way before or would do so had the interview not taken place. Depending on the type of interviewing method, another staple of qualitative interviews is the formulation of open-ended questions, which enables interviewees to recount their own narratives in response to the question. This is not the same, though, as genuine narrative interviewing as a method, which tries – at least in first instance – to let the interviewee completely free in the development of the story. Narrative fragments in narrative interviews are generally longer texts than in semi-structured interviews (Gubrium and Holstein 2012, 32). Three advantages are connected to the semi-structured interview guideline used in the present research. First, I allowed myself to deviate from the interview guide during interviews, if there were interesting aspects to pursue that were not expected on forehand and not covered by the planned questions. Second, after every interview, the interview guide was checked and updated, if necessary, based on the knowledge gained. Third, flexibility in the interview guide also allows for adaptation of the guide depending on case-specifics. These three advantages of dealing with a pre-defined interview guide flexibly all enable the acknowledgement of contextual difference in the cases, which is paramount to understand them from an interpretive standpoint. Besides as a source for interview guide adaptation, the qualitative interview also serves other interpretive research activities, e.g. improving opportunities for mapping for exposure and the search for intertextuality (see section 5.1.3). By asking interviewees directly and following leads in their responses, I was able to increase the pool of potential other interviewees, which is also sometimes called 'snowball sampling'. However, in interpretive research, research quality does not increase merely by increasing the number of interviewees to ensure some kind of 'average' truth may be distilled from their accounts. Rather, the interpretive researcher attempts to increase the number of interviewees sensibly, taking into account the mapping for exposure.

An important element in qualitative interviewing is a focus on the confidentiality of co-constructed data. Although every country has its own legal framework regarding research partici-

pants' privacy, typical processes aimed at making interview aims and confidentiality explicit in qualitative interviewing are declarations of consent and anonymization of qualitative data (Gebel et al. 2015). In this research, declarations of consent have been voiced verbally by respondents. Cited fragments of respondents' answers have been labelled with the date of interviewing and respondents' job description. It was not possible to omit respondents' job description due to the influence that their employment background in many cases assists in the interpretation of the answers. MP3 recordings were made for all interviews, except one interview in the Hondsbossche Duinen case, which the respondent did not want me to record due to sensitivity concerns.

5.2.2.2 Interview guideline construction and development

The three cases covered in this dissertation research all follow a semi-structured interview guide. Of course, in general, I was after the same thing in all cases, i.e. finding out about respondents' perspectives on the case and understanding how meaning-making developed in the cases. But two factors made the interview guideline evolve gradually. First, all cases had different contexts, which had to be accounted for. That meant some questions were simply not applicable in all cases. This includes the fact that access to the Hondsbossche Duinen and Houtribdijk pilot was gained from contract work, which also had its own objectives which differed from the research objectives. In addition, because I had already analyzed available project documentation, more relevant questions could be formulated based on a priori knowledge. Second, I dropped questions, changed their wording or their focus depending on the richness of the responses the answers to questions yielded. In other words, some questions worked better in one case than others. As discussed in the subsection on case access (subsection 4.3.1.1), the cases have been studied in the following sequence, with a brief overlap only between the first two: (1) Hondsbossche Duinen, (2) Houtribdijk pilot, and (3) Sand Motor. In this section, I first briefly summarize the underlying ideas for the construction of the interview guides, what this meant for the formulation of the questions, and how the guide evolved compared to the guide from the previous case, if applicable. Then, I give an overview of how the general logic of the interview guides changed over time.

Hondsbossche Duinen. The general logic behind the interview guide for the Hondsbossche Duinen project was based on the objectives of the contract work (see subsection 5.2.1.1), but formulated in a way that would also benefit my dissertation research. The contract work objectives included finding out what role policy-makers had as well as how stakeholders participated in the process leading to the realization of the project. The interview was divided into six parts (Appendix IV). Interview topics included:

- Respondents' experience with coastal management projects and their opinion of the technological possibilities at the time,
- respondents' initial expectations of the project,
- the most important disagreements and points of discussion in the decision-making process,
- the scope of the construction assignment given to the involved actors at the beginning of the project,
- participation and cooperation, and
- tasks and responsibilities of different parties involved.

All questions were pre-formulated and complemented with follow-up/probing questions. The guide also featured an introductory text which explained the objective of the interview, introduced me as a researcher and the duration of the interview. After the interview, I asked respondents, if they wanted me to send them the interview transcripts and whether they wanted to be informed about the results of my research, but this was not included in the interview guide.

Houtribdijk pilot. The interview guide for the Houtribdijk pilot followed the same logic as the interview guide in the Hondsbossche Duinen project (Appendix V). However, the part about the scope of the initial construction assignment had been removed. Questions about the scope of the project included:

- how limiting or enabling the scope of the construction assignment was initially, and
- when during the process a more detailed design was used for discussion.

These questions followed the logic that the scope of the construction assignment would have an influence on the choice of policy options and the way participation would be managed and that discussions about project design can be more focused, when they involve a concrete plan as opposed to vague ideas, which would only be concretized at the very end of the project. The questions turned out to be confusing the respondents and, consequentially, did not yield useful answers. Moreover, the part about tasks and responsibilities had turned out to function like strange afterthought and was integrated into the part about expectations about the project. This part already included questions about respondents' own work in the project, so adding a question about the tasks and responsibilities of other involved actors felt more natural. I changed the follow-up/probing questions into topics, which was easier to manage when deciding to move on or linger on the previous question. The introductory text in an adapted version and final questions about keeping the respondents' updated were equal. The guide also includes a note to keep in mind that the Houtribdijk pilot happened in the wake of a larger reinforcement project along the same seawall.

Sand Motor. For the Sand Motor case, the general logic changed somewhat. This change was primarily due to the fact that I was no longer tied to also following the objectives of the contract work. This meant that I could use only my own sensitizing concepts about framing. The first change was the inclusion of a formal briefing and debriefing section, so as not to forget any formalities about returning transcripts and keeping the respondents updated. In addition, I used the concept of critical moments in the process as well as perceptions as point of departure for the interview guide. The topics were:

- general information about respondents' involvement in the project, i.e. in what role, for which organization and for how long,
- critical moments in the decision-making process, including actors' problem definitions and favorite policy options connected to that problem definition,
- perceptions about changes in the discussion of policy substance, the decision-making process as well as actors' identities and relationships (cf. Chapter 6),

- perceptions about frame changes brought about through interactions among actors (cf. Chapter 8), and
- snowballing for other respondents.

All topics were introduced with a brief description of the background of why these questions are asked. Furthermore, I asked about other potential respondents previously, too. But now I also added this to the interview guide more formally. I removed follow-up/probing questions, because I wanted to let the respondents' answers guide the development of the interview.

General logic. The general logic of the interview guides used in this dissertation research evolved based on three underlying developments. First, the initial two projects were part of a contract research, which partly determined the scope of the interview guides, while leaving enough space for my own content. In the Sand Motor project, on the other hand, I could choose freely as to how to construct the interview guide. Second, the interviews also reflect the theoretical evolution which has taken place in the research as a whole. While the theoretical focus was initially on discourses and the Hondsbossche Duinen and Houtribdijk pilot were seen as exploratory cases, the theoretical orientation switched to a framing-oriented perspective. This is visible in the way in which the interview guides were set up. Furthermore, the interview guides also show the push-and-pull of formalization versus informalization. As I gained more experience in qualitative interviewing and learned more about its technicalities, my thoughts about how to construct an interview guide also changed. In hindsight, this led to differences, not so much in the interview questions themselves, but in the flexibilization or rigidification of the interview guide.

5.2.3 Data analysis

This section discusses the processing of the data after their generation. First, the transcription and data management processes are described. Second, I explain how I analyzed the data.

5.2.3.1 Interview transcripts and data management

A total of 28 interviews was conducted for all three cases together. As previously-mentioned, recording was not allowed by one respondent, so only the remaining 27 interviews were recorded and subsequently transcribed. 17 interview recordings were transcribed by myself. The remaining 10 were transcribed by one paid student assistant, who had signed a confidentiality agreement based on the "Code of conduct for the use of personal details in scientific research" formulated by the Association of universities in the Netherlands (Association of universities in the Netherlands 2005). I checked the quality of the transcripts by listening to the recordings again while reading the transcript (Poland 1995). It was chosen to transcribe word-for-word to avoid overlooking meaningful text fragments (McLellan, MacQueen, and Neidig 2003, 65). Expletive words were omitted. In cases where the respondent started a same sentence more than once before finding the definitive formulation, those sentence beginnings were omitted, too. Incomplete sentences were only transcribed, if they were not followed up by a logical ending. This transcription method resulted in approximately 350 pages of interview data.

Interview recordings, transcripts and a journal of the interviews including key information about the interviews were stored on the University of Twente server space, which was only accessible with a personal password. Whenever I took the recordings or transcripts with me, they were stored on a password-protected hard disk. Recordings and transcripts are stored for data preservation at the IGS Datalab of the University of Twente and are password-protected. Due to confidentiality requirements towards the interviewees, the recordings and transcripts can only be accessed by myself.

5.2.3.2 Hermeneutic interpretation as analysis

Analysis of meaning-making already begins during initial engagement with the research subject in the field, not just during interaction with interview transcripts. Although the process of analysis is less concrete and explicit at the beginning, from the moment researchers engage with people and objects in the field, they compare what they encounter with the knowledge and expe-

riences they bring into the field with them. Engagement with the topic already means analysis and interpretations begin to form before data generation due to a priori knowledge, document analysis, and during data generation due to encounters with policy-relevant actors.

In order to analyze the interview transcripts in the three cases, I used sensitizing concepts from the policy framing literature. In the Hondsbossche Duinen case I mainly relied on the conceptual lens provided by Van Hulst and Yanow (2014), i.e. the three framing acts and framing foci. For the Sand Motor case, I extended this set of sensitizing concepts with the interactional framing mechanisms derived from Dewulf and Bouwen (2012). These heuristic concepts gave me "initial ideas to pursue and sensitize you to ask particular kinds of questions about your topic" (Charmaz 2006, 16). Similar to Charmaz, "I used those concepts as points of departure to form interview questions, to look at data, to listen to interviewees, and to think analytically about the data" (Charmaz 2006, 17; emphasis in the original). In addition to these sensitizing concepts, I looked for interview fragments, which stood out in their respective contexts, e.g. marked by metaphors or other rhetorical means. Such fragments could pertain to

- the chronology of the project,
- mentioning the roles of other actors in the project,
- relationships between those actors,
- any kind of opinions or feelings towards aspects of the project, and
- any topics which the interviewee thought were important concerning the project.

The process of analyzing was iterative. After each transcript was made, possible new insights were incorporated into the interviewing process. The more interview transcripts were ready, the more jumping back-and-forth between interview transcripts happened to compare actors' interpretations. This meant re-reading previous interview transcripts to elaborate the position of the most recent transcript among the other interpretations. This is the hermeneutic process of trying to place fragments of interpretations in the bigger picture. This process uncovers how the small fragment refines the interpretation of the research subject. At the same time, the bigger

picture refines the meaning of the smaller fragment. For each case, this led to the inductive development of plausible, epistemically objective narratives, while ensuring the integrity of the epistemically subjective frames and framing.

By means of this hermeneutic process, the sensitizing concepts and additional aspects found in the transcripts indicated changes in the frames of actors and their framing, i.e. evolving meaning-making about the project or aspects of it. The next steps taken depended on the layers of meaning that were interpreted to be most important in the respective projects. This step can be seen to move further away from the data and involve theorizing about what really mattered in the projects. For instance, the strong distinction of project phases in the Hondsbossche Duinen project warranted a closer look at frames of involved organizations in the respective phases, how these may have changed over time, and what the effect of those changes was on the evolution of the project. In the Sand Motor project, on the other hand, I connected interactional framing with the involved framing foci. This enabled an analytical abstraction to see who framed towards whom in what way concerning what framing focus. As Chapters 8 and 9 discuss, this analytical process led to an overview of frame-convergent and frame-divergent interactional framing mechanisms.

The abductive analysis of what was going on in the cases delivered different interpretations across the three cases. In the Hondsbossche Duinen case (Chapter 6), the dominant meaning-making processes emerging from the iterative reading of the transcripts revolved around the three framing foci of policy substance, policy processes and actors' identities and relationships. In this case, at least at the beginning, policy-relevant actors' cognitive framing prevented frame-convergent interactions. The interview transcripts of the Houtribdijk pilot case were mainly analyzed using in-vivo-codes. The Sand Motor case emerged to be a case in point of fruitful, meaningful interactional meaning-making between policy-relevant actors. The abductive character of the analysis became especially clear in the Sand Motor case. After all, the utility of incorporating the policy entrepreneur concept and, subsequently, developing the interpretive policy entrepreneur concept only became apparent about three-quarter through the data generation process, in which more and more interviewees attributed importance to the Province South Holland and the Provincial Executive in charge at the time.

5.3 Summing up

This chapter has endeavored to clarify the philosophical commitments underlying the present dissertation research as well as the resulting methods. I have briefly outlined my personal scientific development in a methodologically rather positivistic or unreflective environment and the friction I felt in it. During my doctoral research, I turned towards a more constructivist ontology and an interpretive epistemology, which had its effects on the methods and data. It is noteworthy that the development from a positivist qualitative research approach to an interpretivist approach is not without difficulties, especially once already begun on a specific methodological path. I have tried to describe the methods background which is usually too broad to be included in peer-reviewed research articles, so as to embed the following empirical chapters in an explicit methodological surrounding.

In brief, the chosen methods align with the research focus as well as with the ontological-epistemological commitments. The methods uncover epistemically objective facts as well as epistemically subjective interpretations of the underlying meaning-making processes in three Dutch coastal management projects which make innovative use of sand. I now turn to the presentation and discussion of the empirical settings.

(MIS-)MATCHING FRAMING FOCI: UNDERSTANDING POLICY CONSENSUS AMONG COGNITIVE COASTAL MANAGEMENT FRAMES[24]

24 This chapter is under review as: Aukes, Ewert, Kris Lulofs, and Hans Bressers. "(Mis-)matching framing foci: Understanding policy consensus among cognitive coastal management frames" Changes relate to the numbering of paragraphs, figures and tables."(Mis-) matching framing foci: Understanding policy consensus among cognitive coastal management frames" Changes relate to the numbering of paragraphs, figures and tables.

6.1 Abstract

Framing is a generic human process in perceiving and understanding policy processes. It also determines the consensus potential of those processes. Although 'frames' and 'framing' are widely used terms in public administration and policy sciences, their underlying structure is often neglected. This paper foci on the structure of frames and their framing in policy-making. We study how the development of frames among actors influences the direction of the process and eventually leads to a consensus in a coastal management setting. Deconstructing the found frames into three framing foci – policy substance, policy process and actors' characteristics –, we analyze the overlap between these among actors. We find that the actors reached consensus about a coastal management solution despite dissimilar frames. Digging into the structure of those frames shows that one frame was inclusive enough to overlap with other actors' frames on different framing foci. It spoke to some actors' frames due to its policy substance position, while speaking to others on its policy process position. Hence, deconstructing actors' frames contributes to the understanding of consensus in policy processes, especially in cases such as presented here, in which it is unclear at first sight, how consensus occurred.

6.2 Introduction

Coasts are often areas of bustling activity. Especially in small countries such as the Netherlands, dense urbanized cores alternate with economic production space. Besides, beaches represent popular recreational destinations. In the past, coastal managers relied on 'hard' coastal defenses to protect these coastal areas against storms and – recently – climate-change-induced sea-level rise[25]. This practice is challenged by coastal management experts with the growing belief that more flexible, multi-functional and ecologically integrated coastal protection solutions may be more appropriate (Van Slobbe et al. 2013). While innovation in coastal protection solutions was crucial for the survival of the Netherlands as a country (cf. Disco 2002, Gerritsen 2005, Meijerink 2005, Van Koningsveld et al. 2008), their implementation is not always welcomed by coastal managers, who prefer proven technologies

25 'Hard' coastal defences are defined as structures made from concrete, steel or other anthropogenic, non-natural materials. In the Netherlands, the Maeslantkering and the Oosterscheldekering are examples of such 'hard' coastal defences. 'Hard' coastal defences are commonly juxtaposed with 'soft' coastal defences. The latter embody techniques making use of natural materials or processes, such as sand.

that they can rely on. In this article, we examine a case displaying this framing duality. The Hondsbossche Duinen project is a coastal protection case in which the matching and mismatching of parts of frames led subsequently to breakdown and success of the process.

The Hondsbossche Duinen case is one of ten weak spots detected during inspections of the Dutch sea defenses in the early 2000's. Within the so-called 'Weak Links' framework program, these weak spots were supposed not only to be reinforced with regard to coastal safety, but also to improve spatial quality – the 'double objective'. In 2004, the Dutch Ministry of Infrastructure and Environment (MinI&E) mandated the provincial government of North-Holland to prepare a reinforcement proposal for this weak spot. The first proposal by the provincial government was turned down by the ministry in 2006. In the process of preparing the proposal, the province had not taken into account detrimental effects to the local population, neglected additional expertise from the water board and the public works agency, as well as exceeded the budget. After delegation of the project management to the water board in 2006, it took until 2014 for the first non-experimental mega-nourishment scheme to be realized in the Netherlands. During these eight years, the water board succeeded in bringing together actors with different opinions regarding the solution to be chosen and the process by which this solution was to be chosen. While early on in the case, the project threatened to fail, it was finally realized with a broad epistemic community of actors supporting it.

Policy frames are interpretive representations of actors' understanding of the policy situation at hand, including a definition of the problem, possible solutions and an idea of how to reach those solutions. It has been suggested that 'master frames' or 'consensus frames' are the consensual elements that may couple otherwise divided policy frames (Snow et al. 1986, Candel et al. 2014). They bind frames together by "widely shared terms and concepts" (Candel et al. 2014, 48) or a "broad scope" (Benford and Snow 2000, 619). Frames that are brought together by master or consensus frames share what Donnellon, Gray, and Bougon (1986, 44) coined "equifinal meaning", i.e. they are "interpretations that are dissimilar but that have similar behavioral implications". Linking framing to action, consensus or master frames can lead to equi-

final results. For example, in situations where actors differ in the definition of the policy problem, there may be policy solutions that solve all defined problems without the necessity to converge on the problem definition. However, we contend an approach centering on the overlap between frames does not explain why projects threaten to break down. Instead, we argue that to complete this perspective different dimensions of frames have to be taken into account, which we call 'framing foci' (Dewulf et al. 2009, Van Hulst and Yanow 2014). We shall see that a large overlap in framing foci may still put actors in opposing camps. The central research question we address is: why do some policy solutions and the processes by which they are chosen lead to policy consensus while others do not? Actors' framing foci in different phases of the Hondsbossche Duinen project guide our analysis. We subdivide actors' frames into three foci, i.e. policy substance, policy process, and identities and relationships (Van Hulst and Yanow 2014).

This article continues with a discussion of the framing foci followed by the methods. Then, we present the empirical results of the case study. In the interpretive policy analysis, we discuss the framing foci of the main actors and how these changed over time. The development of actors' framing foci throughout the case allows for an understanding not only of why the project almost broke down, but also of why success became more and more likely once the water board became project manager. In addition, the perspective of framing foci allows for a more fine-grained understanding of meaning-making processes than master or consensus frames do.

6.3 Policy framing foci

The framing literature has its root in Goffman's (1974/1986) work on frame analysis. After that, it was picked up by psychologists Kahneman and Tversky (1984). Gradually, the concept diversified into different social-scientific fields, such as policy sciences (Schön and Rein 1994), including water management (Dewulf et al. 2007, Isendahl et al. 2009, Vink et al. 2013). Framing is also common in the fields of social movements (Snow et al. 1986) and communication and media sciences (Entman 1993, Scheufele 1999). By now, two strands of framing literature have developed characterized by different conceptual outlooks (Dewulf et al. 2009, 163). One focuses on the interactional component of the

co-construction of meaning, studying the mechanisms by which the act of framing occurs. This line of thought prefers to study interactions of actors in the field. The other, "the cognitive-representational stance on framing focuses on the way that people experience, interpret, process or represent issues, relationships and interactions" (Dewulf et al. 2009, 160).

In this paper, we focus on cognitive policy frames. We define cognitive policy frames as actors' "implicit theories of a [policy-making] situation" (Van Hulst and Yanow 2014, 98, cf. Nie 2003). In the form of individual stories (Stone 2002), "frames […] guide the ways [actors] perceive their social reality and (re)present it to themselves and to others; […] they structure the ways in which segments of social reality are attended to" (Van Hulst and Yanow 2014, 3). Which segments of social reality stand out to actors depends on other actor characteristics, such as education, upbringing, organizational membership, and experience. In policy-making situations, the selected segments of social reality form the basis for a definition of the problem at hand. Encapsulated in this problem definition, actors' frame, then, also defines the scope of acceptable policy solutions (Kurt 2004, 240). Following Dewulf et al. (2009) and Van Hulst and Yanow (2014)[26], a cognitive policy frame and the problem definition it contains deals with three policy framing foci, as we call them. First, we understand the meaning actors give to the content of policy as policy substance (Van Hulst and Yanow 2014, 102). Second, actors also make sense of other actors involved and how these are networked with themselves and others, which is the policy framing focus of actors' identities and relationships (Van Hulst and Yanow 2014, 102). The third policy framing focus is an actor's perception of the policy process, e.g. how and which other actors should be involved in the process (Van Hulst and Yanow 2014, 103). With a familiar ring to them, these policy framing foci serve as conceptual tools to subdivide actors' frame. Using the language of reframing, we can study the changes in policy framing foci. Reframing, i.e. a change in the implicit theories of the policy-making situation, "resolves the controversies that arise in policy practice" (Schön and Rein 1994, 38). These controversies among actors occur over differences in policy framing foci, e.g. a different framing of the policy substance. Once tensions between policy framing foci become resolved, actors' policy frames converge and deciding on

26 The approach of Van Hulst and Yanow (2014) bridges the afore-mentioned distinction between interactional and cognitive framing approaches. It further specifies the act of framing and links it to what is framed. Here, we limit ourselves to analysing what is being framed, instead of how this framing occurs.

a mutually accepted solution becomes more likely. By disassembling actors' frames over time during a policy process, we can follow the development of policy consensus or controversy in a case (cf. Schön and Rein 1994).

6.4 Methods

6.4.1 Data generation

The interpretive tradition we choose calls for rich textual data. In addition, we want to reconstruct the actors' policy framing foci. Policy framing foci can be derived from conversational, semi-structured interviews, because they reveal the policy process from the point of view of the actors. We interviewed respondents mostly at their own workplace. Our initial access to the case came from contract research for the Dutch public works agency, enabling us to talk to central people in the organization of the water board in the province North-Holland. From there, we found new respondents by snowballing. We assume that actors named by respondents are somehow important to the case. Böhm (2005, 476) explains that data may stem from interviewing people, observing situations and reading documents covering as much as possible of the research interest. Sources may in following steps be nuanced or diversified, enabling us to select respondents based on respondents' meaning-making and not imposed by the interviewer himself. Although the interviews were confidential, respondents may choose strategically what to disclose or tell their stories differently than they would in the policy setting. This cannot be avoided, but by triangulating the interviews of respondents from different organizations, inconsistencies can be uncovered, if any. As we studied the case retrospectively and expressions of policy framing foci could not be observed in real life, we relied on interviews and background reports from the case.

Eleven policy-relevant actors were interviewed about their involvement in the project. Respondents worked at the water board[27], the public works agency[28], the province North- Holland, the former municipality adjacent to the dike, the ministry of infrastructure and environment. In addition, the leader of an entrepreneurial lobbying group was interviewed, which focused on creating favorable business conditions in its region. All of these organizations are to a certain extent involved in infrastructural

27 Whereas provinces and municipalities are defined by territory, water boards in the Netherlands have one defined task, which is serving water quality and water quantity.

28 The public works agency is an agency of the national Ministry of Infrastructure and Environment.

decision-making in the Netherlands giving us an all-around view of the case. This contributes to what Schwartz-Shea and Yanow (2012, 85) call "mapping for exposure":

"The concept of exposure rests on the notion that the researcher wants to encounter, or to be exposed to, the wide variety of meanings made by research-relevant participants of their experiences. […] Interpretive researchers anticipate that experiences and views will vary according to participants' locations, literally and metaphorically, in the field of study".

We recorded and transcribed the interviews omitting sounds and incomplete thoughts[29], thereby minimizing the loss of meaning that would occur due to summarization. Interpretation of the data can then start from a complete 'raw' text. If requested, as happened in one case, we returned transcripts to respondents for fact-checking. Additions to and changes in transcripts due to fact-checking were included in the analysis as well.

6.4.2 Data analysis

For the analysis of the interviews, we used the policy framing foci as an initial code list. The interview transcripts were systematically coded using Atlas.ti. We looked for extracts dealing with the policy substance, policy process and actors' identities and relationships. Besides plain descriptions, stylistic devices such as metaphors served as signaling words for a framing focus. We distinguished between extracts explaining actors' own framing focus and extracts explaining other actors' framing focus. Reported framing foci were used as triangulation. Table 6.1 shows coding examples, explaining how we linked parts of the transcripts to policy framing foci. Often, extracts referred to more than one framing focus at the same time. Although this complicated the analysis, these extracts were double-coded and included for both framing foci.

29 One respondent did not allow us to record the conversation for reasons of sensitivity. The respondent allowed us to take notes and we used this interview as additional material for analysis.

Table 6.1 Coding examples of framing foci.

Example	Framing focus[a]
"I always call [those people] 'concrete thinkers'. Can't think differently than in concrete. […] A sandy environment with dunes is my natural background, so I can also think that way." (executive, water board)	Policy substance, actors' identities and relations
"And [the province] was also separated from all other governing bodies, such as water board and public works agency." (policy advisor, ministry)	Policy process
"You'll never see Google people at a water board. It's not desirable, because we will have a different seawall every year. […] Someone can shout 'Just try something else!'. Indeed, until we are flooded." (project manager, regional public works agency)	Actors' identities and relations

a. For description of the framing foci, see the section on "Policy frames and policy framing".

After coding, all codes were pooled per respondent and framing focus to distil a label for the framing focus (Table 6.1). We discerned variation in framing focus among respondents in the case. Nonetheless, respondents from the same organizations had roughly the same framing foci, which enabled us to pool them and lift the analysis to the organizational level. With regard to policy substance, we found three positions including safety, regional development and multi-functionality. We categorized respondents' policy substance framing focus as 'safety', if the coded extracts revolved around cost-effective coastal safety solutions. 'Regional development' was attributed to respondents, who were mainly interested in the livelihoods of the local population, economic development and opportunities which had less to do with coastal safety. Respondents' extracts were categorized into 'multi-functionality', if they wanted policy solutions that linked both coastal safety and other functions and intended to maximize their synergy. For the other two types of framing foci we found two positions. The policy process framing focus was either envisioned in some sort of inclusive, participatory way, which we termed 'process-oriented' or it was approached from an exclusive perspective termed 'task-oriented', which means that to some extent, involving other actors is seen as delaying the process to quick realization. Furthermore, we found two positions for the last type of framing focus, actors' identities and relationships. These positions included 'empathy' and 'indifference' concerning other actors. 'Empathy' contains all respondents' extracts that showed interest in other actors,

revealed a perception of actors' own or other actors' identities, said something about their own relationship with other actors or about relationships between other actors. Extracts labelled with 'indifference' do not show signs of interest in other actors or relationships. We see the framing foci of policy process and actors' identities and relationships as related. For example, a task-oriented framing of the policy process is in this case often related to an indifference with regard to other actors' identities and relationships. On the other hand, there is an interest in other actors' identities and relationships among actors with a more process-oriented framing of the policy process.

The case is divided into three phases marked by changes in the organization in the lead of the project. In the first phase, the provincial government of North-Holland led the project, followed by the water board in phase two and the water board together with the public works agency in phase three. The organizational change in project management also triggers shifts in the dominance of framing foci. In addition, by distinguishing different phases, we get a more fine-grained overview of framing focus changes.

6.5 Project managers and their framing foci

6.5.1 Phase 1

6.5.1.1 Provincial government in charge

The seawall called the 'Hondsbossche en Pettemer zeewering' was to be prepared for strong storms while contributing to spatial quality. This aim for both coastal protection and spatial quality was termed 'double objective' and was formalized in an agreement of all involved actors in 2004. The double objective sparked a lasting conflict between the provincial government and the ministry over the allocation of costs. The provincial government insisted that the ministry should pay for the complete project based on the double-objective agreement. Conversely, the ministry stressed the clear-cut task division between ministry and provincial government – flood safety and spatial quality, respectively – implying the allocation of costs to both organizations.

The first proposal by the provincial government of North-Holland in 2006 included the partial destruction of the village, leading to unrest among the local population. But the minister of Infrastructure and the Environment also turned down

the province's reinforcement proposal. It was thought to be too expensive, designed with too little public participation and it had to be less destructive.

In the same year of the minister's rejection of the provincial project proposal, the public works agency introduced a new national flood protection program. Acting as a project evaluator, this national flood protection program saw heightening the dike as the only acceptable solution:

Project manager regional public works agency, 27-02-2014

"Primarily, at the flood protection program we said: 'sand is […] efficient, but not cost-effective, functional and robust'. Because that is really only the seawall."

In addition, the public works agency had to clarify its passive, evaluative role continuously, because municipalities appealed for help to prove the province wrong (project manager regional public works agency, 27-02-2014). At the same time, the public works agency disapproved of the province's top-down approach to implement a traditional coastal protection solution, as it diverged from the more participatory national policy (project manager regional public works agency, 27-02-2014).

At the local level, the municipality closest to the dike was interested in flood safety and an improvement of the economic situation. Although flood protection is not the responsibility of the municipality, it attempted to raise the awareness of the current problems in the region and of the potentially disastrous consequences of following the provincial proposal. To achieve this, the municipality used its formal political means as well as informal ways to lobby for what was in its eyes the best solution for the region: sandy coastal protection with its potential economic benefits. In spite of clearly taking a position with regard to the policy substance, the municipality was also aware of its limited influence in the policy process.

6.5.1.2 Framing foci

We find a scattered framing foci situation in the first project phase (Table 6.2). In this phase, most framing interactions occurred between the provincial government and the ministry. Other actors were either not included at all (water board) or did not have a for-

mal say in the process (public works agency and municipalities). Although the actors were off to a flying start with the collective agreement on the double objective, this solidarity is not reflected in the following interactions between actors.

The provincial government's choice of policy substance in the first phase was based on safety considerations. It proposed a solution that other actors perceived to be even more detrimental to the already alarming economic situation in the region. It was unclear, how the proposed solution would contribute to the double objective and the provincial government's general interests (provincial official, 19-03-2014). On the contrary, the proposal's potential side effects for the local population were perceived to be predominantly negative. In addition, the policy process which the provincial government followed, was top-down and exclusive. According to the ministry, the provincial government completely neglected other actors, such as municipalities, the public works agency and the water board (policy advisor MinI&E, 18-08-2014). This policy process focus also limited the scope of the policy substance. By excluding other actors from the process, the provincial government precluded the confrontation with other policy substance foci. The province overrated its own capacity to realize a project in a policy domain which it is usually not responsible for. In addition, if at all, it misinterpreted the framing identities of other actors. Relationships with other actors worsened due to this closing off by the provincial government.

The policy substance focus of the ministry is vague throughout the first phase. It is known that the ministry disapproved of the solution advocated by the province, because it was too intrusive. It remains unclear from the interviews whether this framing focus came from a disagreement with the exclusion of other actors or a generic support of multi-functional coastal management solutions. However, the latter is probable due to enthusiastic ministerial support of multi-functional solutions in other projects. The ministry also advocated an open and inclusive policy process. It was dissatisfied with the way in which the provincial government dealt with the project (policy advisor MinI&E, 18-08-2014). The interest in including other actors and hearing their frame renders the ministry an empathic actor. Nonetheless, the ministry's role was more in the background.

Table 6.2 Actors' framing foci across project phases.

	Project phase	Policy substance	Policy process	Actors' identities and relationships
Public works agency	1	Safety	Process	Indifferent
	2	Safety	Process	Indifferent
	3	Safety/Multi-functionality	Process	Indifferent
Water board	1	---	---	---
	2	Safety/Multi-functionality	Process	Empathic
	3	Multi-functionality	Process	Empathic
Provincial government	1	Safety	Task	Indifferent
	2	Safety/Multi-functionality	Process	Empathic
	3	Regional development	Process	Empathic
Ministry	1	Multi-functionality	Process	Empathic
	2	Multi-functionality	Process	Empathic
	3	Multi-functionality	Process	Empathic
Municipality	1	Regional development	Process	Empathic
	2	Regional development	Process	Empathic
	3	Regional development	Process	Empathic

Although the public works agency thought an innovative, sandy solution efficient, it did not match the other criteria of sobriety and robustness in its standard policy. In this phase, it advocated a traditional safety solution as policy substance focus. It did not matter how safety was achieved, as long as the chosen solution fit its financial and safety performance criteria. In the eyes of the public works agency, the provincial government's top-down policy process approach was inappropriate. The public works agency thought it had a clear idea of the distribution of tasks and responsibilities in the policy process. Towards the municipalities, the public works agency felt it had to justify its passive role in the process continually.

The water board was quite clear about its position in the project. It did not identify as an actor in the project in this phase. As a result, it did not yet have relationships with other actors, nor did it

take position concerning policy substance or the way in which to approach the process.

The municipality also opposed the provincial proposal, with its sole focus on safety and the partial destruction of the village. It advocated sandy solutions in its policy substance framing focus, because these were said to be most advantageous for economic development. While aware of its limited influence in the project, the municipality, as the spokesperson for the local population, tried to harness its political relationships for its purposes using the formal and informal tools at its disposition. The municipality realized its small role in coastal management, but tried to make the most of the options it had.

6.5.2 Phase 2

6.5.2.1 Water board opens up

In early 2007, the provincial government delegated the project to the water board "shirking its responsibility" due to the emerging technical infeasibility of its proposal (policy advisor MinI&E, 18-08-2014). This was an opportunity for the provincial government to evade the negative public opinion: "[the province] suffered a terrible blow and could escape with the newest hydraulic conditions" (policy advisor MinI&E, 18-08-2014).
Reconsidering all solutions "did not make [the water board] popular in the region" at the beginning of its project leadership (water board executive, 27-02-2014). However, the water board answered these protests pragmatically: "If there is a seawall somewhere, […] and it has to be reinforced, you think: 'I am going to reinforce that seawall'" (water board executive, 27-02-2014). But the water board came to the same conclusions as the previous provincial proposal: the additional height necessary to make the seawall safe would destroy part of the village. However, the water board's conclusion was different from the province's:

"If you talk about doubling the size of a seawall, then that is a new seawall from my point of view. So, if you talk about a new seawall, you may also think of new solutions".

Water board executive, 27-02-2014

Thus, the water board began considering purely sandy and hybrid solutions. It involved civil society and the public works agency in

the process. Looking forward, flexibility and landscape fit were important in the water board's opening-up towards sandy solutions, but benefits for the local population were not mentioned as such. The local population appreciated the shift of focus, because the village would probably remain intact. This is referred to as a 'lifesaver' for the project (Policy advisor MinI&E, 18-08-2014). In the meantime, the province began lobbying for sandy solutions, too. The provincial official claims the province advocated a sandy solution all along and that the success of the sandy solution is even thanks to the province. At the beginning, the water board was the opponent, because it "was still rather conservative at that moment" wanting to keep hard solutions on board (provincial official, 19-03-2014).

The cost-allocation debate re-emerged. The province still hoped that the public works agency agreed with its interpretation of the double-objective consensus and would use the available national funds for both safety and spatial quality. The public works agency countered this hope with the intention to invest in the safety task only and expected the province and water board to pay for non-safety-related elements. Because of these expectations, the province chose to focus on the expectedly less costly spatial quality measures.

By 2008, the water board was preparing the environmental impact assessment. The province was now gravitating heavily towards sandy solutions. When the water board presented its preferred solution in 2009, the national flood protection program re-ran the cost calculations. It doubted that the sandy solution could be less expensive than the hard solution. The public works agency wanted the water board to reconsider its choice, but the water board resisted.

6.5.2.2 Framing foci

In phase 2, with the water board as project manager, the framing foci experienced considerable reframing (Table 6.2). The inclusion of all possible types of coastal management solutions – traditional, sandy and hybrid solutions – was a reflection of thorough project management, making its original policy substance a combination of the 'safety' and 'multi-functionality' framing focus. The water board also appreciated the participation of other

actors with an interest in the process. Later on, concluding that "seawall reinforcement" would equal "new seawall construction" made the water board reframe the policy substance. Thinking of new solutions warranted a search for a coastal management solution which respected the needs and interests of other actors, too. A multi-functional solution was more in line with the double objective which was still prevailing. It also led to improved relationships with the local population, i.e. the local population reframed the water board's identity. Overall, the openness with which the water board approached the policy substance and the policy process considerably reduced the tensions among the involved actors.

The provincial government reframed to a multi-functional policy substance framing focus in this phase. It began criticizing actors who did not explicitly advocate sandy solutions. This included the water board with its broad view on possible coastal management solutions. The provincial government more and more focused on the spatial quality part of the project, which was eventually upgraded to a project of its own. Thereby, it joined the municipalities in the framing focus on maximizing the economic and spatial benefits of the project – regional development (Table 6.2). This improved the previously severed relationship between provincial government and local population.

The public works agency did not incur substantial reframing in its framing foci, but remained still skeptical of sandy solutions. When the water board's outlook on policy substance moved towards sandy solutions, the public works agency urged the water board to reconsider its choice. It was too uncertain that sandy solutions could be cost-effective investments. The public works agency risked further impairment of its relationship with the local population, but policy substance seemed to have precedence over actors' identities and relationships in this case.

Regional development remained the municipality's focus. It had an ambivalent position with regard to the water board's policy substance framing focus. On the one hand, it welcomed the water board's inclusion of sandy solutions, because it increased the chances of selecting a less destructive solution. On the other hand, there was still a possibility that a non-sandy solution would be chosen. With regards to policy process, the municipality stayed alert and kept making use of its participatory opportunities to try

and influence the process. In this phase, its relationships with both the water board and the provincial government improved.

Though having a reduced role, the ministry thought the openness with which the water board approached the project essential to its success. It was glad to see a new project manager with similar policy substance and policy process framing foci.

6.5.3 Phase 3

6.5.3.1 Cooperation saves the day

Replacement of the water board director in 2009 marked the transition to the third project phase. The water board soon began endorsing sandy solutions as their preferred alternative, because the new water board director advocated sandy solutions. Previously employed at the public works agency, the new director knew the public works agency's organizational culture and language, but building a coalition with his former employer was still difficult.

Another transition-marking event is the ministerial acceptance of the water board's preferred alternative in 2010 – under two conditions: a budget cap of €250 million and the inclusion of 20 years of maintenance in the contract. Both conditions caused conflict between the water board and the province and the public works agency, respectively. With expected project costs exceeding the budget cap, the water board had to negotiate the allocation of the excess costs with the province. The public works agency, on the other hand, feared the loss of its coastal maintenance responsibility, if the water board received this task. Furthermore, it doubted the water board's capability of managing the whole project on its own, due to a lack of expertise. Bearing in mind these reasons and the problematic first project phase, the public works agency demanded a more influence in the project. Resistance and annoyance grew with the water board, as the increasingly uncooperative public works agency saw deliberate conflict as a means to increase its influence (water board executive, 27-02-2014; project manager regional public works agency, 27-02-2014). A high-level meeting at the end of 2011 cleared the air, marking the turning point leading to the success of the project. Both actors agreed to finalize the project together. They call their cooperation the "best of both worlds" (stakeholder manager water board, 7-01-2014; project manager regional public works agency, 27-02-2014). Although the

public works agency recognizes the water board's achievements for the project, "the water board wouldn't have managed [the project alone] and the big change we made in 2011 was to be prepared to carry the risk together" (project manager regional public works agency, 27-02-2014).

The studied project period ends with the tendering procedure, which was uncommon insofar as the project management only set framework conditions such as a maximum budget or other requirements, for example 'economically and societally sound investments'. Contractors were free to use their creativity, expertise and ideas of other stakeholders to develop their plans. This process incentivized contractors to include as many ideas as possible at as low a cost as possible. In the end, although the tender also had a budget cap (€170 million), this tender resulted in project costs of merely 56% of the ministerial budget cap (€140 million). The ministry appreciated the low costs. The final plan features a sandy mega-nourishment of about 30 million m^3 in front of the existing seawall, which loses its function, but stays intact as a cultural-historic landmark.

6.5.3.2 Framing foci

In the third phase, the framing foci do not change considerably anymore. However, an important organizational change occurred: the public works agency joined the project management. At that point, it remained the only actor where sandy solutions supposedly did not fit the policy substance framing focus. Nevertheless, the ministry's conditional acceptance of the project proposal triggered reframing of the public works agency's policy substance: the public works agency accepted sandy coastal management solutions as a valid safety alternative. But it saw its identity threatened by the proposed takeover of its coastal maintenance responsibilities by the water board. Joining the project management reduced this threat. The choice of tender reflects the public works agency's and water board's 'process' focus with regard to the policy process.

Meanwhile, the sandy solution had become the undisputed policy substance at the water board. Before, the water board's framing focus was policy process based ('for good project management, you need to include all possible options'). With the new director, the framing focus was grounded more strongly in

the policy substance ('sandy solutions are the preferred option'). Moreover, the water board's framing of the policy substance reframed the water board's identity as seen by province and municipalities to 'ally'. Although the public works agency challenged the water board's leading role in the third phase, it was now easier for the water board to understand the public works agency's identity due to the new director. This enabled the improvement of their relationship, as well.

The province now focused completely on the orphaned spatial quality part of the double objective. Because of reframing the policy substance, the province retreated from the safety project. By now, the province saw itself more as a spokesperson for the interests of the local population. To be sure, in this phase of the project, there were officially two sub-projects dealing with coastal safety and spatial quality separately. The latter was in the hands of the province, municipalities and nature organizations.

6.5.4 (Mis-)matching framing foci

Actors reframed their framing foci throughout the case. Failure or success in the project phases depended on mismatching or matching framing foci, as a comparison of framing foci constellations reveals (Table 6.2).

The provincial government as the project manager looked for a coastal management solution promoting safety in the first project phase. Its search can be characterized by a task focus and indifference for other actors' positions. Unfortunately, this was an isolated stance. The public works agency was the actor with the most similar framing foci, converging on the policy substance and actors' identities and relationships. However, its process orientation was decisive for the public works agency to oppose the provincial government's proposal in 2006. The public works agency prioritized one framing focus over others. Other actors were either not involved, such as the water board, or differed from the provincial government on all framing foci. The municipality and its opposing stance on policy substance and the policy process may have triggered the rejection of the provincial government's proposal by the ministry. As the second-most important actor for the course of the project in the first phase, the ministry disapproved of the task-orientation of the provincial government and the resulting exclusion of other ideas

about policy substance in the case. This difference in framing foci explains the negative reception of the provincial proposal marking the end of the first phase.

Actors converged towards a state of consensus in the second phase. A main factor is the entrance of the water board as project manager, which had a much more open-minded framing with regards to policy substance and policy process. This increased other actors' willingness to cooperate. Especially the initial undecidedness of the water board regarding the policy substance kept the other actors on board. On the one hand, the public works agency expected that safety would be safeguarded by the water board. On the other hand, other actors advocating multi-functionality and regional development could still hope for a project solution in their favor. The water board also welcomed participation much more and was concerned to find a solution that would benefit all.

The final framing setting, after which the project was realized, shows a number of partial overlaps among framing foci. The water board's multi-functional solution was acceptable for the province and municipalities, because it promised new space for recreation and potential for the tourist industry. Meanwhile, the public works agency also reframed the policy substance to the multi-functional solution, owing to its membership in project management, the strong preference of the ministry for multi-functional solutions and the increasing certainty that the safety performance was indeed warranted. The framing differences in the other two domains weighed less strongly for the public works agency, because its main aim was to guarantee coastal safety, regardless how this state was achieved. This is different from the first phase, where the provincial government's task orientation was a barrier for the public works agency to support the proposal. The water board's approach to the policy process and its awareness of the interests and needs of other actors, made for a smoother decision-making process towards realisation of the project.

6.5.5 Emphasizing (dis-)similarity

Throughout the case we have seen actors agreeing and disagreeing with each other over one framing focus or another. However, the project phases show different patterns with regard to the empha-

sis on similar or dissimilar framing foci. We understand the mechanisms of process breakdown or success as a result of these emphasizing motions.

In phase 1, there were largely two coalitions. There was the provincial government and other actors who were against the provincial government's policy substance and policy process. This latter, larger coalition was not a unified whole, though, with differences in the policy substance and the interest in other actors and relationships with them. In this phase, the provincial government was the only actor focused on mono-functional safety solutions, without including other actors in the decision-making process or interest in their positions. The other actors all framed a broad, inclusive policy process necessary. Most actors also disagreed on the policy substance to focus on and were empathic of other actors. However, the public works agency overlapped with the provincial government in two of the three framing foci. Both wanted a coastal management solution dealing with the safety problem and were not very interested in other actors. But the difference in policy process framing focus between the two turned out to be crucial in the public works agency's opposition against the provincial government. Agreeing on the policy substance was not enough for the public works agency to condone the policy process framing focus of the provincial government. The public works agency – and other actors – emphasized the dissimilarity between the provincial government's and their own framing foci (Table 6.3). For the ministry, with framing foci centering on innovative, multi-functional solutions and an inclusive process, the differences with the provincial government were too large. The framing foci constellations of the ministry and the public works agency also reveal another mechanism. In their case, it was enough to agree on the policy process framing focus to take the same position. In this phase, two emphasizing mechanisms occurred. First, emphasizing the dissimilarity of two actors in their policy process, but ignoring the similarity in the other two framing foci, defined an opposing relationship. Second, emphasizing the similarity of two actors in the policy process, but ignoring the dissimilarity in the other framing foci, defined a coalescing relationship.

Table 6.3 Mechanisms of emphasising and ignoring framing foci.

		Ignore	
		Similarity	Dissimilarity
Emphasise	Similarity		• Phase 1: Rijkswaterstaat and ministry • Phases 2+3: Water board and other actors
	Dissimilarity	• Phase 1: Rijkswaterstaat and provincial government	

In the following two phases, actors began to emphasize similarities more than dissimilarities. Most importantly, the new project manager, the water board, had a more connective policy substance focus – multi-functionality. There was no necessity for other actors to reframe their policy substance framing focus, because it was broad enough to accommodate other policy substances. The multi-functionality policy substance acted as a consensus frame on the framing foci level, by emphasizing the similarities in the policy substance (Table 6.3). Another factor was that other dissimilarities between actors in policy process and actors' identities and relationships decreased. It was less necessary for actors to emphasize or ignore agreements or disagreements, because they were heading towards a total consensus. The only disagreement in policy substance was reconciled with a consensus framing focus.

6.6 Discussion and conclusion

In the coastal management case of the Hondsbossche Duinen, we found the policy substance framing focus of multi-functionality to become dominant, because it accommodates other policy substance positions. While this case illustrates that complete agreement in all framing foci is not necessary for actors to reach consensus, it also becomes clear that consensus frames or master frames do not tell the whole story either. It may be enough for actors to differ in one of the framing foci to increase the potential for conflict in a process. The further development of a decision-making process – towards consensus or towards controversy – then depends on which framing foci are emphasized and which

are ignored. Multi-functionality has proven a versatile framing focus in the case presented here. It is also an example of the interconnectedness of the framing foci. The broad view on possible functions connected with multi-functionality also increases the probability of perceiving the stakes of other actors and the willingness to include them in the process.

While the Hondsbossche Duinen case is atypical in the set of other Weak Links projects, which have been realized in less time and with less conflict, it still shows the signs of a typical case for the Dutch policy-making arena, in which participation of affected and concerned actors is important. Provincial governments in the Netherlands usually take into account the interest of their population and are responsible for regional development as well. The fact that the first phase ended in controversy with a policy solution found with limited participation is rather surprising from this perspective. The water board, on the other hand, is an institution with a bottom-up history, originally being established by farmers to protect their life and work surroundings.

The final aspect at play, which this analysis revealed, but did not focus on, is the interplay between framing foci and actors' institutional power. In the first project phase, the ministry's authoritative veto power prevented the realization of a project that was not in the national government's interest. Other actors also had no formal power in the process. They could only have participated with the goodwill of the provincial government, which did happen in the following phases. The framing foci perspective clarified the reasons for the use of formal power in the decision-making process.

Understanding actors' ability to reach consensus in the Hondsbossche Duinen project despite their differences in framing foci requires the exploration of the assemblage of frames. Our framing foci perspective enabled us to specify which constellations of framing foci between actors led to conflict and why the project finally succeeded. It produced an in-depth analysis of the elements of policy framing which may otherwise be convoluted. We observed different mechanisms with regard to emphasizing or ignoring similarities and dissimilarities between actors' framing foci. These mechanisms deliver an understanding of why the Hondsbossche Duinen project almost broke down in the first project phase, while it thrived in the later phases.

CO-PRODUCTION AND PAR-TICIPATION: TWO MAGIC WORDS?[30]

30 This chapter was published as: Aukes, Ewert, and K. Lulofs. 2014. "Co-production and Participation: two magic words?" Tijdschrift voor Water Governance 5/6:58-62. Besides the translation of the originally Dutch introduction (section 7.1, cf. Appendix VIII), Changes relate to the numbering of paragraphs, figures and tables.

7.1 Samenvatting

This contribution deals with the coming about of the Houtribdijk pilot project. The pilot is realized as a result of a societal initiative. It puts an agenda into effect, which decision-makers had already put aside in an overarching Houtribdijk reinforcement project. This agenda pertains to the broad application of innovative, sandy strategies for meeting water safety requirements – also at the Houtribdijk. We devote attention to several governance aspects of the project, and compare this to co-production of wet infrastructure projects where governments are in the lead. A clearly deviant pattern was found, especially with regard to communication, reconciliation, cooperation and the involvement of actors. The case suggests that co-production evolves differently, if private parties are in the lead. The strategic area management exhibited by the Houtribdijk pilot case deviates from governmental standards.

7.2 Consequences of co-production

In this era of growing challenges and shrinking budgets, governments are tempted to retreat from some of their responsibilities. Fortunately for these institutions, the call for more public participation is answered by societal actors such as citizens and companies that aspire to step in. In general, forms of cooperation between governments and societal actors developed that are referred to as co-production. Co-production occurs, when governments work together with societal actors to find policy solutions. The final decision-making authority in such cases is still with the governments, but they are committed to the solutions developed with the societal actors (Edelenbos and Klijn 2005, 429). However, within these co-production processes, either governments or societal actors can be in the lead. Starting from the assumption that governmental institutions and societal actors have different interests and drivers, this article explores the consequences of societal actors taking the initiative in terms of involved actors, interaction and cooperation. In this contribution, we elaborate some of the consequences of such a shift in governance by examining a societal initiative resulting in a pilot at the Houtribdijk. This pilot investigates sandy strategies in low energy water systems for their potential for flood protection.

This pilot is in contrast with the government-led dike reinforcement project at the Houtribdijk.
In this case study setting, especially two questions are explored:

A *If civil society takes the initiative, and that initiative is managed by co-production, what are the consequences in terms of involved actors, interaction and cooperation?*

B *How do civil society initiatives perform, when it comes to stakeholder management in the preparation of a water infrastructure project, in comparison to the standards that governmental institutions have set for themselves when carrying out water infrastructure projects?*

The focus of this article thus chooses to discuss what happens if a government withdraws, a societal initiative emerges, takes the lead and includes other governments for realization. The reason for this limited scope is that governmental institutions have to adhere to rules and procedures granting fair inclusion of stakeholders and interests. Of course they also have to adhere to rules to budget control and outcomes useful for all. Citizens and companies have different interests and foci; they in general tend to perceive much smaller-scale problems and pursue their own interests. Furthermore, societal actors are less subject to accountability. Hence, the degree to which societal actors target large-scale societal problems and subject themselves to strict accountability criteria is low. So they might not only take initiatives but also do things differently. Whether this pattern appears with regard to stakeholder participation might be an appropriate strategy to signal the consequences of the described shift in governance.

7.3 Experimenting at the Houtribdijk

Now consider a water infrastructure project in which civil society takes over and government is just one of the stakeholders. As an example the Dutch case of the pilot Houtribdijk is taken. The construction of the Houtribdijk was finished in 1976. This dike was supposed to form the first part of the reclamation of the Markermeer, a part of the IJsselmeer. When it turned out that the Netherlands did not need more agricultural soil, the land reclamation plan was dismissed again. Nevertheless, the dike remained in

place and is nowadays an important traffic connection between Lelystad and Enkhuizen. As a result, the side of the Markermeerdijk which was dedicated to be reclaimed is not flood proof. Hence, a large dike reinforcement project has been launched to remedy the situation (Figure 7.1).

The case concerns an infrastructural pilot project – started by a societal actor – to increase the knowledge of innovative sandy solutions in low energy water systems. This pilot case was initiated as a result of the discussions that took place in the government-led dike reinforcement project Houtribdijk. Both projects are not formally related, though. Some advocated for such a relation and lost this battle. Sand does play a role in the dike reinforcement project, though to a far lesser extent than the advocates of innovation by sandy strategies suggested. The follow up pilot can be considered as a societal initiative. Below, the pilot case is described. The case description is followed by an account of how several interviewees perceived stakeholder involvement in the case at hand.

Figure 7.1 Location of the Houtribdijk pilot project on the border between IJsselmeer and Markermeer (Source: Rijkswaterstaat/ Steetzel, Ouwerkerk, and Fiselier (2013)). (See image of the project in cover foldout.)

7.3.1 Origins of the Houtribdijk pilot

It is unclear where the original idea to explore the safety performance of a sand deposit at the Houtribdijk came from. However, the evidence points towards the consultancy Arcadis as the first to come up with the idea. When studying the wave dynamics at the Markermeer side of the Houtribdijk, Arcadis experts wondered what the effect would be of a sand deposit at that location on the safety performance of the dike. Arcadis then suggested building a dam wall as a lock-up construction, putting an amount of sand on one side and examining the wave effect on this sand body.

The opportunity to carry out this idea opened up, when the dike reinforcement project for the Houtribdijk searched for feasible dike reinforcement solutions. During the initial phase of that project, large uncertainty about the costs of a sandy solution for this project persisted. At this point in time, the Corporate Innovation Program of the Dutch public works agency Rijkswaterstaat entered the stage. A member of staff of this Program contacted the Ecoshape Consortium[31] – of which Arcadis is a member – and suggested to research the costs and benefits of sandy solutions in this type of environment. According to the pilot project manager, there was also a desire at the national level to carry out such an experiment to gain more insight in low energy water systems.

Specifically, the two main aims of the experiment at the Houtribdijk were:

- *Showing that sand really works as an option for flood protection, and*
- *Reducing the existing uncertainties about sandy flood protection solutions.*

For example, the latter concerns the frequently reported potential cost advantages. But there are also other additional values that are inherently or can be intentionally linked to sandy flood protection options. Last but not least, another envisioned outcome of the pilot could be the formulation of assessment criteria for sandy flood protection options in low energy water systems.

31 This consortium of universities, commercial consultancies and dredging companies aims at developing the wet infrastructure while creating opportunities for nature.

7.3.2 From idea to realisation

Figure 7.2 Work in progress at the Houtribdijk (Source: Rijkswaterstaat/ Harry van Reeken).

Next, Arcadis took the lead to develop the idea together with the dredging companies that are part of the Ecoshape Consortium. At the time, the flood protection program (HWBP) at the Dutch public works agency released funds for innovations that do not fit in a current project. These funds fall under the funding program 'Naturally more favorable' ('Natuurlijk Goedkoper') (Lenselink, Beumer, and De Wit 2014, De With et al. 2014) – also an initiative of Ecoshape. Four project proposals were submitted to this funding program by the Ecoshape Consortium. One of these proposals was granted. This proposal concerned an amount of €3.7 million. However, the total project budget for the pilot project amounted to €4.4 million, because the Ecoshape project partners also contributed €0.7 million. This total budget is rather small compared to full-scale infrastructural projects in the Netherlands. Thus, the project did not qualify for an obligatory environmental impact assessment with its criteria for public participation and stakeholder management.

From the start, the innovation department of the flood protection bureau was captivated by Ecoshape's idea. Nevertheless, it took the flood protection bureau a lot of effort to move

Ecoshape to develop the idea into a concrete project plan. It must be said that Ecoshape had a hard time forming an effective project organization, also because the personnel capacity was low at the public works agency.

The project organization's initial vagueness was also noticed by the dike manager[32] at the regional office of the public works agency. Hence, the dike manager took up a wait-and-see attitude towards the pilot project. In the end, Ecoshape succeeded in forming a project organization with the rough character of integrated project management (IPM). The definitive project organization was composed of staff from the public works agency and the involved Ecoshape parties. Due to this cooperation of public and private parties, the project manager sees the pilot project as a classic example of co-creation. In the final plan, the division of tasks was as follows. From Ecoshape, the dredging company Van Oord/Boskalis is the contractor, the consultancy Arcadis deals with the work-plan and consultancy Deltares is concerned with monitoring. There are two parties to be distinguished at the public works agency: the dike manager at the regional agency and the flood protection program as funding organization.

32 The dike manager is responsible for keeping the dike in order and has to give permission for projects such as the Houtribdijk pilot.

7.3.3 Construction & monitoring

On 20th May 2014 the building contract was signed by the public works agency and Ecoshape. All the preparations – research, reports and permits – have taken eight months to be completed. In the permit application process, the project manager highlights the difficulties which the project had in receiving a water law permit. These difficulties were due to the fact that there were no assessment criteria for sandy techniques. Notwithstanding, the project organization intended to realize the project within a timespan of six weeks and before the construction industry holiday began.

The location of the pilot is about halfway along the dike at Trintelhaven. The dike road cannot be crossed by pedestrians at this spot. It is also forbidden to get out of the car. As mentioned, the final plan contains the construction of a 150m long dam wall. The dimension of this dam wall is based on underground measurements. Besides, calculations have been made for estimating the effect of the pile-driving for the dam wall on the dike. The location has also been examined for explosives and archaeological relics.

The pilot will include the deposit of 100.000m³ of sand with 30.000m³ as reserve. The sand is divided into four stretches of 100m. Two stretches will have a steeper slope than the other two. In both segments, one stretch is planted artificially, while the other stretch is allowed to grow over at random. By this setup, the project organization wants to research the relationship between plant coverage and waves. The location is monitored on several aspects: meteorology, hydrodynamics, morphodynamics and vegetation growth. Monitoring will continue until 2018.

7.4 Public participation & stakeholder management

For a number of reasons, the pilot project was reactive in its stakeholder management. Firstly, no participation requirements were set by the funding organization and the dike manager. Secondly, the pilot is a small-scale, technical experiment where a small project organization suffices. That is, only the applicant (Ecoshape) and the public works agency (dike manager, flood protection program) are involved in the project. Thirdly, the intended location of the pilot is far away from cities and other potential stakeholders. It seems that the project organization assumed that no other stakeholders exist who need to be involved in the project.
The project organization is aware of the importance of the dike manager in the process. It is stated that intensive consultation is needed to come to a better result. Also, other stakeholders are assumed to be convinced and enthusiastic. On the contrary, the dike manager feels too little involved in the preparation of the pilot project. In his opinion, he was confronted with settled facts and a vague project organization: hence, the conservative and wait-and-see attitude. On another note, agreement is high about the fact that the project is a classic example of co-production from societal/commercial actors.

7.5 Conclusions

Contrary to the requirements set for government, the stakeholder management applied by Ecoshape was reactive and only focused on realisation. Funding and permitting was handled by connecting to two stakeholders only. The societal initiative did not connect to all relevant stakeholders sufficiently. In this empiri-

cal case, it is obvious that "co-production" and "stakeholder participation" cannot be labelled magic words. Some of the relevant governmental agencies were not amused by the lack of communication and stakeholder management by the private initiative. Nevertheless, the fragmentation and lack of communication that emerged between relevant governments themselves is also apparent and could just as easily be highlighted.

FRAMING MECHANISMS: THE INTERPRETIVE POLICY ENTREPRENEUR'S TOOLBOX[33]

33 This chapter was published in this form as: Aukes, Ewert, Kris Lulofs, and Hans Bressers. 2017. "Framing mechanisms: the interpretive policy entrepreneur's toolbox." Critical Policy Studies Online ahead of print. doi: 10.1080/19460171.2017. 1314219. Changes relate to the numbering of paragraphs, figures and table

'…we are beginning to see how the context for policy entrepreneurship can be complicated when multiple perspectives exist concerning the direction that policy change should take from the status quo.'

Mintrom & Norman, 2009

8.1 Abstract

Policy entrepreneurs were, originally, neither conceived to be active meaning-makers nor did they interact with other actors. They invested other resources such as time, energy, reputation and money in coupling problems, solutions and politics. Adding the interpretive dimension of interactional framing mechanisms turns them into interpretive policy entrepreneurs. This perspective improves our understanding of policy cases in which initial frame conflicts are resolved by extensive meaning-making work by one specific actor. We illustrate this interpretive policy entrepreneur concept with the innovative Sand Motor mega-sand nourishment scheme case, an artificial peninsula of 21 million m^3 at the South Holland coast. Designed to achieve multiple aims, this coastal management scheme should serve coastal protection, nature development as well as recreational purposes. In the risk-averse, complex policy domain of Dutch coastal management, the provincial government of South Holland turned out to be an adept meaning-maker by linking other actors' problem definitions to their proposed solution. Fourteen in-depth, semi-structured interviews put the provincial government at the heart of several framing interactions that led to frame convergence and ultimately the resolution of the initial frame conflict. Our interpretive analysis of framing interactions concludes that interactional framing mechanisms can reveal interpretive policy entrepreneurs.

8.2. Introduction

The genesis of the 'Sand Motor' is a story of a provincial governor and her civil servants. Together, they succeeded in bringing about reframing (Schön and Rein 1994, 38) among other important actors to realize an innovative, prestigious project. We argue that the provincial governor, flanked by her civil servants, acted as an interpretive policy entrepreneur. Kingdon (2014, 179), who coined the original term in his multiple streams theory, defines policy entrepreneurs as 'advocates who are willing to invest their resources – time, energy, reputation, money – to promote a position in return for anticipated future gain in the form of material, purposive, or solidary benefits'. In the case we present, though, the policy entrepreneur did not only spend the resources men-

tioned by Kingdon but was also successful in establishing meaning through framing mechanisms. Through these mechanisms, the provincial governor and her civil servants were able to link their regionally perceived issues with issues existing on other governmental scales and in other sectors (Van Lieshout et al. 2012, Van Lieshout et al. 2014). They convinced other actors that issues on different levels and in different sectors could be solved by using the same policy solution. The original policy entrepreneur definition does not capture this meaning-making activity. Kingdon's policy entrepreneur knows how to use resources to couple policies with problems and political will, but the concept fails to open the black box of how frames converge through the way the policy entrepreneur frames the issue at hand in specific settings.

Our aim is, therefore, to explore and strengthen the link between interpretive policy analysis and policy entrepreneurship conceptualizing the instrumental use of framing mechanisms as the toolbox of what we call the interpretive policy entrepreneur.[34] The original policy entrepreneur concept will benefit from adding the meaning-making resource to the policy entrepreneur's tool kit, as this reveals what happens once the policy entrepreneur couples existing political will with policy problems and policies. In addition, the interpretive policy entrepreneur concept translates Kingdon's three streams into interaction settings, enabling us to study actual actors doing interactive framing work. The theoretical elaboration of the policy entrepreneur concept presented here also projects it into the realm of interpretive policy analysis, by adding an actor perspective to the static frame concept and the processual framing concept. While this is a conceptual advantage of the interpretive policy entrepreneur, in everyday policy practice, the concept may increase the awareness of policy actors of the salience of meaning-making alongside the four other resources mentioned in the original policy entrepreneur definition.

We discerned this interpretive policy entrepreneur in a project called the 'Sand Motor' – a coastal protection scheme constructed along the Dutch coast in 2011 (cf. Figure 3.1)[35]. This project exploits the sea currents and wind as a metaphorical 'motor' to transport sand from one location to others where it is needed. As such, it presupposed detailed knowledge about where sea currents erode the coast and where the sand is then deposited. While the use of huge amounts of sand to build artificial islands

34 To date, Hoes and Regeer (2015) and Winkel and Leipold (2015) appear to be the only attempts to explore potential connections between interpretive policy analysis and the MST.

35 Various documentaries have been made on the Sand Motor. For visual and technical information, see: http://www.npo.nl/de-kennis-van-nu/02-11-2014/PWON_1229351; https://www.youtube.com/watch?v=wtY4_QXcVsM. nis-van-nu/02-11-2014/VPWON_1229351; https://www.youtube.com/watch?v=wtY4_QXcVsM.

36 In the Sand Motor project, approximately 21 million m³ of sand was used to create a hook with a lagoon at its base. This added an area equal to approximately 115 football pitches to the Dutch coast.

for leisure purposes is now understood, as the Arab Peninsula and parts of coastal China testify, the Sand Motor project was the first attempt at harnessing sand for large-scale coastal protection (Stive et al. 2013)[36]. However, realizing such an innovative coastal protection experiment in a functioning coastal management system characterized by a complex web of responsibilities and tasks is far from easy. Various aspects such as defining and monitoring safety criteria and the proposal of coastal protection projects are dispersed over a range of policymaking levels (Stumpe 2011, 16). This policy situation, in which an innovative coastal management technology has to be managed in a complex policy domain, is further complicated by a public works agency focused on tradition and routine coupled with a suspicious attitude toward unproven technologies (Disco 2002). In this case, we observe an argumentative struggle between innovation-minded and traditionalist coastal management actors who initially all have different interpretations of the problem definition and who differ in terms of the values they bring to the coastal management problematic making this project a case of 'frame conflicts' in decision-making over time (Schön and Rein 1994, 23). The actors in this case had to debate the suitability of the Sand Motor technology based on their values, experience and normative perceptions, as there were no facts about the performance of the technology, yet. It was impossible for them 'to resolve […] their disputes by examining the facts of the situation' (Schön and Rein 1994, 3). Hence, the Sand Motor case represents a 'frame conflict' between actors, such as the provincial government, who expect the Sand Motor to be a promising technology and actors, such as the public works agency, who feel there is no need for experimentation when lives are at stake and the technology in place works.

The central research question we discuss is: How did an interpretive policy entrepreneur make use of framing interaction mechanisms to implement an innovative coastal management technology such as the Sand Motor in a complex policy context characterized by competing frames? This paper looks into the framing dynamics initiated by interpretive policy entrepreneurs that occurred in the planning phase of the Sand Motor project. This article presents an Interpretive Policy Analysis and the terminology used reflects this approach. Interpretive Policy Analysis is an interpretive, hermeneutical approach to data analysis that involves an abductive way of reasoning (Schwartz-Shea and Yanow 2012). As opposed to induc-

tive and deductive ways of reasoning, abduction is the systematic movement from data to what Geertz called 'guesses at meanings', and then back to the data until the interpretation of the meaning is satisfactorily plausible (Geertz 1973). Interpretive approaches set out to understand the meaning and the processes of meaning-making of social phenomena for actors. In applying an interpretive approach, we develop an 'understanding of the key concepts and meanings-in-use among situational actors – those that are significant to them in their own lived experiences' (Haverland and Yanow 2012, 404) which led to the adoption of an innovative coastal management technology in the case presented.

In the next section, we develop the concept of interpretive policy entrepreneur. After this, we outline the case history. We discuss the findings related to framing mechanisms and how these fed into the conceptualization of the interpretive policy entrepreneur. Finally, the implications of the case are discussed and conclusions are drawn.

8.3 Theoretical framework: the interpretive policy entrepreneur

8.3.1 Original policy entrepreneur definition

As mentioned, a policy entrepreneur invests certain kinds of resources (time, energy, reputation, money) in a policy process. But these resources merely enable a policy entrepreneur to create the settings – e.g. policy arenas or venues – in which policies may be advocated. Policy entrepreneurs have to be present in some way at such settings to be able to promote or advocate at all. This is where those resources go: travelling to and being at meetings and negotiations, building expertise, writing advocacy documents, etc. Hence, these resources form the conditions for a policy entrepreneur to advocate policies. Kingdon's definition is silent, however, as to the processes by which this advocating will come to pass. In multiple streams theory terms, policy entrepreneurs only act in relation to the three streams – problems, policies and politics – as they 'hook solutions to problems, proposals to political momentum, and political events to policy problems' (Kingdon 2014, 182). This activity is also called coupling. The questions of specifically how they do this as well as why they couple particular solutions to particular problems are left in the dark.

8.3.2 Conceptual issues

The policy entrepreneur concept misses a significant factor which is crucial once the advocacy settings are created. Policy entrepreneurs also need the expressive power to convince other policy actors of their advocated policy. In a way, the definition as is ignores what could be called the 'advocative moment', i.e. the interaction between policy actors – not between the policy entrepreneur and some evasive stream – in which meaning is exchanged to achieve reframing among policy actors to follow a certain policy course. In other words, they need to be able to give meaning to policy situations that resonates with other actors. Although the policy entrepreneur concept adds an agency dimension to the otherwise arguably structure-oriented streams, the definition proposed by Kingdon still lacks the depth to illuminate what constitutes the special powers of policy entrepreneurs as opposed to those policy actors who may not be characterized as such.

8.3.3 Interpretive dimension of the policy entrepreneur

The specific depth of character that separates policy entrepreneurs from other types of policy actors can be developed by consulting the four characteristics every policy entrepreneur has 'at least to some degree' (Mintrom and Norman 2009, 651). These features are (a) the ability to make sense of other actors' perspectives, (b) the ability to express problems in other actors' terms, (c) the ability to build epistemic communities (Haas 1992) and (d) a willingness to take risks (see Table 8.1 for Mintrom and Norman (2009) terminology and our respective interpretive translations). If we examine these basic characteristics of policy entrepreneurs, we can conclude that three of them are essentially interpretive activities.

Table 8.1 Policy entrepreneur features: Mintrom and Norman (2009) terminology and our interpretive 'translation'.

Mintrom and Norman (2009)	Our interpretive 'translation'
Displaying social acuity	Sense-making of other actors' perspectives
Defining problems	Expressing problems in other actors' terms
Building teams	Constructing epistemic communities
Leading by example	Taking risks

The first of these activities is the ability to make sense of other actors' perspectives. It is the most generic feature and a precondition to the latter three. In fact, it is at the heart of interpretation. This ability to interpret others – congruent with the concept of sense-making – depends on empathy (Gadamer 2010). It comprises an affinity for maneuvering in policy networks by 'understanding the ideas, motives, and concerns of others in their local policy context' (Mintrom and Norman 2009, 652), i.e. empathizing with others. For example, in interacting with other actors, policy entrepreneurs need to be able to make sense of others' positions to appreciate them and outline their own strategy vis-à-vis these other positions. Understanding the constellation of ideas, motives and concerns in a policy arena is thus a precondition for further action aligned to other policy actors.

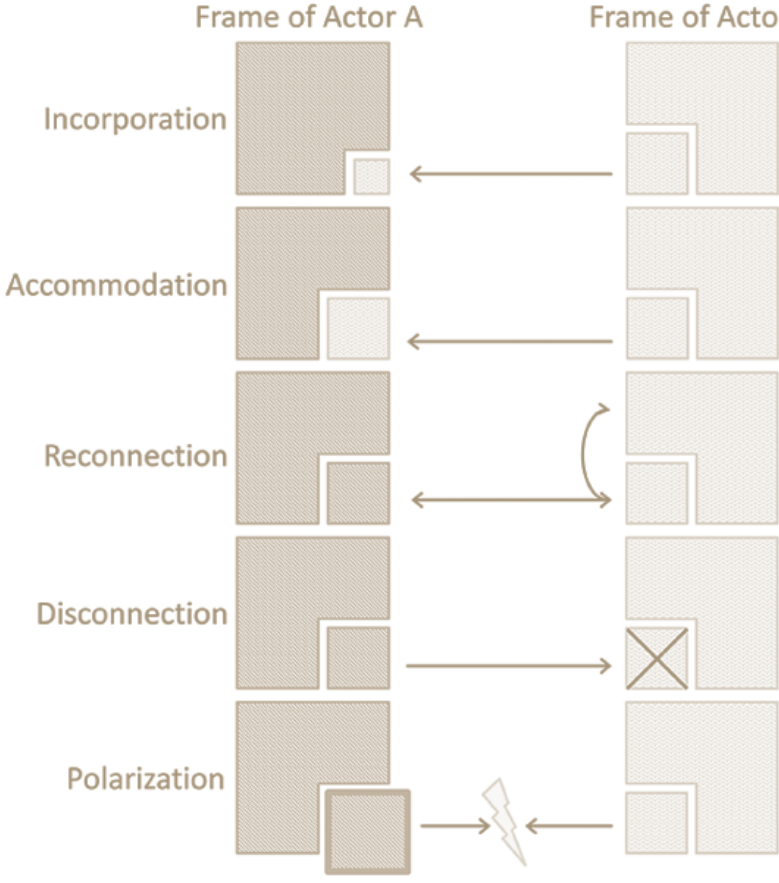


Figure 8.1 Framing interaction mechanisms (adapted from Dewulf and Bouwen 2012).

Once there is an understanding of other policy actors in a given interaction, this enables the policy entrepreneur to redefine problems, solutions or arguments in other actors' terms.[37] Policy entrepreneurs need to be able to frame their own definition of problems and solutions[38] such that they are accepted by other actors and hopefully integrated into their frame. Problem definition as a core interpretive activity is not only found in the work of Van Hulst and Yanow (2014) and Rein and Schön (1996), but also ties into the framing mechanisms described below. Focusing on the advocative moment and scrutinizing, the problem definition behavior of policy entrepreneurs in interaction with other actors also answers Mintrom and Norman's (2009) call for more focus on interactions. From an interpretive perspective, the interactional framing mechanisms are the tools by which policy entrepreneurs attempt to bring across their view of a policy situation (Figure 8.1). These tools are not necessarily consciously used as such, but represent rhetoric and argumentative means of discussion. Although all actors engage in these framing mechanisms, policy entrepreneurs are actors who are particularly adept at using them successfully. This is in line with what has been called somewhat pejoratively '[manipulation] of problematic preferences and unclear technology' (Zahariadis 2014, 35). The success of this ability depends on the accuracy of the sense-making of other actors' opinions. If the initial sense-making was inadequate, the redefined problem and solution may lead to miscommunication or conflict. The policy entrepreneur may still have opportunities to adjust his sense-making and, in turn, the problem definition, but eventually this may result in the breakdown of the process – and the closing of a window of opportunity. However, the successful framing of elements of the policy setting in a way corresponding to other actors is, again, a precondition for building teams, or – in interpretive terms – epistemic communities.

Agreeing on elements of the policy setting increases chances of reframing. If policy entrepreneurs are skilled at reformulating elements of the policy situation in other actors' terms, it is more likely that these open up to policy entrepreneurs' position and join the ranks. This leads to a larger epistemic community advocating a certain policy, thereby increasing the success potential of the advocated policy. Finally, but not strictly an interpretive feature, policy entrepreneurs need to be willing to take risks,

37 In this sense, interpretive policy entrepreneurs are closely related to boundary workers in that they reformulate boundaries of frames to change the policy situation in their favour (Williams 2002, 110).

38 From an interpretive perspective, problems and their solutions are teleologically linked (Kurt 2004). Frames limit the scope of solutions, and which solution within that scope will be preferred. Each policy actor will perceive a different range out of the entire stream of problems or solutions.

so that other actors become convinced that the risks are indeed manageable or even to be overcome. Although willing to take a risk shows determination and a certain level of certainty about the policy in question, adequate sense-making of others' positions is still important. A sense of other policy actors' positions also delineates the spectrum of risks that are acceptable for others. Taking a risk that turns out too far removed from what is acceptable for others could lead to loss of reputation or even political demise of the policy entrepreneur. On the other hand, a well-gauged risk would take into account what is acceptable for other actors and increase the chance of reframing at their end.

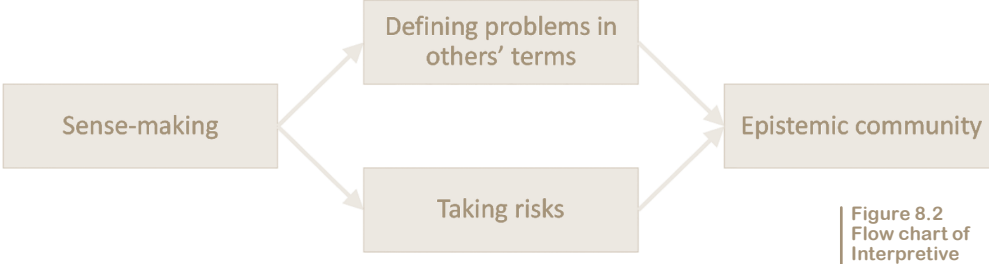


Figure 8.2 Flow chart of Interpretive Policy Entrepreneur characteristics.

Reflecting on these four characteristics shows the interpretive element in the activities of a policy entrepreneur. It starts at the root of making sense of other actors, understanding how and why they attribute a certain meaning to particular elements of the policy setting. Interpretive policy entrepreneurs engage in framing interaction to bring about reframing to increase the coalition rallying around their advocated policy. An 'interpretive policy entrepreneur', then, is an actor who is successful at making meaning and attributing this to a certain situation or policy alternative (Figure 8.2). Defining 'reframing' as a process that 'resolves the controversies that arise in policy practice' (Schön and Rein 1994, 38), interpretive policy entrepreneurs bring about reframing among other actors through framing mechanisms, thereby creating an epistemic community, which may be understood as a group of people attributing similar meaning to a policy or policy situation.

8.3.4 Framing

The framing literature is divided into two streams – a cognitive and an interactional type. Cognitive framing entails the individual understanding of a (policy) situation by assigning meaning to elements and binding them together in a coherent story (Scholten and Van Nispen 2008, Stone 2002, Van Hulst and Yanow 2014, Hawkins and Holden 2013). The interactional framing literature engages with the interactive effects of frames. Part of that literature focuses on the instrumental use of framing for 'the rhetorical functions of persuasion, justification and symbolic display' (Schön and Rein 1994, 32, cf. Entman 1993, Gallo-Cruz 2012). However, the interactional framing literature, we use here, revolves around the function of actors making meaning together in interaction with each other (Dewulf and Bouwen 2012, Dodge 2015). Specifically, we follow Dewulf and Bouwen (2012, 169), who define framing as 'the dynamic enactment and alignment of meaning in ongoing interactions'. In this understanding, framing is finding a consensus among actors over the meaning of a (policy) situation instead of doing so individually. We understand the interactional framing mechanisms Dewulf and Bouwen (2012) propose as processes initiated by an actor for meaning-making, and may also be used consciously in an instrumental way.

39 The interactional framing approach proposed by Dewulf and Bouwen (2012) is process oriented in nature and is not so much interested in the framing content as the way in which actors deal with challenging frame elements in general. For a more content-oriented framing approach, see Van Hulst and Yanow (2014), by means of which it is possible to analyze the rhetorical moves of the actors.

8.3.5 Interactional framing as signpost for interpretive policy entrepreneurs

We argue that, for an interpretive policy entrepreneur, successfully making meaning is reflected in the successful initiation of frame-convergent framing moves (Abolafia 2004). Frame-convergent framing moves bring about reframing among other actors, thereby increasing the epistemic community of the interpretive policy entrepreneur. Dewulf and Bouwen's (2012) five interactional framing mechanisms[39] are such framing moves occurring when frames confront one another in policy processes (Figure 8.1). However, only three of these mechanisms – Incorporation, accommodation and reconnection – have frame-convergent effects or lead, in the terms of Schön and Rein (1994), to reframing. Incorporation is seen as taking place in situations where actor A includes a watered-down element of actor B's frame, maybe because

actor A only partly agrees with that element. In accommodation, there is no watering down, and actor A substitutes an element of his/her frame with a more-or-less exact copy of the corresponding element of actor B's frame. In some situations, actors may connect a conflicting element with other elements in their own frame to overcome a conflict – reconnection. These processes increase the epistemic community for the policy solution. Conversely, the remaining two mechanisms of polarization and disconnection intensify the intractability of policy controversies and impede the resolution of framing conflicts, in other words are frame-divergent framing moves. Where actor A totally rejects a corresponding element of actor B, this is referred to as disconnection. Finally, if actor A focuses on their own frame and emphasizes their own conviction regarding an element, we speak of polarization.

8.4 Method: analysis of framing interactions

As a research setting, a coastal management project along the Dutch North Sea coast, just south of The Hague was chosen. The construction of this novel coastal management technology – the Sand Motor – was finalized in 2011 and the project is currently in the evaluation phase. The fact that the project and discussions are already finalized creates complication for the research, which is discussed in the data generation and data analysis section.

8.4.1 Data generation

Qualitative analysis enables context-sensitive, in-depth understanding of meaning-making in policy cases. Hence, data generation in our approach rests on in-depth interviewing. This data generation method had the disadvantage that we had to rely on the memories of policy-relevant actors since we were unable to make real-time participatory observations. But it was the only way to acquire primary qualitative data in this retrospective case.

We interviewed 14 participants in the policy process from the provincial government South Holland, the municipality of 's-Gravenzande, the public works agency and the national Innovation Platform. Interviewees' occupations ranged from provincial governor through project managers, policy advisors to coastal management experts (Table 8.2). The first interview-

ees were initially identified from prior knowledge of the project based on their participation in the policy process. This knowledge came from reports about the case and casual conversations with involved actors (Bureau Landwijzer et al. 2012, Dulfer et al. 2014, Baltissen 2015, Stive et al. 2013, Van Slobbe et al. 2013). Consecutive interviewees were selected based on them being mentioned as important to the policy process by previous interviewees and were contacted to request an interview (Schwartz-Shea and Yanow 2012, 88). The final number of interviews follows from the basic aim of the interviews, which is mapping for exposure. Mapping for exposure means getting as many different, 'research relevant' understandings about the case in question as is possible (Schwartz-Shea and Yanow 2012, 85). That is, judging the research relevance of additional understandings depends on the interpreter. At a certain point during the fieldwork, additional understandings only add nuances to understandings already identified rather than adding opposing/contrasting understandings. From this point on, it depends on the research's feasibility, whether more understandings are sought.

Table 8.2 Interviewee organisation and occupation.

Organization	Occupation
Province South-Holland	Program manager
	President steering group
	2 project group members
	Project manager
	Coastal management expert
	Provincial governor
Public works agency	Vice president
	2 permit officers
	Project manager implementation
	Policy advisor
Municipality	Policy advisor
Innovation Platform	Scholar

The interviewee selection strategy delivered a mapping for exposure that leans toward policy makers. Starting from the premise that interviewees spoke of other actors, if they were important to the policy process and contributed to it, the selection of interviewees reflects a network of actors who work together a lot, but leave out others, such as civil society organizations and NGOs. Probably, the selection of interviewees would have been different and the case story might have differed, if we would have started from an actor outside the formal policy process. The choice of initial interviewee may, thus, determine the rest of interviewing process and shape the results of the analysis.

We approached the project from a perspective of decisive moments, defined as moments in the policy process, which interviewees perceived as important. Participants were asked to delve deeper into what happened to their own and others' framing moves in and around the moments they perceived as decisive. If necessary, we adapted the interview guide based on the initial analysis after interviews. Audio recordings were made of all interviews, as all interviewees allowed so. Recordings were transcribed verbatim without fillers to form coherent sentences. All transcripts were collected and analyzed in the NVivo 10 software package. Transcripts were analyzed as soon as possible after the interview to incorporate new aspects such as new 'decisive moments' in the interview guide before the next interview. A spreadsheet was kept as a log containing interview and transcript characteristics. Transcripts, interview log and memos form an audit trail for the analysis (Lincoln and Guba 1985, 382). Hence, during the fieldwork period, transcripts, initial analysis and memos created an initial understanding of what was at play in the project.

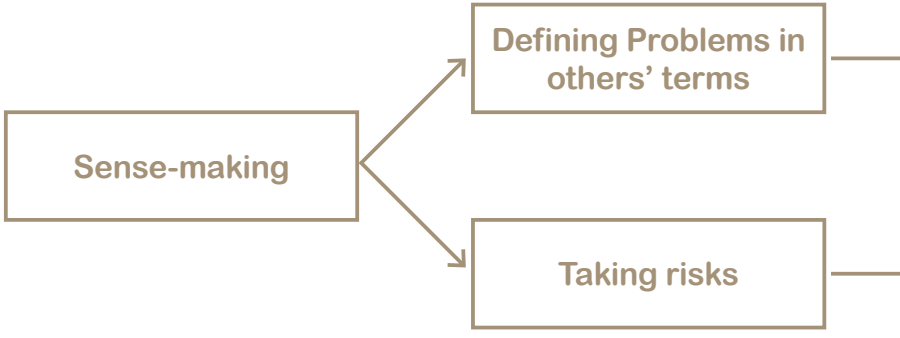
8.4.2 Data analysis

The first analytical step was to reconstruct the project timeline based on the interview transcripts, policy documents (Dwarshuis-van de Beek et al. 2008, Minister van Verkeer en Waterstaat et al. 2010) and documentation pertaining to the project (Bureau Landwijzer et al. 2012, Dulfer et al. 2014, Baltissen 2015, Stive et al. 2013, Van Slobbe et al. 2013). Knowledge about decisive moments enabled us to reconstruct the moments during the project when interviewees perceived changes in their own or in others' framing. We linked the project

timeline to self-reported interaction settings. As we were unable to observe interaction settings ourselves in the process and acquire interactional data from these, using self-reported interaction settings is a way to use interview data to reconstruct the interaction settings for the analysis with interactional framing mechanisms. Those self-reported interaction settings analyzed with the five interactional framing mechanisms to distinguish between actors involved in the interaction, initiator and type of framing mechanism involved. Dewulf and Bouwen (2012) interactional framing mechanisms enable us to observe the policy entrepreneurial characteristics enacted in interactions between actors (Figure 8.3), by relating events and outcomes of the policy process to actors' meaning-making efforts. Once we know the nature of framing interactions in a case, we can relate them to events and the direction the case took after those events and whether there were crucial, meaning-making actors in these events. Actors are said to be crucial for the policy process in their meaning-making, i.e. interpretive policy entrepreneurs, when they initiate meaningful frame-convergent framing moves that enrich the epistemic community for the advocated policy. Thus, uncovering the framing interactions in a policy case is the main step in a systematic analysis of interpretive policy entrepreneurs.

8.5 Results: discovering an "interpretive policy entrepreneur"

In the Sand Motor case, we noticed an actor who functioned as a driving force in the decision-making process. This actor's activity was not limited to the delivery of 'data' or 'facts' but also extended to the level of meaning-making. That actor – the province of Zuid-Holland – succeeded in associating its project idea to frame elements of other actors to rally them around that very idea. We describe the context of these



actions, followed by an analysis of which framing interaction mechanisms have been at play in the case. This section ends with an analysis of the Zuid-Holland province as an interpretive policy entrepreneur.

8.5.1 Case description

During a previous coastal reinforcement project, the provincial governor of province Zuid-Holland was captivated by the advantages promised by extensive land reclamation with associated benefits of flood safety, spatial quality and a positive economic impact. These promised benefits translated into a drive at the province[40] to realize this project. In consequence, the province and its governor needed remarkably little time to realize the project, especially seeing that it was an experiment (Provincial project manager, personal communication, 21 October 2015). While the provincial director of the coastal policy program estimated the beginning of the project in 2006/2007, the officially documented kickoff with the signing of an ambition agreement only occurred in March 2008 (Table 8.3).

40 Whenever we mention the 'Province' without specifying individuals, we mean the provincial government as a policymaking actor, i.e. the provincial governor and her civil servants.

Table 8.3 Events of official procedures in project Sand Motor.

Date	Event
03-03-2008	Agreement of ambition
18-12-2008	Notification of Intent for Environmental Impact Assessment
01-02-2010	Final report Environmental Impact Assessment
15-06-2010	Maintenance agreement
01-03-2011	Beginning of construction works by dredging companies
18-03-2011	Letter of discontinuation to steering group by provincial alderwoman

Figure 8.3 Framing interactions as tools revealing interpretive policy entrepreneuring processes.

41 The then prime minister (Balkenende) founded this Innovation Platform in 2003 to boost the innovation capacity of the Netherlands.

42 'Cost-effective and functional' ('Sober en doelmatig') was the slogan of the PWA. This slogan describes their task metaphorically: guarantee flood safety at low costs.

The next step for the province was to construct a business case around this idea of a mega-nourishment scheme. Unfortunately for the province, the costs outweighed the benefits in the business case, because it was striving for not easily monetarizable, social benefits – recreational and nature improvements to the area – which were not taken into account in the appraisal technique (Provincial project manager, personal communication, 21 October 2015). Consequently, the business case was discarded, and the province needed to find another way to realize the provincial governor's ambition.

An alternative pathway opened up when the province was able to pitch the project to the Dutch Innovation Platform. Though not immediately leading to realization of the project, this extended the project's outreach to the national government level. The innovativeness of the project convinced the members of the Innovation Platform[41] who began to endorse it publicly. One of the results was the public announcement by the prime minister to construct a tulip-shaped island off the Dutch coast, similar to the prestigious palm-shaped islands constructed at the Arab Peninsula (Boeters 2008). Hence, although other involved actors perceive earlier roots, the Dutch commission for environmental impact assessments (environmental impact assessments) attributed the project Sand Motor to the Innovation Platform itself (Commissie voor de milieueffectrapportage 2014).

Little conflict characterized the ensuing planning phase (Policy advisor of municipality Westland, personal communication, 14 July 2015; Provincial project manager, personal communication, 21 October, 2015). In fact, some even called it a 'problem free' project, referring to the absence of urgency or necessity to improve the coastal safety at the proposed location (Provincial project manager, personal communication, 21 October 2015). However, the choice of location of the mega-nourishment exemplifies the fact that there were indeed conflicting interests. The province wanted the Sand Motor to be visible and not submerged in front of the coast. After all, an expensive prestige project, which is invisible and impossible to open ceremonially, is worth little for a politician. Because of this, the province was prepared to pay additional costs for a project design that maximized benefits in the recreational, natural and economic sector. On the other hand, the public works agency was, initially, more concerned with coastal protection solutions[42]. Compared to their

non-submerged, land-attached[43] counterparts, submerged nourishment designs usually cost less, but score low on those benefits, which the province strived for. But as a submerged design fit the public works agency's standard policy and its disinterest in non-safety benefits, it favored the less expensive submerged option. Nonetheless, in the end, the ministry hierarchically ordered the persistently skeptical public works agency to construct the project.

43 That is, not island-type nourishment designs.

Various municipalities near the proposed location had more practical concerns such as nuisance through sand or tourists and also swimmer safety. The province dealt with these concerns pragmatically by staying in close contact with worried actors and drafting a maintenance agreement including the feared nuisance aspects and measures to counter them (Policy advisor of municipality Westland, personal communication, 14 July 2015).

For two reasons the conflict potential between these differing interests in this phase was not realized. First, few actors had interests at the proposed location itself (Provincial project manager, personal communication, 21 October 2015). In the Netherlands, the coast is national property, so municipalities have little formal influence in the coastal management process. This ownership structure also meant that expropriation was unnecessary. Second, from the start, the project was approached and communicated as an 'experiment' and 'pilot', which had two advantages. First, national funds reserved for infrastructural innovation experiments facilitated the financing of the project. Second, an experimental coastal management project could not contribute to coastal protection, due to unknown safety performance, so that the coast would not be unsafe, if the experiment failed. As a result, the urgency of the project was lower than with a regular coastal reinforcement project, reducing resistance among other more critical actors (Provincial project manager, personal communication, 21 October 2015).

As the project moved on and the environmental impact assessment phase dawned, a change occurred in the timescale perception of the province. When the end of the legislative period of the governor drew near, the urgency of finalizing the project increased for the province. After all, the governor wanted to open the new beach strip herself and add the project to her list of achievements. As a consequence, the project organization had to step up its efforts. Hence, all the procedures including that of the

environmental impact assessment had to be rushed (Provincial project manager, personal communication, 21 October 2015). Fourteen months between the Notification of Intent and the final environmental impact assessment report – a short amount of time for this kind of project – reflect this procedural pace (Table 8.3). Further, until the environmental impact assessment report was published, there was no clear-cut design for the Sand Motor. At last, the environmental impact assessment report proposed three different designs for the Sand Motor, favoring one of these for its presumed environmental advantageousness. In this period, nature organizations began voicing loud critique. Although they acknowledged that nature would be developed with the project, they argued that all nature benefits would be nullified, because of fragmentation of the designated nature areas with cycling paths and other recreational infrastructure. The World Wildlife Fund for Nature (WWF), an authoritative actor in the environmental field, rose to defend the Sand Motor. It was the WWF's view that the created ecosystem would be robust enough to withstand these fragmenting interventions. This was an important move in rallying actors around the Sand Motor (Member of the project group, personal communication, 23 September 2015).

Negotiations about the division of costs during the financing phase did not occur in the steering group nor in the project group. Not even the municipal policy advisor, a member of the steering group, knew how the cost allocation negotiations went. It turned out that the program director of the province had negotiated the distribution of the costs with the public works agency. The public works agency would pay €58 million from a crisis and recovery fund initiated during the financial crisis to boost innovative projects. Decision-making had to speed up to be eligible for the next funding deadline, again putting time pressure on the process. For the provincial program director to convince his provincial council to spend €12 million on the Sand Motor was much more difficult than negotiating funding with the public works agency (Provincial program director coast, personal communication, 11 May 2015). In the end, opposing parties in the provincial council of Zuid-Holland managed to come together on the funding issue and the Sand Motor project could proceed (Provincial project manager, personal communication, 21 October 2015).

8.5.2 Policy framing mechanisms…

The best example of the provincial government's difficulty to realize its project was that the urgency and necessity of the proposed coastal protection policy was challenged by other actors. This is directly related to the suggested 'problem-free-ness' of the project. On the one hand, commenting on a project as problem-free suggests the low-conflict character of the policy process. On the other hand, it also insinuates a critique on the necessity of the project, as if to ask: 'Why is this project done, if there is not a "real" policy problem?' Some actors thought that the coastal management policy in place – the annual routine nourishment scheme – was appropriate and did not need reviewing. Because these actors felt the absence of a problem there was no reason for them to participate in the project. In this situation, problem definitions differed across policy levels. For the province, the project could solve a regional infrastructure problem and prepare for future coastal management challenges. On the national level, in particular for the Innovation Platform, the provincial problem was not perceived as such. Rather, the national level was concerned with a lack of innovation in The Netherlands as a whole. The public works agency accepted the policy as a suitable option, but did not see the urgency to implement it at the proposed location, as there was no safety issue there at that time. This critique exposes the originally undertheorized meaning-making aspect of the multiple streams theory. It reveals a frame conflict between actors who perceive an infrastructural problem and other actors who disagree with that problem definition. To convince those other actors of the relevance of the Sand Motor project, the province had to bring other actors to reframe to solve this frame conflict.

8.5.2.1 Frame-convergent framing mechanisms

Incorporation. Over time, provincial government interviewees observed a frame Incorporation at the public works agency. In interactions with the public works agency, the provincial government promoted its idea of a Sand Motor and tried to convince the public works agency that it had the potential to be a useful addition to the set of coastal protection instruments. The polarization from the provincial government that went hand in hand with

the Incorporation by the public works agency, will be discussed below. As more and more preliminary studies were produced, the evidence for the Sand Motor's potential accumulated. At a certain point before the public works agency accepted the idea, it was reluctance to experiment with such an unproven technology which remained. This interaction is an example of Incorporation and not one of accommodation. The public works agency did not fully accept the Sand Motor as proposed by the provincial government of South Holland. Rather, it accepted the relevance of experimenting with the concept, but wanted it to occur at a spot outside of the province of South Holland. Hence, the frames of the provincial government and the public works agency converged but did not end up overlapping totally.

Table 8.4 Overview of framing events in project Sand Motor.

Moment	Actor A	How?	What?	Actor B	Addition to epistemic community
From the start	Province	Accommodated	Naming the project a 'pilot'	Innovation Platform	Innovation Platform, national government
Continuously	Province	Polarized	Project location	public works agency	-
Gradually	public works agency	Incorporated	Project relevance	Province	public works agency
During environmental impact assessment	Province	Reconnected	Additional measures to reduce expected nuisance	Municipalities	Municipalities Westland & The Hague
After environmental impact assessment report	WWF	Reconnected	Reassurance of no ecological disadvantages	Other nature organizations	Nature NGO's

Accommodation. The province's persuasiveness is visible through a number of framing mechanisms that we uncovered in the case (Table 8.4). By the end, most actors in the Sand Motor project were in favor of multifunctional coastal management. These actors reframed from problem orientation to focusing on opportunities and grand innovation. The general openness of actors toward the

new coastal technology resulted in lower frame conflict potential. Another advantage of the approach chosen by the province was that it was set up as a 'pilot'. As a pilot, the novel technology could be tested for its performance on the intended targets. This testing character reduced the frame conflict potential in the decision-making process. This is an example of the accommodation mechanism. It shows that by replacing the idea of a 'full-fledged coastal protection project' for the 'pilot approach' in its frame, from the outset the province was able to soften resistance to the unchartered territory that the new coastal management technology represented. Namely, frame conflict potential would have been much higher, if the project had been a regular coastal reinforcement project. In regular coastal reinforcement projects, the public works agency would have protested, if such an unproven technology had been suggested. Choosing to approach the project as a pilot, thus, reduced the conflict potential in the project and is partly responsible for the pervasive perception that the project was executed smoothly. Besides an accommodation of frame elements at the province, this development shows the instinct of the province in dealing with the frames present at the national level and the public works agency. By accommodating the pilot aspect, the province defined their problem in terms of the innovative power it could possess. Convincing the national level of the innovativeness of the project added a powerful actor to the epistemic community, which the province was constructing.

Reconnection. Another type of framing mechanism occurred in the interaction between the province and the local municipalities. The latter warned for potential local nuisance in the aftermath of the project. Here, we see the municipalities' frame element of 'fear for nuisance' challenging the province's frame element of 'an unproblematic construction'. However, the provincial project organization had little difficulty in dealing with the municipal politicians' fears for nuisance by setting up a maintenance agreement (Policy advisor of municipality Westland, personal communication, 14 July 2015). This maintenance agreement specified the responsibilities for local nuisance problems emerging after construction in the maintenance phase and which additional measures had to be implemented to deal with these. As a result, the maintenance agreement formed the missing link between the

province's and the municipalities' frames by which the province succeeded to reconcile their respective frames by frame reconnection. This is again a framing move increasing the number of actors in the epistemic community. While the province is on the same wavelength with the municipalities regarding the indirect benefits of the project, the province has to deal with the problematic side effects of the project on the local scale. Only after acknowledging these side effects and amending the project to prevent them, did the municipalities become full members of the epistemic community.

A reframing, which did not occur among the inner circle policy actors – ministry, province, public works agency, municipalities and water boards – happened at the environmental and nature organizations. These were initially critical about the actual nature development that was planned. They feared that recreational elements such as cycling paths designed to traversing the designated nature area would fragment the habitat too much. It can be ascribed to the WWF's persuasiveness that these organizations were won over. Here, the WWF brought about a frame reconnection between them and the other nature organizations, by affirming that the impact on nature would not be as grave as was predicted by the other nature organizations. This argument functioned as a strong categorization of the policy substance. By means of this frame reconnection, the WWF helped the inner circle policy actors to reduce the resistance against the project in civil society.

8.5.2.2 Frame-divergent framing mechanisms

Polarization. It was much more difficult for the province to convince the public works agency of the Sand Motor. The reframing that eventually occurred at the public works agency was triggered by one framing mechanism. The province polarized its frame with respect to the public works agency's frame, by insisting that the Sand Motor as a once-in-20-years nourishment was worth pursuing and that the location should be in the province. The public works agency initially maintained that they already had a functioning nourishment program in place and that there was no need to change the way they worked. Frame disconnection was not found in the case.

8.5.2.3 Non-interpretive interactions

Nevertheless, the other factor leading to the public works agency joining the project was not associated with framing between province and public works agency, but was hierarchical. As the public works agency is an agency of the ministry of infrastructure and environment, it takes orders from said ministry; this is a typical principal–agent situation. As previously mentioned, the ministry was very much in favor of the innovative character and eventually ordered the public works agency to cooperate with the province. This aspect was especially visible in the financing phase when the public works agency agreed to contribute a large share of the predicted costs. Having been overruled by its principal, the public works agency's heart was not in this agreement, because it had to contribute a part of its scarce funds to a project that it did not support in the proposed design (Vice president public works agency, personal communication, 30 October 2015; project employee public works agency, personal communication, 30 October, 2015). Once the top-down decision was made to execute the project according to the design proposed by the province, the public works agency began cooperating and carrying out the project as an obedient agent (Vice president public works agency, personal communication, 30 October 2015). Again, this top-down decision could not have been made, were it not for the national-level support of the project. The mechanism of frame polarization meant that the province stayed in charge of the framing power. The looming exacerbation of the frame conflict between the province and the public works agency was prevented by the ministerial intervention ordering the public works agency to carry out the project. Hence, the ministry was an important partner for the province to have and shows the necessity of forming an epistemic community.

8.5.3 …Reveal interpretive policy entrepreneuring

When looking at these framing activities, it becomes clear that the provincial governor and her civil servants took up the challenge that the initial frame constellation represented. Three of these five major reframings involving framing mechanisms that we found in the case are attributed to the province (Table 8.4). As the initiator of the project, the province was an active meaning-maker in the case, trying to build an epistemic community with the other actors. The observed reframings illuminate the development of meaning-making in this case study. They point toward a gradual opening up of most actors to the idea of nature development and Building with Nature throughout the case. However, it was due to the provincial governor's boldness and verve that this push and pull was decided in favor of the province. Early on, before the actual pilot project began, the provincial governor had been able to propose an innovative coastal project. Although she did not succeed and the weak spot was resolved with another technology, other actors at the time incorporated the idea of an innovative experiment in coastal management at the Zuid-Holland coast into their frames: the seed had been sown. During the project, the province could show persuasively that the policy content could indeed be labeled 'innovative' and that it was embedded in a broader story. Besides being about the infrastructural and protection potential for the province, this broader story emphasized the reputational effects of the pilot project for the Netherlands. The story was about the greater good. For these actors, the project meant an opportunity to realize multiple benefits, among which innovation was key. In telling this story, the province accommodated the objectives of other actors, including the ministry and the Innovation Platform into its own frame. As we have seen, the latter was just one of the venues at which the provincial alderwoman displayed her sensitivity for other actors'perspectives.

To leave a legacy, for a politician often involves leading the way into unknown terrain. Coupling the Building with Nature concept with the infrastructural problems she discerned in her province, brought this opportunity for the provincial governor. She already revealed her willingness to try something new during the weak spots project. However, at that time, she did not succeed in convincing other actors to incorporate or accommodate a novel

coastal management technology into their frame. In compensation, she negotiated that the province could experiment with the new technology later on. What we see here, is the, albeit not yet fruitful, willingness of the provincial governor to lead by example.

In two instances, the framing agency of the provincial governor and her civil servants was not enough to convince other actors. In these instances, institutional entry points were necessary. First, the project organization needed the institutional venue of the annual parliamentary infrastructural project pitches to set the national agenda. Second, although presumably influenced by the province's framing efforts toward the ministry, the ministry had to order the public works agency officially to stop protesting and execute the project. This is an example of the ministry exerting institutional power over the public works agency. Without these two institutional events, it would have been much more difficult for the province and its governor to meet its ambition. Here, our assumption is confirmed that not only framing and argumentation shape the outcome of the project. Sometimes, framing and arguing do not lead to frame coalitions including all relevant actors and other means have to be used.

Seen by many interviewees as the mastermind behind the pilot project, the provincial governor was the one who wanted to make it happen and to bequeath the Sand Motor to the next generations. Notwithstanding her failure to convince actors earlier on in the weak spots coastal management project, her way of defining problems and rallying actors in an epistemic community certainly gave a glimpse of her generic ability to sense and act upon other actors' perspectives. Her prominent position in the case, though not the inventor or designer, legitimates labeling her as an interpretive policy entrepreneur. The interpretation of other actors' frames and responding to them by framing mechanisms were her main forging tool. Hence, we argue that the provincial governor can be characterized as such an interpretive policy entrepreneur who succeeded in building an epistemic community around the innovative coastal defense technology of the Sand Motor.

8.6 Discussion and conclusions

In this article, we explore meaning-making and policy entrepreneurship in a coastal policy project. The 'Sand Motor' coastal

management project presents an opportunity to understand the development of meaning and meaning interactions where the policy substance is innovative. We illustrate how the provincial governor can be seen as an interpretive policy entrepreneur. This is based on the accounts we obtained from participants in the policy process, triggering our deeper engagement with the provincial governor and her civil servants' meaning-making activities. Our analysis indicates the importance of framing mechanisms and the presence of an interpretive policy entrepreneur for successful implementation of an innovative coastal protection technology.

Although Kingdon intended to add an agency dimension to his three streams by including the policy entrepreneur, his coupling mechanism remained a black box. In opening this black box, interactional framing mechanisms enabled us to trace Kingdon's policy entrepreneur in practice. Instead of studying the interaction of a policy entrepreneur with some stream, interactional framing mechanisms guide the focus of study to the meaning-making interactions between potential interpretive policy entrepreneurs and other actors. As such, the five processes of framing interaction have been introduced as a heuristic tool to uncover whether it is possible to rightfully speak of the presence of an interpretive policy entrepreneur. From the overview of framing interactions in Table 4, we are able to reason back to the characteristics of interpretive policy entrepreneurs, given that successful meaning-making is one way to uncover these latent characteristics. If there is an actor who is successful in meaning-making interactions with others, that actor must make good sense of the meaning other actors attribute to the policy situation, because for the interactions to be successful.

In addition, by introducing the interpretive dimension of policy entrepreneuring, we were able to structure the four characteristics of policy entrepreneurs hierarchically (Figure 8.3). It shows that at the base of policy change lies understanding others' positions in the policy arena. Seen in this way, sense-making is a necessary condition for successful policy entrepreneuring through framing. Thus, illustrating the interpretive side of policy entrepreneurs contributes to the conceptual development and elaboration of multiple streams theory and expands its applicability into the interpretive, meaning-oriented realm.

Besides speaking to the policy change literature in mainstream public administration, the conceptual construction of the

interpretive policy entrepreneur also contributes to the interpretive policy analysis field. Looking back, the constitution of the frame concept by Goffman reflects the 'what?' of an individual's perception of the world (Goffman 1974/1986). Recently, interpretive framing research has emphasized the processual component of the more active 'framing' – 'how?' are frames made and changed individually as well as in interaction. Finally, the interpretive policy entrepreneur takes this a step further and adds a third to these two conceptual developments, reflecting on 'who?' is doing the framing based on their own frame and in reaction to others' frames. In this way, the interpretive policy entrepreneur extends the dynamics in interpretive framing research. In addition, by integrating a well-known policy change concept, the interpretive policy entrepreneur concept bears the potential to increase the visibility of the interpretive policy analysis field in mainstream public administration and policy sciences.

The findings we present do not only cross the borders between subfields of the policy sciences and public administration but are also relevant beyond the practice of the coastal policy domain. In line with Gadamer's idea of interpretation as a generic everyday-life process, the analysis can also be used in other policy domains (Gadamer 2010). The interpretive policy entrepreneur processes we have described here are not limited to the coastal policy domain and will also reveal interpretive policy entrepreneurs in other policy domains. Hence, we argue that the provincial governor's story, and its theoretical implications, as presented here are useful for practitioners in all policy domains. Practitioners may learn from the way in which the interpretive policy entrepreneur used framing mechanisms to deal with the various problem definitions and preferred policy solutions among other actors on all policy levels and organizations. For policy practitioners aspiring to become an interpretive policy entrepreneur, framing interaction mechanisms are a means of process management which, if employed sensibly, may increase the possibility of policy change in a desirable direction.

The theoretical and practical implications of the interpretive policy entrepreneur concept lead us to two aspects that deserve attention in future research. First, the relationship between taking risks and meaning-making are not as strong as those between defining problems in terms of others and sense-making. Although

we have explained taking risks as an expression of understanding other policy actors' positions, exactly how the relationship between understanding and estimating the acceptable level of risk to be taken needs more exploration. Finally, in our hierarchical conceptualization of interpretive policy characteristics, an epistemic community is the final stage of policy entrepreneuring. This need not be the final stage at all, though. As such, it is still unclear as to what happens in case of failing policy entrepreneuring. We suggest several alternative outcomes, but rooting these conceptual ideas in empirical cases represents another alley of future research.

COMPARING EMPIRICAL SETTINGS

9.1 Introduction

The three projects discussed in this dissertation (Chapters 6-8) bear witness to the search for innovative coastal management practices that may support the challenge posed by coastal squeeze, i.e. natural and socio-economic pressures from seaside and landside, in the course of the 21st century. All projects came into existence in a period of time when new insights in the current as well as projected future hydrodynamics of the sea urged coastal managers to adopt a pro-active stance and secure Dutch coastal areas for the next 50 years – a process, which is commonly known in Dutch coastal management policy as fixing the Weak Links in the coast (Bestuurlijk Overleg Kust 2003). This metaphor of Weak Links and the potential consequences it foreshadows is in itself already a signpost for the importance of finding a way to avoid large-scale damage to livelihoods. Note, that for the Netherlands, the country priding itself with having reclaimed from the waves the very soil its population lives on (pathos intended), retreat to higher ground is just not an option. Unlike other European countries with a much less emotive relationship with their coast, the Dutch hold their coast and the cultural history of its coastal areas dear. Only imagine having to surrender places of Dutch – and European – history, such as The Hague or Amsterdam, to the floods when seeking higher ground in the East. The necessity and urgency portrayed in these reflections is embedded in the use of the Weak Links metaphor. Hence, experimenting with new solutions for Dutch coastal managers is not only a matter of economic gain, but also a matter of safeguarding its socio-cultural heritage.

For a structured comparison of the three projects, they are contrasted with respect to the conceptual work they do. The original analyses that resulted in Chapters 6-8 are expanded to the other projects, based on the information provided in the empirical chapters (see Chapter 5). This comparative chapter is structured according to Figure 9.1. This figure shows the frame and framing concepts that are the foundation of this dissertation. The elements relate to a specific part of the framing literature, e.g. the interactional or cognitive streams of framing literature. In addition, the boxes show which elements of the model return in which chapter. For instance, the chapter on the Sand Motor project deals with the framing performer properties in relationship with the

framing activity properties those performers use. In contrast, the Hondsbossche Duinen project relates to frames, the meta-properties of those frames as well as the effects of the framing moves. In the Houtribdijk pilot, the framing foci, framing performer properties and framing effects come back. The conceptual elements serve as stepping stones for the comparison. Before I come to the framing aspects uncovered in the research, I display general characteristics of the cases. Then, I focus on the non-interpretive public administration categories, which played minor roles in the projects, but are nonetheless worth mentioning. Afterwards, this chapter proceeds with the comparison in light of the framing-theoretical concepts employed throughout this dissertation.

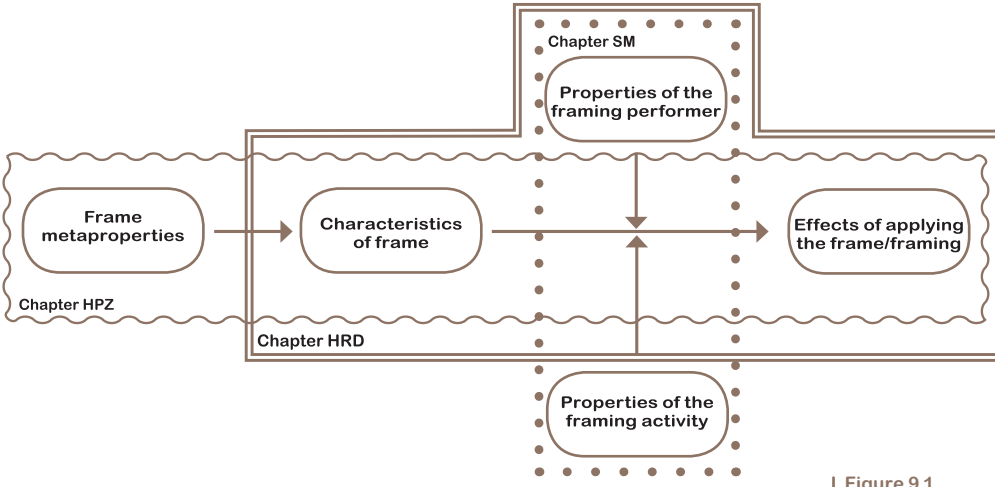


Figure 9.1 Frame and framing concepts, their relationship and how they figure in the empirical chapters of this dissertation.

9.2 Synopsis

This synopsis will present the contextual differences and similarities of the Sand Motor, Pilot Houtribdijk and Hondsbossche Duinen projects. Several of their characteristics are inevitably diverging, since they are related to the institutional and geographic contextuality of the projects (Table 9.1). An overview of cases should begin with general information about the cases. I begin with a timeline of important events of the three coastal management projects. A discussion of project characteristics follows, including the project type, which actor initiated the project, from which sources funding was secured, what the expectations

and objectives were, how the location was selected and what the focus and duration of the post-construction monitoring was.

Table 9.1 Case characteristics in comparative view.

	Sand Motor	Hondsbossche Duinen	Pilot Houtribdijk
Location	South-Holland North Sea coast	North-Holland North Sea coast	IJsselmeer
Initiator	Province South-Holland	Ministry of Transport & Public Works	Arcadis consultancy
Project type	Experiment	Application	Experiment
Amount of sand[a]	21	30	0.13
Project objectives	• Coastal protection • Recreation potential • Nature development • Learning	• Coastal protection • Landscape quality • 'Double objective'	• Flood protection • Reducing uncertainties
Preparation period	2006-2011	2004-2013	2013-2014
Construction	2011	2013-2015	2014
Monitoring until	2021	2065	2018
Total costs[b]	70	140	4.4
Costs per m³ sand[c]	3,33	4,66	33,85
National funds[b]	58,1	140	3,7
Sub-national funds[b]	11,9	0	0
Private funds[b]	0	0	16

a. in million m³.
b. in million €.
c. in €/m³.

9.2.1 Timeline

A temporal classification of the case studies gives us an initial perspective on how important events are related. Figure 9.2 shows a timeline of the three projects. It becomes quite clear, visibly, that the lifetime of the experimental cases is much shorter than of the non-experimental project. The Pilot Houtribdijk as the smallest project in sand volume and funding also has the shortest lifetime.

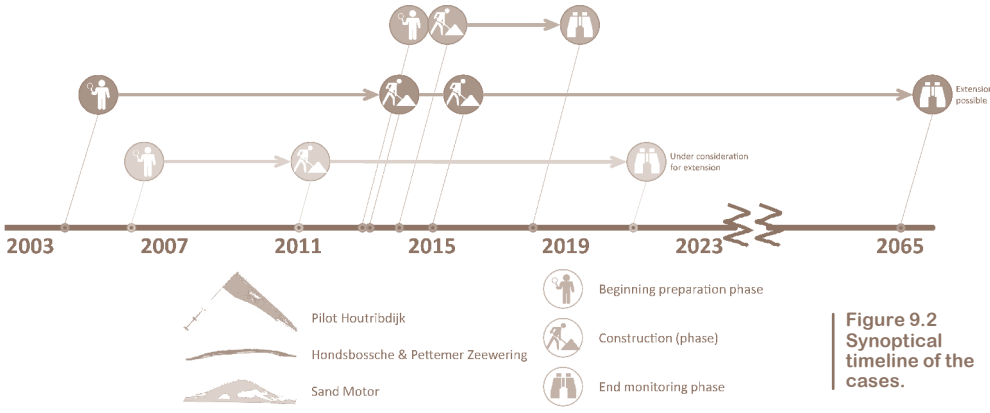


Figure 9.2 Synoptical timeline of the cases.

It amounts to approximately one year of preparation, less than a year of construction time and a monitoring time up to 2018, carried out by the initiating consultancy. As the second experimental case with a much higher sand volume and funding, the Sand Motor project has the second longest lifetime. Built in the summer season of 2011, it took about five years to prepare, and was supposed to be monitored for ten years thereafter. Halfway through those ten years in 2016, tables turned. Projections at the time suggested that contrary to earlier expectations, the Sand Motor's sand would need more than ten years to disperse. Voices rose advocating the extension of the monitoring span of the Sand Motor to see the experimental development through until the system has once again settled into a more or less balanced state. Hondsbossche Duinen is the longest case in this research. Not only did it take longest to prepare (approximately nine years), it was also the most elaborate construction (nearly two years) and has the longest monitoring period (thirty-five years from now), due to its non-experimental character.

9.2.2 Project type

The type of project – whether experimental or not – made a difference in several respects. The non-experimental project Hondsbossche Duinen was bound to legal frameworks more closely, while the experimental projects Sand Motor and Pilot Houtribdijk had more leeway to do things differently in terms of process and solution design. By the way, its non-experimen-

44 In 2010, this ministry was merged with the Ministry of Housing, Spatial Planning & Environment to form the Ministry of Infrastructure & Environment.

tal character did not preclude the introduction of innovative elements such as a little-used tender in the process (section 6.5.3.1 and Appendix VII). As Chapter 8 revealed, in the Sand Motor case the "experiment" was put to rhetorical use and increased the viability of the project, because the project would not have been accepted in the genuine coastal protection context, so long as its coastal protection performance was unknown. This was different with Pilot Houtribdijk, though. Here, the title of "experiment" did not receive additional meaningfulness other than the plain categorization of project it represents. The Hondsbossche Duinen case is a non-experimental application of a sandy coastal management solution. The status of experiment versus non-experimental application has a number of consequences.

9.2.3 Initiator

Coastal management primarily being a governmental task, the initiator of non-experimental coastal management projects is usually a governmental body. For example, at the time, the Ministry of Transport & Public Works[44] charged with the task to monitor the Dutch coastal protection system found the previously mentioned Weak Links and called the affected provincial government into action to come up with a joint plan. This plan to involve played out differently, depending on the provincial government, though. In South-Holland, the provincial government was hailed as an exemplary project manager for the Weak Links projects. The provincial government in North-Holland on the other hand, quickly delegated its project management task to the water board to prevent political damage, once its proposal was turned down. The Sand Motor experiment and the Pilot Houtribdijk were not part of the Weak Links framework program. There is a connection between the Weak Links project in South-Holland and the Sand Motor, though. The Sand Motor was introduced by the provincial government of South-Holland as a follow-up to its Weak Links projects (for more detail see Appendix IX). However, the provincial government picked up an idea that was already buzzing around in the epistemic community of coastal management for some time. At the Houtribdijk, a well-known Dutch environmental consultancy initiated the project, as a member of a cross-sectoral consortium.

9.2.4 Funding

Funding for the two types of projects came from different sources. Usually, for non-experimental coastal management projects funding comes from the budget of the dedicated public works agency department. However, if the Weak Links framework program would have been financed from the annual public works agency budget reserved for coastal management, it would have sucked up too large a share of those funds. It would have rendered the public works agency unable to carry out necessary maintenance and reinforcement of coastal areas which were not assigned to the Weak Links. Because of this, the national government had made available approximately €750 million for the Weak Links, from which the Hondsbossche Duinen case was funded, too. Surprisingly, the Hondsbossche Duinen project succeeded to remain far below the maximum allocated funds from the Weak Links budget. While this budget allowed for a maximum of €240 million, the project tender was capped at €170 million and the final funds spent were €140 million – approximately 42% below the allocated maximum. So, the way in which the Hondsbossche Duinen project management dealt with these funds was a noteworthy achievement. This is opposed to the situation in other large-scale public infrastructure projects, which often exceed budgets due to unforeseen circumstances.

In the experimental cases, financing structures were more complex. This can be traced to the diversity of different innovation funds which coastal management projects can make use of. In addition, private actors may also contribute in public-private-partnership contract constructions (Figure 9.3). The financial construction in the Sand Motor project involved funds from a national law to boost the economy during the economic crisis after 2008, as well as a considerable amount of funding from the province of South-Holland. This construction amounted to approximately €70 million with a very low cost per m^3 sand applied to the coast, i.e. €3,33 (Figure 9.4). In part, the low cost per m^3 sand is due to the fact that the contractor's nourishment fleet was already in the area for a different large-scale project. Therefore, fleet mobilization costs, which are fixed costs, could be kept low. For the Pilot Houtribdijk, the initiating consultancy was able to secure a large share from a national innovation fund, but

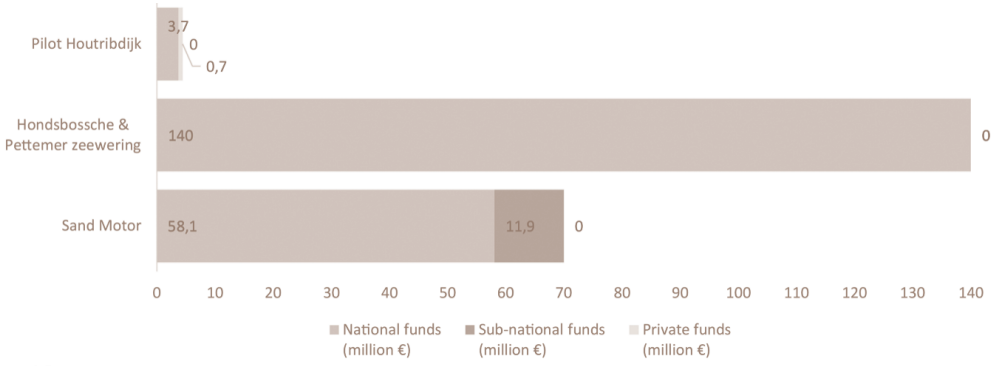


Figure 9.3
Distribution of project funds per source (€).

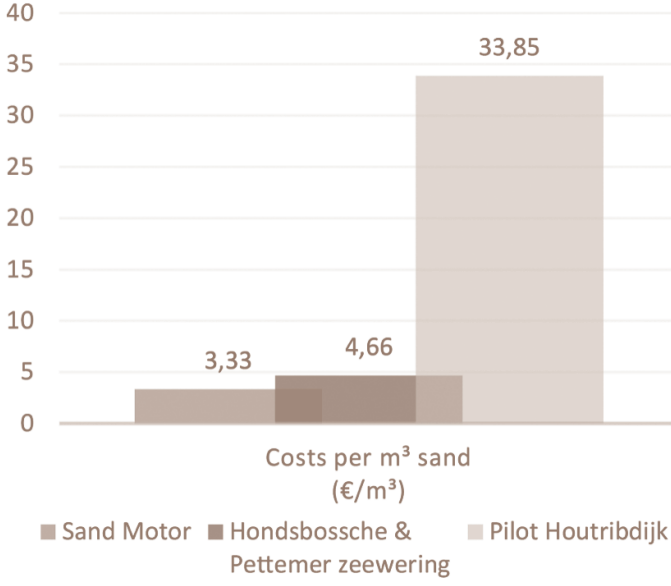


Figure 9.4
Project costs per m³ sand (€/m³; own calculation).

also contributed a small share itself as part of a consortium, totaling €4,4 million. Compared to the other two projects, the cost per m³ sand of €33,85 was very high (Figure 9.4).

The total project costs as well as the costs per m³ sand, which can be used as a measure of cost-efficiency per m³ sand, reflect the intended scale of the projects. The Houtribdijk pilot case was a small-scale experiment. Probably, its experimental character and the small amount of sand justified the low cost-efficiency of the project as compared to the other two projects (€/m³ sand). For the Sand Motor, this does not hold. Although it is an experimental project as well, it was possible to utilize economies of scale and synergies with other projects to achieve a high cost-efficiency

through a low cost per m^3 sand. On the other hand, this is in line with the overarching objective of the Sand Motor project to maximize multi-functionality. Cost-efficiency in the Hondsbossche Duinen case comes close to the Sand Motor case.

9.2.5 Expectations and objectives

Expectations towards and objectives for coastal management projects determine their degree of success. They shape and orient the standards to which projects' outcomes will be compared. In the three cases studied here, the standards to which the project outcomes are compared are closely linked to the material that was used: sand. Sand is widely seen as a material that holds potential for more functions than coastal protection only, much more so than materials used in hard engineering coastal management solutions (Chapter 3). Hence, the projects are intended to reach goals in the area of recreation, economic and nature development, too. Of course, while all three cases necessarily strive for coastal protection, expectations towards experimental and non-experimental projects vary. On the one hand, non-experimental projects are designed to meet pre-defined expectations, in line with its objectives. Often, these pre-defined expectations are formulated in terms of 'hard' objectives, such as protection indicators. This approach calls for coastal management solutions which are broadly explored and which have proven themselves to deliver a certain protection performance. That means, that although the Sand Motor was the only mega-nourishment scheme implemented at the time and even though it was an experiment still in its evaluation phase, the large-scale use of sand in the Hondsbossche Duinen had to live up to coastal performance expectations already. Nonetheless, in this case, the idea of multiple objectives was enshrined in the concept of the 'double objective', which comprised coastal protection as well as spatial quality. On the other hand, experiments such as the Sand Motor and the Pilot Houtribdijk elicit a much wider range of expectations, because they were purposefully intended to explore the coastal protection performance of sand as a construction material (cf. Chapter 3). An objective of the Pilot Houtribdijk was to show that sand could also be used in less dynamic ecosystems, i.e. inland lakes, with a similar protection effect. In the small circle of policy actors

participating in the Pilot Houtribdijk, governmental actors took a wait-and-see attitude as opposed to the initiating consultancy, which had high expectations of the new solution involving sand and planting on an inland seawall. As regards the Sand Motor, advocates with a very open and positive view towards the project's objectives stood at one end of the range of expectations. The other end of the range of expectations was occupied by actors who were skeptical about the functioning of the experimental solution as well as the necessity to spend large sums on this project. Both experiments were also intended to achieve learning, research and general knowledge development, in other words reducing existing uncertainties about sandy coastal management solutions and seeing them applied in different environments. Again, the experimental character of the Sand Motor and Pilot Houtribdijk explains the difference in objectives between the two and the Hondsbossche Duinen project.

9.2.6 Site selection

The degree to which a project is tied to a specific location is also dependent on whether it is non-experimental or experimental. Non-experimental coastal management projects are carried out at locations where there is high urgency to make the coast safe from flooding. The Weak Links are an example for this. In this framework project, ten spots along the Dutch North Sea coast had to be fortified by 2015 to protect the country at least until 2065, taking into account climate change projections. The North-Holland coast where the Hondsbossche Duinen project is located was one of those spots.

For experiments on the other hand, there are at least two reasons why they are carried out at locations that are safe at the time of construction. First, coastal managers cannot afford to carry out an experimental coastal management project at an unsafe location. If the safety performance of that solution is insufficiently known and it fails to meet the expectations, coastal managers jeopardize the hinterland population. Second, the ideal experiment takes places in a completely controlled situation. As an intervention, the experimenter would only tweak one variable to see what its effect is on the studied phenomenon. However, the coastal area is a complex, feedback-loop-rich system, in which it is impossible

to control all factors, if any. A 'full-scale experiment in a natural environment' such as the Sand Motor is, therefore, somewhat of an oxymoron. To come as close to an experiment as possible, it was thought that the Sand Motor – as the intervention – had to be located at a coastal stretch that was already safe (cf. Morphologist project group Sand Motor, personal communication, 29-10-2015). Starting from a safe coastal stretch as a kind of baseline, every addition to the safety level of the coast after the intervention could be attributed to the Sand Motor. Indeed, it would also be possible to measure the safety level addition to a coastal stretch that was not yet safe. But coastal managers would run the previously-mentioned risk of having to apply an additional solution once it turns out that the experimental solution is inadequate. The debate in the Sand Motor case between the provincial government of South-Holland and the public works agency was precisely about this. On the one hand, the public works agency argued for locating the project at a coastal stretch that needed reinforcement anyhow. It feared unnecessary overinvestment at one location when they had limited budgets for those locations most in need of reinforcement. This view was opposed by the provincial government of South-Holland which saw the Sand Motor as a solution to more policy problems than the coastal safety. Besides the prestige that was expected to come with such an innovative project, the provincial government wanted to mitigate its spatial problems and give the regional economy a boost.

Both the Sand Motor case and the Hondsbossche Duinen case are located at the Dutch North Sea coast. Although the former is situated at the coast of the province of South-Holland, while the latter lies at the coast of the province of North-Holland. There is no general difference between the types of coast in these provinces, both being part of the sandy North Sea. Spatially, these two coastal stretches differed, though. The South-Holland coast features dune areas protecting the hinterland, whereas the Hondsbossche Duinen itself is a more than century-old sea wall. This geographical peculiarity also shapes the selection of coastal management solutions that may be used. The difference in location also matters for the way in which projects are realized institutionally as Dutch provinces deal with spatial issues differently[45]. Pilot Houtribdijk is somewhat of an odd man out. It is completely surrounded by water and connects the province

45 "Well, it is the general process of all those Weak Links, South-Holland has done that very well. They understood immediately. You should read the process evaluation report, you'll see that North-Holland did very badly." (Policy advisor Ministry of Infrastructure & Environment, 18-08-2014)

of Flevoland with North-Holland. It cuts through the IJsselmeer, the large inland lake of the Netherlands. This location subjects any coastal management solution to a completely different set of climatic and geomorphological conditions. Nonetheless, this latter case is an example of innovative developments with regard to coastal management in the Netherlands.

46 These research projects feature numerous PhD and Postdoc positions in a diverse set of academic fields, of which the present dissertation is a result, too.

9.2.7 Monitoring

Checking the effect of a policy is a crucial part of its evaluation. To be able to judge the success of a policy, its objectives have to be compared to its outcomes and this process needs a monitoring system to base the comparison on. As a monitoring system needs to deliver data that say something meaningful about project objectives, they mirror the purpose of the projects, experimental or not. Besides the type of data which the monitoring system delivers, the time period for which it is in place is also important for meaningful conclusion about performance. At the Hondsbossche Duinen monitoring is continuous, because the coast needs to be safe constantly far into the 21st century. Nevertheless, indicators monitored there will probably pertain to what is necessary for judging coastal protection. In both experimental cases, this is different. In the experimental cases, a broader spectrum of system characteristics is kept track of. For example, the Sand Motor is subject to several structural research projects[46] in addition to the intensified monitoring by the public works agency as compared to non-experimental coastal protection projects. The Pilot project at the Houtribdijk is monitored mainly by the initiating consultancy to increase their knowledge for future projects. Hence, in the monitoring of these three projects, we see three different approaches. First, at the Hondsbossche Duinen, those characteristics necessary for coastal protection are measured. Second, at the Houtribdijk, a broader set of indicators pertaining to hydrodynamics, geomorphology and ecology are tracked. Third, at the Sand Motor, those indicators are used to develop scientific knowledge.

9.3 Non-interpretive comparison

The three projects display differences with regard to common categories in public administration and political sciences theories.

Although these are acknowledged categories, they cannot serve as rival theories for the research in this dissertation. They are too eclectic and this research barely scrapes the surface of these topics, which is why the following comments have the form of general reflections. Five categories will be dealt with. First, non-interpretive structural support is touched upon, which describes the availability of political and financial resources in the projects. Second, I discuss participation, a familiar topic in relation to the consensualist decision-making tradition in the Netherlands (Kickert 2003, 139). Third, the relation between the more informal forms of framing and the more formal forms of top-down steering are explored. I briefly dwell on the level of governmental risk and its importance for the projects. This section ends with a look at the interactions between the scientific and the political sphere, i.e. the science-policy interface.

9.3.1 Non-interpretive structural support

Besides various ways of meaning-making, a certain availability of political and financial resources is necessary for policy-relevant actors to realize projects. Here, I define political resources in two ways. For one, approval for a certain course of action from higher levels of decision-making as well as authorization to carry out activities leading to a shared prospective outcome are a political resource. In addition, diversity and effectiveness of policy instruments at policy-relevant actors' disposal increase their political resources. Financial resources are seen as access to either previously assigned budgets or as potentially reassignable budgets to the purpose of a desired project. A temporal link exists between the availability of resources and meaning-making. Political and financial resources can be available, before the conception of a project, because it fits with higher-level policies or discourses. In this project, policy-relevant actors are less urged to draw on their meaning-making capacities. At least, it will not be necessary to make meaning as intensively towards all other relevant actors. It may not always be possible to trace back the reason for the availability of resources, if they were accessible from the start. If, however, policy-relevant actors see their access to political and financial resources denied, they will have to engage in meaning-making towards owners of desired resources to grant access.

From the start, the level of structural support in terms of political resources in the Sand Motor project was high. The national government level and parts of the public works agency were open to experimentation with new solutions and there was already a general inclination towards innovation in the Dutch economy. Besides, the Building with Nature concept was already being promoted for a while and was trickling down into infrastructure and nature organizations in the Netherlands. In addition, it was acceptable for the provincial government of South-Holland to lead a coastal protection project, because it had previously realized a large-scale coastal protection project within the Weak Links program (cf. Chapters 6 & 8). Remarkably, as a national interest, protection of so-called primary coastal infrastructure is usually the responsibility of the national public works agency. Provincial governments are usually responsible for provincial infrastructure. So, the project was not urgent and an initiative of an actor who was not responsible for coastal protection. The level of political resources is not matched by financial resources, though. No funds were reserved at the national level. Neither did the political support from the national level directly result in making those funds available. The project organization had to draw on an economic recovery fund. Until the end, the public works agency did not want to release funds from its budget, because of the project's low urgency, given the tight budget it already had available for protecting the rest of the Dutch coast. The Sand Motor may be seen as an example of the interaction between meaning-making and structural support. The more effort the provincial government spent to frame the project and to increase the epistemic community behind the Sand Motor (see below), the more the political resources available at different levels grew.

The Sand Motor situation is comparable to the Hondsbossche Duinen project. North-Holland's provincial government was already given the task to reinforce its Weak Links by the ministry of Transport and Public Works in 2004. Unfortunately for the provincial government, it had lost part of its political resources in the first period of the project, when it avoided a broad policy process. However, once the project management was transferred to the water board, the political resources could be tapped into again, because the water board included much more actors in the decision-making. This more participatory approach was much

more in the line of what the ministry expected. In this project, the available financial resources were clear from the start, as there was a specific amount earmarked for the project.
The Houtribdijk pilot is rather different with respect to structural support. While the idea for experimenting originated at the public works agency, the project was eventually initiated by a private consultancy. Due to its size and location, the project was inconspicuous for most actors. However, in spite of the national discourse of acceptance and curiosity towards experimentation with new coastal protection methods, which was partly responsible for enabling the Sand Motor project, this project flew under the radar. The involved parts of the public works agency were not openly supportive to the project. The project management team was originally supposed to be composed of employees from both the consultancy and the public works agency. But due to inability or unwillingness to contribute workforce on the part of the public works agency, the establishment of the project management team went slowly. Financial resources for the Houtribdijk pilot came from a national flood protection funding program, which the consultancy had to apply for.

This overview of structural support in the three projects shows that pre-existence of structural support is not critical for successful project realization. The support may intentionally be stimulated through meaning-making as in the Sand Motor project, but it may also not be stimulated at all – see the Houtribdijk pilot. The overview also allows for considerations about political authorization of projects. The national government officially gave its blessing for the Sand Motor and Hondsbossche Duinen projects. While these two were perceived as prestigious projects for the export value of Dutch economy as well as future-proofing the Netherlands, the Houtribdijk pilot was but one of many smaller ones. Actually, the Houtribdijk pilot developed as an initiative by a group of actors at the time when nature-based solutions were decided against in the adjacent, larger reinforcement project for the Houtribdijk (Chapter 7). With this in mind, the Houtribdijk pilot can be seen as an actor group's attempt to secure support for a type of coastal management solution that was cut off support in the larger project. Nonetheless, all three projects show that in the Netherlands many types of actors have access to political and financial resources to realize policies that were formerly seen as

exclusively governmental business. This ties in to the adage sometimes heard at Dutch governmental institutions of the necessity to utilize market expertise for governmental tasks.

9.3.2 Stakeholder participation

Stakeholder participation, here, covers the diversity and number of actors invited to participate in the decision-making process. Choices for the extent of stakeholder participation reflect policies and preferences of policy-relevant actors. The Sand Motor project was conceived as an open and inclusive process. From the start, a multi-organizational steering group comprised representatives from the provincial government, municipal governments, nature organizations and consultancies. This group supervised the process. In a project management group which was dominated by provincial government employees, also coastal management experts from outside the provincial government took a seat. During the process, information evenings were organized for the population at the planned location. The project organization put extensive effort in interacting with other governmental actors to line them up for the project. Similar procedures were chosen with the Hondsbossche Duinen, but omitting the steering group. Whereas the process was rather exclusive and narrow when the provincial government of North-Holland led the project, this changed drastically when the water board took over project management. This culminated in inviting NGO's, civil society organizations and private actors to the table during the tender process for constructing the list of requirements. In the Houtribdijk pilot, participation was deliberately low. The initiating actor was not interested in procedures that could delay the realization and no such requirements were set by the permit giver. Based on the experiences in the larger Houtribdijk reinforcement project, the Houtribdijk pilot location in the middle of an inland lake with but few stakeholders may have been chosen to decrease the probabilities of delay due to participation (Appendix VIII).

9.3.3 Top-down steering

Framing is a process of making sense of our environment, structuring that sense, constructing logical stories from those struc-

tures and, finally, communicating these stories to others. It is a process that can lead to policy action through convergence on the nature of the problem at hand and suitable solutions to this problem. In this understanding, power is implicit. Power is much more explicit in top-down implementation, which remains a common instrument in policy processes. By 'top-down steering' I mean mechanisms enabling higher policy-making levels to make lower levels implement some policy. Such processes reveal hierarchical power of higher policy-making levels. The three projects differ in the way in which framing and top-down steering play a role. Framing can be the main process with which actors interact with each other coming to a shared policy solution. However, top-down steering processes may play a bigger role in projects in which framing does not bring actors to consensus and policy levels are divided in their framing. Framing will be discussed in detail below, so, here, I focus on the top-down steering aspect only.

Judging from how often it was used, top-down steering was not a dominant mechanism in the Sand Motor project. As we shall see below, meaning-making through framing was a more dominant mechanism in this project. However, one crucial conflict in the Sand Motor process was solved by top-down steering by the Ministry of Infrastructure and Environment. The provincial government of South-Holland and the public works agency were unable to reach agreement on the location of the Sand Motor. As the project initiator, the provincial government wanted the Sand Motor to be located at its own coast, so that the new coastal protection solution would deliver its services there. The public works agency, on the other hand, was concerned about spending tax money for a coastal protection project at a location which was already officially safe. There were other spots along the coast better suited for investment in coastal protection. In other words, the public works agency feared overinvestment. This conflict was not solved by re-framing on either of the actors' parts. Rather, as principal, the Ministry of Infrastructure and Environment ordered the public works agency to cooperate and realize the Sand Motor project in the province South-Holland. If it had not been dismissed in this way, the situation could have ended in a stalemate with the project being delayed or eventually stopped. This project reveals the limits of meaning-making mechanisms in political decision-making processes in Dutch coastal management.

In the Hondsbossche Duinen project, top-down steering was relevant for the success of the project. In several instances, the Ministry of Infrastructure and Environment intervened in a top-down manner to keep the project on track. The 2006 ministerial decision to turn down the provincial government's project proposal was one instance of top-down steering. It reflected the ministry's disagreement with the type of solution and its excessive costs. Later on, the ministry approved the solution proposed by the water board, agreeing with the type of solution and welcoming the limited budget. All project proposals were evaluated for the ministry by the public works agency. As part of the Weak Links framework program, the Hondsbossche Duinen project was sure of special governmental attention, because it was not an experiment and important for the protection of the Dutch population and economy. Other than in the Sand Motor project, the funding for the Hondsbossche Duinen did not come from a general fund for economic recovery, allowing for innovative projects. In the Hondsbossche Duinen project, funding came from the Weak Links framework program whose objective was to guarantee the protection of the Dutch coast. The urgency and relevance of this project was, thus, much higher, than that of the Sand Motor project.

Things are different in the Houtribdijk pilot. No instances of top-down steering were found. In this project, the initiating consultancy followed formal procedures to apply for the construction of a coastal protection experiment. In the end, the consultancy met the necessary requirements to realize its plan.

Top-down steering plays a role in Dutch coastal management, but it depends on the type and scale of the proposed project. Higher decision-making levels grant experimental projects more freedom to explore the performance of innovative solutions. In the non-experimental coastal management project studied here, the Ministry of Infrastructure and Environment, which is responsible for this policy field, kept close track of the developments either by itself or through its executive organization, the public works agency.

9.3.4 Governmental risk acceptance

A major task of governmental institutions is to choose a desirable course of action among different alternatives (Hajer and Laws 2008, 252). That choice is based on a classification of the

situation at hand and the politically desired alternative state. In making these choices, policy-makers have to deal with risk and uncertainty wafting around possible alternatives. Perman et al. (2011, 456) explain that these two concepts differ in the way in which the consequences of possible policies may be described as well as the probabilities that are assigned to those policies. 'Risk', then, is characterized by the possibility to list all possible consequences and assign probabilities to all consequences. On the other hand, for policies to be characterized by 'uncertainty', their consequences need to be known, while the probabilities of those consequences are unknown. Furthermore, 'radical uncertainty' is a situation in which not all consequences of policies are known. The challenge for policy-makers, then is to navigate the ambiguity of policies. In some projects, policy-makers may be "pulling in the direction of clarity and the reduction of complexity", while in others they may try "illuminating precisely that which we do not fully understand" (Hajer and Laws 2008, 252). These dynamics are also visible in the three projects discussed here and are especially relevant with regards to the comparison of experimental and non-experimental projects.

In the project of the Sand Motor, there was a general embrace of the uncertainties surrounding sandy coastal protection solutions (section 8.5.1). Although much was already known about the consequences of sand nourishments in general, the planned size and form of the Sand Motor were unprecedented. Questions revolved around the effects of upscaling size and number of functions as compared to smaller-scale sand nourishment schemes. The national policy level embraced uncertainty, where the Ministry of Infrastructure and Environment and a national Innovation Platform led by the then-Prime-Minister Jan-Peter Balkenende were curious about innovations able to jump-start the Dutch economy. Similarly, the provincial government of South-Holland had proposed the project to explore the uncertainties surrounding Sand Motors. It aimed at gaining prestige as a risk taker (section 9.4.3) as well as increasing the spatial quality and economic attractiveness of the province. The public works agency also wanted to study the uncertainties revolving around mega-nourishment schemes and their potential economies of scale for future coastal management. However, opposing the location of the Sand Motor, they saw the risk of investing a considerable amount of national

funds into a project that would not actually reinforce an unsafe spot. From the public works agency's perspective, these funds could be used otherwise to support coastal protection where it was most needed. At the lowest policy level, municipalities were curious as to what the project could bring them. At the same time, they requested all negative effects should be taken care of by the provincial government being the initiator. Municipalities were unwilling to be held responsible financially. Although different actors' concerns were taken into account, it turned out that groundwater risks and subsequent threats to drinking water quality had been overlooked in the process. Fortunately for the success of the project, this could be dealt with. In the Sand Motor project, overall risks and uncertainties were dealt with diligently, but the project was also intended to uncover threats that were not yet known. So, it was expected that other problems could emerge along the way. Being an experiment also reduced the pressure for the Sand Motor project to minimize risks and problems.

The Hondsbossche Duinen would not have been realized with a mega-nourishment scheme, if the public works agency and Ministry of Infrastructure and Environment had not drawn the attention to a risk early on in the process that was inherent to the proposal of the provincial government of North-Holland. The first proposal in 2006 contained the high probability risk of destroying a part of the village behind the pre-existent seawall with the political damage to the provincial government by potentially outraged population. After the water board had taken charge of the project, it was open to consider other coastal protection options with different risk profiles, such as mega-nourishment schemes. The Hondsbossche Duinen project developed parallel to the Sand Motor, so there is a possibility that the two projects cross-pollinated. Especially, as the Sand Motor was realized in 2011 – four years prior to the Hondsbossche Duinen –, this might have removed some of policy-makers' doubts in the Hondsbossche Duinen project. In the end, the evaluation of the water board's proposal welcomed the choice for a new method. Nonetheless, the national policy level and the public works agency had a more active role with regard to risk monitoring in this project, probably because it concerned a non-experimental coastal protection project. It was important for the ministry to minimize the risks and uncertainty for the population inland.

Risks and uncertainty played a minor role in the Houtribdijk pilot. The project involved a very small sand nourishment experiment supposed to determine some of the unknowns of this method in inland lake dynamics. The initiating consultancy was aware of the uncertainties surrounding the method and wanted to reduce them by experimenting. Parts of the public works agency applauded the efforts. But the operational manager of the seawall – also from the public works agency – at which the experiment was planned saw quite some risks of sand nuisance on the road and tourists attempting to relax on the new stretch of beach illegally.

Governmental risk perception plays out differently in the three observed projects. The first difference comes from the status of the projects as experiments or non-experiments. This status determines, whether governmental actors allow the projects freedom to deal with risks and explore uncertainties or whether they restrict projects to minimize potential risks and avoid uncertainties. The former happened in the experimental Sand Motor and Houtribdijk pilots and the latter at the Hondsbossche Duinen. It can be speculated, whether scale may play a role. At smaller scale and smaller overall impact, governments may also allow more freedom, but in order to comment on this substantially, a smaller non-experimental project would need to be included in the comparison. Finally, it is possible that there is a temporal connection between the Sand Motor process and the Hondsbossche Duinen process, when it comes to the acceptability of the projects.

9.3.5 Science-policy interface

Often, policy-makers try to support choices for a specific course of action with scientific knowledge. Given that mega-nourishment schemes such as Sand Motors are argued to be an innovative coastal protection solution, policy-makers will not yet possess the knowledge they need to choose. Hence, it is useful to look at the interaction between scholars and policy practitioners to see to what extent the structures were present to gain the necessary scientific knowledge in the projects. Scientific and political actors interact with each other at the science-policy interface. It can be seen as a boundary and what actors do is to constantly construct and reconstruct this boundary by exchanging meaning, i.e. boundary work (Huitema and Turnhout 2009, 578). For example,

this interface may occur at dedicated institutions or in meetings. Information is exchanged at the science-policy interface in the form of, e.g., questions and practice stories flowing from policy practice to the science side or scientific knowledge flowing to the policy side of the interface. It describes the flow of new scientific knowledge, for example about wave behavior and protection performance of the new solution or the degree to which other objectives are served. Studying this interaction reveals the way in which policy practitioners rely on scientific knowledge to support their decisions as well as how scientific knowledge may be influenced or guided by policy practitioners' perspectives.

The input of knowledge from the scientific sphere into the policy sphere was high in the Sand Motor project. Civil engineering, ecological, and hydrogeomorphological experts took seat in the steering and project management groups of the project. With Huitema and Turnhout (2009), these groups were boundary organizations, in which policy-makers could voice their ideas and interests, and scientists could introduce knowledge and critical evaluation. The whole project was carried out by the provincial government South-Holland in close cooperation with a large-scale consortium which brought together universities, consultancies and industry. Scientific, commercial and practical engineering knowledge was represented in this consortium. This knowledge was at the disposal of the policy-makers. Knowledge flows were similar in the later stages of the Hondsbossche Duinen project, in which the Dutch public works agency and the water board worked together. The public works agency is a governmental organization with engineering expertise. At the water board, political and water management expertise come together. Project managers in this project realized close cooperation with other governmental levels, such as the provincial government North-Holland and the municipalities at the location where the project was planned. The only project where knowledge interaction between scientific and policy spheres was rather low was the Houtribdijk pilot. Although the public works agency had asked for a multi-organizational project management group including the initiating consultancy as well as public works agency experts, this was not realized. Instead, the consultancy shouldered the largest share of the work without strong content-oriented exchange with other organizations. In general, there were structural provisions in the

three projects that enabled interactions between the scientific and policy spheres. However, only the Sand Motor and Hondsbossche Duinen projects also utilized these structures to that end.

9.3.6 Summing up

This section discussed results, which are secondary to the focus of this dissertation, because they are less interpretive concepts. Nevertheless, they are still relevant for the broader surrounding of the projects, as they surround the micro-level, everyday meaning-making discussed primarily in this dissertation with a more abstract perspective of the decision-making process. In terms of structural support, the projects are very different, especially when considered through time. The Sand Motor project is an exemplar of tapping into political and financial resources available at the national level. The Hondsbossche Duinen project had high political and financial resources from the start, but saw their availability drying up, before the project became widely endorsed again. The Houtribdijk pilot was a low-profile project concerning structural support, but could ride the wave of the innovation discourse at the national level. Public-participation-wise, the two large-scale mega-nourishment schemes devised similar scopes with many actors involved in designing and deciding on the project. Although the participation in the Houtribdijk pilot might have been low, the intensity of participation, i.e. the openness of process design by project managers as well as the willingness of other actors to participate, may be seen as related to the spatial and socio-economic context of the respective projects. The Houtribdijk pilot is ultimately intended to serve more than one function, but is situated remotely, thereby decreasing the demand for participation. The opposite is true for the other two projects. While they were designed to serve multiple functions, their impact on the ecological and socio-economic context triggers high participation. As described, the type and scale of the three projects under study determined the degree to which top-down steering was used. The acceptable levels of risk for the projects also depended on the status of the project, be it experimental or non-experimental. Contrary to the Sand Motor and Houtribdijk pilots, in which governmental actors were much more open to risks, the latter had to be avoided as much as possible in the Hondsbossche Duinen project.

Interactions between the scientific and policy community were at least structurally existent in all three projects. These structures played out differently depending on the project, though. While interaction was lowest in the Houtribdijk pilot, it was highest in the Sand Motor with the Hondsbossche Duinen representing an in-between case. In the following, these non-interpretive categories will be complemented with the meaning-making dynamics that led to the developments in the three projects.

9.4 Interpretive comparison

Now that the three projects have been placed in perspective, a more in-depth comparison of the projects based on the theoretical framework spun out in earlier chapters follows. As described in Chapter 5, the analyses of the empirical chapters that was previously applied to one project only will here be extended to the other respective projects. This section is divided along the lines of the map of the framing process (Figure 9.1).

9.4.1 Framing foci

In all three projects, some policy frames dominated the policy process. I take policy frames to be actors' theories about a policy-making situation. Frames are dominant, if they succeed in reframing among other actors and if the chosen policy solution follows their line of storytelling. With Van Hulst and Yanow (2014), it is possible to look at these stories from two perspectives. First, frames are constructed by the three acts of sense-making, naming and storytelling (Van Hulst and Yanow 2014). These 'acts of framing' involve the perceptive mechanisms for the representation and interpretation of social settings and the construction and attribution of meaning to those social settings. Second, framing acts target what may be called 'framing foci'. The content of framing foci can be considered the outcome of the framing acts. The three framing foci refer to distinct parts of the policy process. The first is 'policy substance', containing the content of the policy which the frame advocates. Second, policy frames take a stance towards the design of the 'policy process'. Third, a frame has an interpretation of actor characteristics and how they are networked – 'actors' identities and relationships'. The three fram-

ing foci are interrelated. For example, an actor's interpretation of the right solution for a policy problem may entail the inclusion of certain actors and the exclusion of others. Or a conflicting relationship with another actor may result in the desired exclusion of that actor from the policy process. If necessary, these interrelations will be highlighted.

I focus on this second part of Van Hulst and Yanow's (2014) approach – the framing foci – only. They are the perceptive elements of actors' policy frames. This thought remains unaltered by the fact that the project analyses are done on a higher level, the organizational level. Organizational framing foci rely on the framing foci of the individual people working there and it would be possible to describe differences and similarities between individual framing foci. However, for the present research, I take individual framing foci of employees of the same organization to be similar enough to subsume them in the organizational framing foci. For the present comparison, I chose to compare which policy frame was successful in terms of convincing other actors. This policy frame also imbues the chosen policy solution. The comparison entails a description of the framing foci per project. As opposed to a comparison of framing acts, framing foci can be compared based on the commonality of success in the decision-making process, which is a project characteristic. Thereby, a comparison of the framing foci of the successful policy frame does not remain on the actor level, but is lifted to the project level. Now, the three framing foci will be discussed one by one.

9.4.1.1 Policy substance

In the Sand Motor and Hondsbossche Duinen projects multifunctionality was the primary policy substance. Coastal management experts expect sand nourishments and especially mega-nourishment schemes to be able to incorporate more than only the primary protection function. These additional functions include increased and more diverse recreational use, nature development, innovation and regional development. And the idea that more beach and dune space may support recreational use as well as nature development does not seem far-fetched. Unfortunately, in relation to mega-nourishment schemes, few effects other than safety performance have yet been studied (Chapter 3). In the Sand

47 As a matter of fact, after the design was chosen, urgency went up, because there were additional funding opportunities which included short-term deadlines.

Motor project, the multifunctional aspect of the solution made many actors reframe and embrace mega-nourishments. It meant that they could easily connect to the solution and form an epistemic community. The actors who became convinced about the Sand Motor's multifunctionality came from different governance levels and societal sectors. Due to different interests and backgrounds, latching onto the Sand Motor concept also happened for different reasons. For example, on the national level, the argument to promote the Sand Motor concept was its innovative character, which could increase global interest in Dutch industry and knowledge. Nature organizations on their part were captivated by the promise of new nature development. The public works agency was the most critical actor involved. Although it was curious and willing to experiment with up-scaled sand nourishment schemes, it did not want to waste funding on a large project which would not contribute to improving coastal safety at locations in need. The Sand Motor project, however, is also not the typical policy process. Due to being an experiment, the urgency to come to a design of choice was low[47]. This allowed the provincial government of South-Holland ample time to increase the epistemic community for the Sand Motor concept.

There was less time to come to agreement in the Hondsbossche Duinen project. As part of the national framework program 'Weak Links' prioritizing locations in need of reinforcement along the Dutch coast, a realization deadline applied. All detected weak locations had to be protected as of 2015 and at least until 2065. Surprisingly, although there was a deadline and the project began earlier than the Sand Motor, it took the involved actors more time in total to come to agreement on the policy substance in the Hondsbossche Duinen project. At the beginning of the project in 2004, when deadline pressure was still rather low, the dominant policy substance in the policy frame of the project manager – the provincial government of North-Holland – was more focused on safety (Chapter 6). However, this mono-functional focus excluded many other interests, among others that of the population behind the pre-existing seawall. In the course of the project the policy substance more and more changed towards multi-functionality. Particularly among central policy-relevant actors such as the water board and the public works agency, a gradual reframing occurred. Other actors' policy substance, such as the municipalities near

the seawall, remained similar, focusing on the regional development aspect. This was also why they embraced the final solution for the Hondsbossche Duinen, which paved the way for increase in recreational activities and economic development. Later on, the provincial government North-Holland joined this frame as well. The 2015 realization deadline had counter-intuitive effects on the development of a common policy substance. Initially, the provincial government seemed to feel the need to rush to a solution, thereby overlooking other policy substance alternatives. This links to the provincial government's policy process framing focus (see below). However, later – the deadline drawing nearer and nearer – the project management took its time to consider different options and discuss with other actors. In the end, the water board ended up with a multi-functional frame and enjoyed the support of most other policy-relevant actors in that.

The Houtribdijk pilot stands out in this comparison. It seems that the multifunctionality aspect of sandy solutions never took hold in this project. Safety performance was the main objective in this project. Indeed, there were barely other functions in the near surrounding that could be incorporated. The consultancy in charge of the project did not make an effort to bring about reframing with other actors. This stance was perhaps fueled by the low resistance it experienced. In the end, the results could carry weight in the larger Houtribdijk reinforcement project (Chapter 7).

With the exception of the Houtribdijk pilot, multi-functionality is the red line in the larger two projects. Multi-functionality seems a policy substance which many actors can be convinced to latch onto, if only for its suggested cornucopia of opportunities. Additionally, multi-functionality can take different guises in different projects. Either, as in the Sand Motor project, actors may reframe and embrace the full extent of the multi-functionality policy substance. Or, as in the Hondsbossche Duinen project, actors may remain in their frame and still accept the proposed solution, because it does not interfere with the policy substance of their frame. It is even possible to realize projects without a clear discussion about the policy substance and efforts to obtain reframing among other actors, as occurred in the Houtribdijk pilot. For actors supporting sandy solutions such as mega-nourishments, it seems useful to approach other actors that have to be convinced in a tailor-made way. I discuss framing interactions below in detail,

but there is one point to be made that relates to policy substance as well. Mega-nourishment proponents who want to bring about reframing among others may want to argue for multi-functionality or limit the argument to specific advantages, depending on the frame of the other actor in the interaction.

9.4.1.2 Policy process

The pattern visible in the framing focus policy substance is similar to the policy process pattern across the projects. While the larger projects were conceived – at least the definitive designs – in a consensual fashion, the Houtribdijk pilot is an example of a rather exclusive process, perhaps to avoid rivalry with the larger Houtribdijk reinforcement project. While the Sand Motor and Hondsbossche Duinen projects seem to be more process-oriented, the Houtribdijk pilot was more realization-oriented. The policy process frame in the Sand Motor project was dominated by the position of the provincial government South-Holland. From the start, it built a project management structure that involved many stakeholders outside its own organization, such as municipalities, universities and nature organizations. Representatives of the latter organizations took seats in a steering group supposed to oversee the actual project management group. Furthermore, the provincial government invited coastal management experts to join the project management group. During the process, the president of the steering group and provincial government officials reached out to other organizations to convince them of their idea of building a multi-functional mega-nourishment scheme. This happened in informal as well as formal meetings. For the general population, it did not stop at legally required participatory moments, such as the six week window to comment on official decisions. In addition, the provincial government organized information gatherings to update the local population about the progress and hear opinions, fears and wishes. Such processes take time, which the Sand Motor project had plenty of. Its experimental character meant the absence of realization deadlines as in the Weak Links framework program. The provincial government could take its time to hear and evaluate different opinions as well as try and maximize the epistemic community for its idea. It had the time to look for the optimal design balancing many different

actors' interests. By including many actors from the start, the provincial government shared its consensual policy process framing focus. The other actors – especially those included in the project management structure – showed receptivity for this idea and participated enthusiastically.

Throughout the Hondsbossche Duinen project, actors with different ideas about the policy process were in charge. It began with the provincial government keeping it to itself. It conceived a closed process drafting a proposal on its own. The public works agency felt that the provincial government was avoiding the expertise available at the public works agency. It was even more problematic that the ministry of Transport, Public Works and Water Management had a much more inclusive process in mind when it commissioned the provincial government to lead the project. Especially the municipalities representing the local population felt emotional about being left out of the process, given that the emerging provincial proposal planned to destroy part of the village behind the Hondsbossche seawall. This constellation with different policy process framing foci led up to the open rejection of the provincial proposal in 2006 and a shift of the project management towards the water board. Between 2006 and 2010, the water board led a very open process in terms of participation as well as in terms of content. It wanted to make the best choice for the region and understood this as only possible, if all voices were sufficiently heard. After 2010, the public works agency joined the water board in the official project management team to bundle their forces even more than before. The public works agency was cautious, but not reluctant to accept the water boards inclusive take on participation. It even claimed to have learned from the water board in this respect. Besides information gatherings for the population, interest groups could also participate in the tender. As this little used tender procedure only included framework conditions and the details were to be designed by the competing construction companies, there was a considerable chance that requests of the population or interest groups were integrated in the plan. Overall, after the provincial government had handed the project management to the water board, the dominant policy process framing focus included an open participatory process to come to a choice which could be broadly supported among experts as well as the population.

The Houtribdijk pilot was overall much more limited in its inclusion of actors or stakeholders which were not immediately involved in the project. The initiating consultancy was interested in quick realization of its project idea. It saw no necessity to broaden the policy process to include, e.g., recreational interest groups. Although the reasons for this may only be speculated, perhaps this was because the project was not supposed to be delayed by participative processes. Possibly, the potential to use the experimental method in the larger reinforcement project taking place at the Houtribdijk increased the urgency of the project.

While the Houtribdijk pilot stands out again – now as a closed, realization-oriented policy process – the other two projects had open participatory processes leading to a broadly-supported decision. In both projects, the project management teams used many of the participatory mechanisms at their disposal. These projects show that an open-minded policy process framing focus must not be dependent on the type of project. In both the large-scale experimental and non-experimental projects, the project management teams could deploy inclusive strategies. This was also regardless of time pressure, because the project management in the Hondsbossche Duinen project did not cut down on participation to speed up the process the nearer the realization deadline drew. It can even be argued that the chosen tender type qualifies the Hondsbossche Duinen project as more participatory than the Sand Motor project. It should be noted that the total time window for the Hondsbossche Duinen project was eleven years between the first commissioning and the deadline. So, although the first two years of the Hondsbossche Duinen project were far from productive in this respect, there was a lot of time for deliberation and realization.

The developments with regard to policy process framing foci in the two large-scale projects allow for the conclusion that a multi-functional policy substance framing focus can go together with an open, participatory policy process framing focus. The advantage is, that mega-nourishments are very moldable to the context in which they are planned, so it is also possible to include other actors' wishes rather simply. Another conclusion to be drawn from the Houtribdijk pilot is that, although the Netherlands is known for its consensualist decision-making, this is not the only way. As long as projects are designed within the legal framework, it is also possible for initiators to realize projects with scarce participation.

9.4.1.3 Actors' identities and relationships

In Dutch coastal management actors generally have a good overview of the policy arena, involved governmental institutions and responsibilities. Which actors are involved specifically, depends on the location at which the coast needs protection. Oftentimes, actors from local and regional organizations in the coastal management sector know each other and are used to working with each other. In those projects, actors have an overview of the identities of other actors participating in the policy process, already from the start. This also means, that actors have expectations towards the ease or difficulty with which a policy process will develop. The policy process is usually not a blank canvas on which the relationships between actors still have to be defined. In so doing, the framing focus actors' identities and relationships sets the scene for the level of potential personal conflict to occur in the policy process.

Most actors involved in the Sand Motor project cooperated actively. As previously mentioned, many actors were included in the policy process. They positioned themselves as willing cooperators. The provincial government as a central actor was empathic towards others. Its success in bringing about reframing among other actors reflects the provincial government's appropriate perception of other actors' identities (Chapter 8 and section 6.3). The provincial government as the initiator of the project had an interest to realize the Sand Motor project. With that in mind, it tried to keep good relationships with all other actors. The Ministry of Infrastructure and Environment saw itself as a support actor. It encouraged the provincial government to proceed and exercised its hierarchical power over the public works agency. The public works agency, in turn, took the position of critical evaluator who was not interested in keeping good relationships, but spending the funds as efficiently as possible. Other actors, who were not actively involved, observed the process benevolently. There was one civil society group which was against the Sand Motor and protested against it. Although this group was accepted for its content, some actors still regarded it as a distraction from the policy process (Chapter 8).

In the Hondsbossche Duinen project, the framing of actors' identities and relationships changed over time. The first project period in which the provincial government North-Holland man-

aged the project is characterized with ignorance. The provincial government avoided using the expertise of specialized organizations such as the public works agency or the water board. It thought it could elaborate the project on its own. The protest of the local population was also ignored in this time. It seems that the provincial government framing of which actors were important in the process differed from other actors framing. The framing of actors' identities and relationships changed when the water board took over the project management. The water board itself turned out to be much more interested in other actors' positions. It acknowledged the importance of the provincial government for permitting as well as the public works agency's general expertise in the field of coastal management. Also, the water board saw the local population's position as valid taking it into account in the decision-making. This made the relationship between the water board and the local population and municipalities a much friendlier one, as opposed to the relationship of the provincial government with the latter parties previously. Indifference about other actors occurred only at the public works agency, which was related to its task-orientation in the policy process framing. This framing did not harm the process. Indeed, the public works agency states to have learned about including other actors from the water board. At the end of the project, the water board and public works agency had a close working relationship and knew exactly what the other's position was. In this project, it becomes clear that actors' framing of others' identities and relationships may change throughout a policy process. Actors may get to know others' identities better and bond with them or have to relearn an identity, if an actor reframes about certain aspects.

The actors in the Houtribdijk pilot were indifferent about the other actors' frames and interacted mainly so as to get the project done. The initiating consultancy knew of the importance of the seawall manager for the success of the process. At first, the seawall manager did not confide in the consultancy's ability to realize the project. He waited for the consultancy to follow the right procedure to realize the project.

In the Netherlands, the official identities and relationships between organizations are often well-known after many years of cooperation. Often, actors' framing about the other organizations with which they are dealing helps them to estimate the cooper-

ation in a potential new project and with it the conflict potential. While organizational identities and relationships are formed in part by strategic policy, how these policy substances play out depends at least partially on the individuals who have to stand for them in interactions with other actors.

9.4.2 Framing meta-properties

9.4.2.1 Scale transcendence

The main meta-property which came to the fore in the projects was the degree to which scales were transcended. Scale transcendence describes the perception of scales in the project and how this feeds into the final project design. This meta-property is closely related to scale frames, which describe the way in which actors intentionally or un-intentionally frame certain scalar aspects of the policy process (Van Lieshout et al. 2014). Thus, whereas scale frames can be seen as a type of frame, scale transcendence is a measure of the scope of a frame with regard to scale inclusion or exclusion. While both concepts differ, in combination with in-depth project knowledge, the eventual scale transcendence of projects gives insight in the intensity to which scale frames were an issue.

Table 9.2 Temporal, topographical and institutional scale transcendence for projects Sand Motor, Hondsbossche Duinen and Houtribdijk pilot (based on Chapters 6-8).

	Sand Motor	Hondsbossche Duinen	Houtribdijk pilot
Temporal scale	• Long term • Functional and developmental testing	• Very long term • Applying	• Short term • Functional testing
Topographical scale	• Large scale • Direct, intended effects outside project location	• Large scale • Direct, intended effects limited to location	• Very small-scale • No expected effect on other locations
Institutional scale	• All governmental levels involved • Partly observing, partly participating • Knowledge and private parties	• Province, public works agency and water board • Local government advocative • Developed together with other projects	• Private initiative • Minimal necessary governmental actors • No other (private) stakeholders

The present comparison is limited to rather generic scales. Scales covered are the temporal, topographical and institutional scale. The temporal scale deals with the scope of a policy over time. It is about the time period for which a policy is designed and which

it takes into account. In the topographical scale, the awareness of actors and the policy for other locations and spatial effects is included. The institutional scale comprises the inclusion of actors from different sectors and governmental levels. All scale transcendence descriptions include the underlying argument. The focus is on the project level as the most suitable level of comparison. Table 9.2 shows the results of the analysis.

Temporal scale. In coastal management, the temporal scale is an important one. It guides safety levels – with dangerous events measured in occurrences per thousands of years – and limits the duration of effectivity of coastal protection. The three projects expose different temporal characteristics. The Houtribdijk pilot has the lowest temporal scope. It is aimed at testing primarily the protection performance of a coastal protection solution, and not so much its temporal development. In that sense, it is a project that seeks to prove the principle of sandy solutions in low-energetic coastal environments. During the project, there were no signs of strategic use of temporal scales, other than the indication by the project initiator that the pilot project could be scaled up in future projects, if proven successful. Project Sand Motor has a longer temporal scope than the Houtribdijk pilot. The sandy solution applied in that project was designed to serve as a coastal protection solution able to withstand many decades. Hence, here it was important for the project developers not only to show its safety performance in principle, but also prove its suitability over time. This intention resulted in a project designed to last for ten years before the nourished sand would be completely eroded. This included an initial project monitoring period of ten years. As that monitoring period progressed, it turned out that the sand took more time to disappear from the monitoring location than expected. This gave rise to an up till now unresolved debate about potential extension of the monitoring period. The Hondsbossche Duinen project has the longest life expectancy of all three projects, being designed to function until as much as fifty years after construction. Nevertheless, although it is built for the very long term and it is being monitored throughout the whole lifespan, monitoring is limited to factors necessary to guarantee the effectivity and detect potential weaknesses in the system. Whereas the former two projects were experiments, which is also mirrored in

the time dimension, the latter is an application of a similar new sandy solution. Experiments are characterized by down-scaling certain dimensions for testing and then inferring to the imagined full-scale from the results. This is also valid for the two experimental projects described here. Although they differ in temporal scope, in both projects the promise of longer-term coastal protection was made. For a full-scale application in coastal management, this promise is not enough. Full-scale projects need to remain protective consistently over a long time to increase certainty in the hinterland. So the Weak Links projects including the Hondsbossche Duinen were designed to last for a long time.

Expanding the temporal scope of the project was at least in the Sand Motor project a strategic move. A longer investment period for the project also meant more cost-effective investment and more time for additional indirect benefits to accrue. Thus, a long-term project duration was not only inherent to the project design, but was also convenient for the political actors involved, especially for the provincial government of South-Holland. In the Houtribdijk pilot, the initiating actor did not see the need to broaden the temporal scope of the project, as it was intended as a functional testing. In the experimental projects, actors had considerable liberty in choosing the temporal scale based on design or political reasons. However, in the Hondsbossche Duinen project, the temporal scale was specified on forehand and unnegotiable.

Topographical scale. On the topographical scale, there is a clear-cut, binary division among the projects. Only measuring 500mx150m and including 0,13 million m^3 sand, the Houtribdijk pilot is very small in topographical terms and also for a coastal protection project. The project is not expected to effect changes on other locations along the Houtribdijk. Perhaps, the relatively small size was a reason for the consultancy initiating the project to refrain from scale framing efforts. In addition, the topographical location situated about halfway along the Houtribdijk seawall without any nearby stakeholders may have contributed to the low incentive to frame the project extensively. From the perspective of flying under the radar of the larger Houtribdijk reinforcement project, the location chosen for the Houtribdijk pilot also decreased the necessity to frame the project extensively. Conversely, the two large-scale projects Sand Motor and

Hondsbossche Duinen topographically transcend the scale of their location. Besides having direct coastal protection effects at their respective locations, these two projects differ in the nature and intensity of their effects on other locations. The Sand Motor was designed to protect the coast at its location. At the same time, natural processes of sand suspension and longshore currents were supposed to transport a share of the sand deposited at the Sand Motor to other potentially unprotected locations to the north and the south. Scale framing was an issue in this project. The provincial government of South-Holland picked up on the idea of a mega-sand nourishment scheme as a way to solve its spatial quality problem in the coastal area. For them, a large-scale sand nourishment in the fashion of a land reclamation would immediately increase the availability of space for recreation and nature, which was necessary to attract economic actors. By emphasizing the advantage of new space in the short term, the provincial government covered up the fact that this space was designed to diminish again over time. There was also a deliberate contrary movement by the local governments to focus the topographical scale frame on the local situation so as not to forget potential local effects of the Sand Motor, which culminated in the drafting of a maintenance agreement by the provincial government of South-Holland. The situation was different in the Hondsbossche Duinen project. Here, the scale of the sandy solution was partly dictated by the geographical givens, namely a 5,5km seawall had to be protected. Contrary to the mega-nourishment at the Sand Motor, sand was designed to stay trapped at the Hondsbossche Duinen. This design principle reduces its effect at other locations drastically. Nevertheless, altering alongshore currents due to the sand mass bulging into the North Sea will have an impact on other locations along the coast. In the projects discussed here, size, location and indirect effects at other locations of the project determined how scales were framed. The smaller the project topographically, the less there is necessity to frame scales, especially when the project is also framed narrowly on the institutional scale (as will be seen). On the contrary, the larger the project is designed to be topographically, the less it can be hidden from the eye and the larger the potential repercussions on other sectors to be taken into account. In topographical scale terms, the Houtribdijk pilot could be compared to redesigning a back garden. Few people are interested and you do not need to consult others about their

desired functions and aesthetics in your garden, although some local regulations might exist that predefine, what you are allowed to do. In terms of their topographical scale, the other two projects are more comparable to changing the layout of a street with many residents. All of them might want to have a say in the decision-making, because the way the street is designed in terms of track layout, greening and design influences their everyday behavior and quality of life. Hence, topographical scale frames are important in coastal management.

Institutional scale. At the institutional scale, the three projects are quite different from each other. As explained in Chapter 7, the institutional scope in the Houtribdijk pilot was narrow. There was an initiating private actor which dealt primarily with the governmental actors needed to realize the project. No outside actors such as nature organizations, civil society etc. were included. This project shows that the realization of an infrastructural project in the Netherlands is not always a matter of scaling up framing activities on every scale. Rather, the Houtribdijk pilot is an example of a context, in which it was possible to realize a project with negligible meaning-making with regard to institutional scale. In terms of institutions, instead of frame or argument orientation, the Houtribdijk pilot is characterized by rigorous process orientation for its realization. The Hondsbossche Duinen project figures on a broader level on the institutional scale. Major actors in this project were the public works agency, the water board and the provincial government of North-Holland. However, depending on the phase of the project (Chapter 6), a different set of actors was involved in the project. Moreover, the institutional scale frames of the involved actors were quite influential in the shaping of the decision-making process. When the provincial government was in charge of the project design between 2004 and 2006, it framed the process as institutionally limited to itself, i.e. it intentionally or unintentionally excluded other actors from the design process, with detrimental effects. Only in the later stages of the project the scope of the actors in charge broadened with regard to the institutions involved. This broadening applies to the actors working together on the project as well as to the scope of the project's social environment.

Although local government could attempt to influence decisions during the whole project, it was never in the position to

48 Also known as the 'polder model' (see also Kickert 2003).

49 The question remains, however, whether the Houtribdijk pilot would have been initiated and realized at all, if the technology chosen for the pilot could have been applied in the larger Houtribdijk reinforcement project as well.

make them. In addition, the Hondsbossche Duinen project was developed parallel to other coastal protection projects along the North-Holland coast and alignment among these projects was striven for throughout the project duration. Of all three projects, the Sand Motor project is situated closest to the broad end of the institutional scale. From the start, the project organization comprised all levels of government from local to national as well as water board and public works agency. Perhaps the only relevant actor not included from the start was the drinking water company in the area. Many knowledge institutes, private parties and nature organizations were involved in the preparation of the Sand Motor, too. The broad institutional set-up contributed to the success by at least symbolically, but probably more than that, sharing the ownership of this 'innovation' termed project. It can be argued that the type and size of the project could not have been realized institutionally in the way the Houtribdijk pilot was. Too many parties would feel indirect impacts leading to resistance. The institutional set-up might not have been the only successful set-up thinkable, but the institutional scale frame present in the Sand Motor project seems to be conducive to its success.

In the Netherlands, well-known for its consensual decision-making[48], it would seem straightforward that projects are designed with a broad institutional scale. Without wanting to get deeper into the debate about the suitability of consensual decision-making, the set of projects presented here allows for three conclusions with regard to the institutional scale of projects. First, in the Netherlands, projects – such as the Houtribdijk pilot – are also realized with narrow institutional scale frames[49]. Hence, consensual decision-making is not a tradition cast in stone in the Netherlands. Depending on the context, it is legally and practically possible to realize projects based on narrow scale frames. Second, infrastructural projects in the Dutch coastal management sector, but likely also in other sectors, are not anymore exclusively initiated by public actors. The rise of public-private partnerships, devolution of public powers and opening-up of public actors to market expertise have enabled specialized private actors to contribute to public infrastructure and landscape of their own accord. Third, it is likely that institutional scale frames need to be broad for coastal management projects to succeed, the higher the impact and the larger the size of the project.

9.4.2.2 Consensus potential of framing foci

Another meta-property of frames is the 'consensus potential' of framing foci as described in the Hondsbossche Duinen project (Chapter 6). Adopting the framing foci from Dewulf et al. (2009) and Van Hulst and Yanow (2014), I see 'consensus potential' of framing foci as the congruence between actors' framing foci, i.e. policy substance, policy process and actors' identities and relationships (cf. section 6.3). This means, that the more similar framing foci in the three categories are, the higher the potential for actors to converge towards a consensual policy solution. If framing foci differ too much, a lot of framing work is needed for actors to agree on one policy solution. However, the degree of overlap within and also between framing foci merely indicates the potential of framing convergence. The fact, that there is overlap between framing foci does not inevitably lead to the consensual adoption of a certain policy alternative. Other mechanisms may be at play, i.e. ignoring some similarities among framing foci, while emphasizing differences (Chapter 6). Estrangement rather than convergence among actors may be the result of these mechanisms. In such cases, a high degree of congruence may not lead to convergence towards a shared policy solution and the growth of epistemic communities, but may instead trigger opposition among the actors involved. Indeed, consensus potential of framing foci describes the potential for the development of an epistemic community of actors in a policy process.

It was previously mentioned that the policy substance framing focus adopted by the water board in the Hondsbossche Duinen project increased the consensus potential in the project (Chapter 6). The inclusiveness of 'multifunctionality' as a policy substance even meant that other actors were not obliged to reframe in order to agree to the coastal management solution proposed by the water board. In the Hondsbossche Duinen project, 'multifunctionality' can be seen as a consensus framing focus, uniting policy-relevant actors to support the same coastal management solution. It should be added, that the Hondsbossche Duinen project revealed one instance, in which the consensus potential of a framing situation was not realized, because the public works agency, having framing foci similar to the project manager, emphasized the one difference they had in their framing foci. In addition,

when project management switched to the water board, the dominant mechanism was emphasizing similarities instead of differences in framing foci.

Multifunctionality also represented a powerful policy substance framing focus in the Sand Motor project. Its encompassing view on the multitude of problems that may exist in a region enabled the provincial government to do successful meaning-making work. There was something for everyone in this framing focus. The Sand Motor technology was designed to withstand storms and protect the coastal areas from flooding, which was welcomed by most actors, but especially by the public works agency, whose legal responsibility it is to keep the North Sea coasts safe. Though surrounded with much more uncertainty, the Sand Motor was also planned to have favorable effects on recreational activity, economic productivity as well as nature development, which charmed civil society and nature organizations just like the national policy level. So, multifunctionality functioned as a consensus framing focus in the Sand Motor project, too. Consensus potential was even increased by the other framing foci of the provincial government. It was interested in other actors' opinions and was open to their suggestions. The provincial government sought to emphasize similarities to rally actors behind the idea of a Sand Motor.

In the Houtribdijk pilot, the consensus potential of framing foci was low. There was an overlap in the policy substance framing focus between the consultancy, who initiated the project, and the innovation program of the public works agency. Both saw the difference in coastal protection demands of inland waters compared to the sea coast and wanted to experiment with new ideas. The multifunctionality component was low-key in this project and coastal safety prevailed as main focus. However, this policy substance overlap between consultancy and innovation program was not shared with the operational manager of the Houtribdijk seawall. The latter did not see the same problem, but rather the inconvenience of experimenting at 'his' seawall. The operational manager was mainly emphasizing a different policy substance framing focus. Nevertheless, there was a slight overlap in the policy process framing focus between the consultancy and the public works agency's operational manager, which was task-oriented. As long as the consultancy played by the procedural book, the operational man-

ager would not obstruct them. In this case, overlap between framing foci was fragmented, while there was a mixed situation with regard to emphasizing and ignoring differences and similarities.

9.4.3 Properties of the framing performer

In Chapter 8, the concept of the interpretive policy entrepreneur was developed based on recent ideas about John Kingdon's policy entrepreneur. By excavating the interpretive structures in four characteristics attributed to policy entrepreneurs by Mintrom and Norman (2009), a definition of the meaning-making side of policy entrepreneurs was developed. Interpretive policy entrepreneurs have two core features (cf. Chapter 8). They…

- *successfully make meaning for and attribute it to a policy situation or solution, and*
- *cause reframing among other actors with the result of a growing epistemic community concerning a policy situation or solution.*

This new concept was helpful to understand the meaning-making dynamics in the Sand Motor project. Here, we expand that analysis to the other projects to see what this perspective may add to the understanding of the other two projects. But first, the findings about the Sand Motor project are recapitulated.

9.4.3.1 Interpretive policy entrepreneur

As Chapter 8 explained, the provincial government of South-Holland acted as an interpretive policy entrepreneur in the Sand Motor project. This actor exhibited the four interpretive characteristics of an interpretive policy entrepreneur, i.e. (a) making sense of other actors' perspectives, (b) expressing problems in other actors' terms, (c) constructing epistemic communities and (d) taking risks (Table 8.1 for non-interpretive analogues). By means of certain framing mechanisms, the provincial government succeeded to gather other actors affected by the Sand Motor around the project as proponents (for elaborate discussion of those framing mechanisms, see subsection 8.3.5). In line with this, there was no generic policy entrepreneur to be found in the

Sand Motor project. There was no window of opportunity at the time the Sand Motor idea came up at the provincial government. Indeed, a window of opportunity had just gone to waste when the South-Holland North Sea coast had to be reinforced as part of the Weak Links framework project. At that time, too few participating actors were convinced of the use of a mega-nourishment scheme. This conviction changed in the following years. The provincial government began framing the project in different ways depending on the actor with which it interacted. Helpful in this endeavor was the alleged multifunctionality of mega-nourishment schemes, which enabled the provincial government of South-Holland to approach other actors depending on their presumed interests and positions. For example, on the national level, the provincial government persuaded a governmental innovation platform to back the mega-nourishment idea by emphasizing the innovative character, the potential for knowledge gain, and the export potential for Dutch companies. Nature organizations, including the World Wildlife Fund, were won over because of the prospects for nature development. On the other hand, municipalities close to the proposed location came aboard when the provincial government made sure that no adverse effects would occur. In acting as an interpretive policy entrepreneur, the provincial government cultivated an epistemic community around the Sand Motor concept which culminated in the joining of the three streams when the project was finally realized.

In the Hondsbossche Duinen project, none of the two types of policy entrepreneurs may be detected. At least, not when looking at the project as a whole. On the level of the whole project, this project tends more to a case of muddling through. Successively, multiple project managers and actor collaborations were necessary to realize the project. It can be termed a 'messy' decision-making process. When zooming in on the three project phases, the picture is a little different. In all phases, there were actors trying to lead the project with differing success. The provincial government was involved with all framing moves in the first project phase. However, its framing moves were largely framing-divergent, so these interactions did not contribute to an epistemic community. None of the other actors was busy with meaning-making in the same way. But this changed in the second phase of the project. The water board's approach to meaning-making is diametrically

opposed to that of the provincial government. Although there are still some framing-divergent interactions, the water board manages framing convergence much better than the province. It is also more often the originator of framing moves as compared to the provincial government. The water board was far better able to understand other actors' concerns and adapting the project to those concerns, which points to the conclusion that the water board can be seen as interpretive policy entrepreneur in the Hondsbossche Duinen project.

9.4.3.2 Generic policy entrepreneur

Building an epistemic community was not a goal in the Houtribdijk pilot, but also turned out not to be necessary as it was in the Sand Motor project. It was sufficient for the initiating consultancy to take the normal procedural route to apply for permission to realize the pilot project. There was little need to devote attention to building an epistemic community for the initiating consultancy. First, the idea to experiment with sandy solutions at the Houtribdijk seawall was raised by the innovation program of the public works agency, which still wanted to experiment with new methods of sand application after failure of implementing these at the larger Houtribdijk reinforcement project. Second, due to the prior and parallel projects at the Sand Motor and Hondsbossche Duinen, the national government level was already aware of experimental potential of sandy solutions and advocated their use.

While there was no interpretive policy entrepreneur discernible in the Houtribdijk pilot, there are indications that the consultancy initiating the project can be categorized as a generic policy entrepreneur. This can be explained in terms of the multiple streams theory. The consultancy had a testable solution (sandy solution → policy stream) for a policy problem (unsafety of Houtribdijk seawall → problem stream) and succeeded to couple this to the politics stream by mobilizing funds from a dedicated governmental source (governmental incentives for innovation → politics stream). It revealed the intuition for the fact that the politics stream was already sensitized to this kind of coastal management solutions, which is an example for the consultancy's social acuity and its capacity to define problems in terms of other actors.

Coupling these three streams led to a window of opportunity for the consultancy, transforming it into a generic policy entrepreneur.

9.4.4 Properties of the framing activity

Another part of the framing literature delves into the mechanisms with which frames are co-constructed in interaction (Chapter 4). The approach applied in the Sand Motor project follows Dewulf and Bouwen's (2012) interactional framing mechanisms. Dewulf and Bouwen (2012) distinguish five interactional framing mechanisms explaining what may happen to the frames of two actors in an interaction. These interactional framing mechanisms comprise framing-convergent and framing-divergent mechanisms. The former are mechanisms which may make actors consent to aspects of a policy situation step by step. These mechanisms include fully or partially accepting a certain aspect (frame 'accommodation' and 'incorporation', respectively) as well as including an aspect, which was initially seen as unconnected or secondary (frame 'reconnection'). Dewulf and Bouwen (2012) defined two interactional framing mechanisms which lead to divergence in frames. The first occurs when actors delegitimize certain aspects of other actors' frames (frame 'disconnection'). For the second divergent mechanism, actors polarize one aspect of their own frame with conflict as a result (frame 'polarization').

The content of those interactional framing mechanisms can be described further by tagging it with the relevant concept from Van Hulst and Yanow's (2014) framing foci. This method allows for a more abstract view on what parts of frames were challenged through a specific framing mechanism. This type of analysis results in a combination of what was done in Chapters 6 and 8 and leads to Table 9.3, when extended to the other two projects. Results of Chapter 8 about the Sand Motor project will be summarized followed by new analyses for the other two projects.

9.4.4.1 Sand Motor

Throughout the project, framing mechanisms occurred with the provincial government of South-Holland as a leading figure (Chapter 8). Another striking observation may be made in the third column of Table 9.3: the dominant framing mechanisms in

the project have framing-convergent capacities, i.e. they mostly consist of accommodation, incorporation and reconnection. Although we can see that the relationship between the provincial government of South-Holland and the public works agency was not undisputed (continuous polarization from the provincial side), the public works agency more and more incorporated aspects of the provincial frame. It seems that continuous polarization was not enough of a barrier for the cooperation between the two actors involved. Another remarkable observation is that policy substance was the dominant framing focus. Either the policy process and actors' identities and relationships was not an issue in the Sand Motor project, or they were not perceived as problematic. Again, because of the polarization of the policy substance by the provincial government, there was potential for reframing in the actors' identities and relationships domain at the public works agency. Until the end of the project, the epistemic community endorsing the new sandy solution proposed as the Sand Motor had grown with a broad variety of actors including those most relevant for decision-making in Dutch coastal management, i.e. national government and public works agency.

9.4.4.2 Hondsbossche Duinen

There are more observable framing moves in the Hondsbossche Duinen project, than in the Sand Motor project. This may or may not have to do with the length of the project, but the project certainly displays a different pattern than the Sand Motor project. Based on the project description and following the phase distinction from Chapter 6, a little more structure can be added.

In the first phase of the project, the ministry and its agent, the public works agency, are the actors where most framing moves originate. The framing moves in Table 9.3 also reflect the development of the first phase which led to the provincial government of North-Holland to delegate the project to the water board. The provincial government is involved in all framing-divergent interactions such as polarization and disconnection. If the provincial government was not the actor where framing moves originated, it was often the actor targeted by them. In three of the four instances of a polarizing framing move, this move targeted the policy process framing focus. In these instances of framing moves, actors

could not converge on the policy process. In general, the ministry and the public works agency framed the policy process as 'shared work means shared responsibility'. Both actors expected that financing the project should be a shared responsibility, because the public works agency was involved as project reviewer and the provincial government as project manager. The provincial government on the other hand promoted the view that coastal management is a responsibility of the national level and that the provincial government worked more as a contractor. In this view, project funding would fall solely to the public works agency. The other two instances of divergent framing moves targeted the policy substance. While the divergent framing moves targeting the policy process certainly added to the lack of framing convergence, the polarization of the provincial government's frame regarding the policy substance was probably the most delaying framing move in this project phase. Nonetheless, the provincial government of North-Holland was also involved in the only two convergent framing moves in that phase of the project. These convergent framing moves targeted both policy substance and policy process. In the beginning of the project, the ministry, the public works agency and the provincial government of North-Holland agreed on the double objective. In doing so, national actors incorporated the spatial quality aspect into their frame, which was introduced into the double objective negotiations by the coastal provinces. Judging by the resolve with which the ministry and the public works agency tried to include the provincial government in the financing of the project, this is an instance of incorporation instead of accommodation[50], because these actors did not see the double objective as a completely integrated aim. In this phase, there was not yet an epistemic community around the policy substance, as the ministry and public works agency, and the provincial government, respectively, had different ideas with regards to which policy option to choose. However, the ministry, public works agency and municipalities demanded a more open and inclusive treatment of other actors' fears and ideas, which meant the formation of an epistemic community regarding the policy process.

50 Incorporation is a weaker form of accommodation, where an actor includes a watered down version of a frame element (cf. Chapter 8).

Once the water board took charge of the project management in the second phase of the project, the framing moves became exclusively related to policy substance. It seems that the actors were able to overcome their conflicts at least superficially and pull

the discussion onto the content level. While all detected framing moves relate to the content of the policy, this did not mean that actors were only converging in their framings. As an advocate of thorough decision-making, the water board did not want to limit its scope of the policy substance to sandy solutions only, as the municipality demanded. Later on in the second phase, however, this tension reduced when the water board became convinced that sandy or hybrid solutions would be the only way forward to reach the double objective. The water board was not able to convince the public works agency that sandy solutions could be more cost-effective than hard engineering, which led to disconnection from the public works agency's side. Actually, the water board often appeared as the originator of framing moves. By the end of the second phase, the epistemic community advocating a sandy solution had grown with the municipality, the provincial government of North-Holland and the ministry.

The third phase is dominated by convergent framing moves, which are often initiated by the water board. These convergent framing moves even spanned all domains of framing foci. The water board accommodated the municipalities' policy substance, the policy process advocated by the ministry, and reconnected with the public works agency over expertise in coastal management, i.e. the public works agency's identity. However, the water board also polarized the policy process in the beginning of the third phase, by wanting to force the provincial government to contribute financially to the project, and intentionally or unintentionally colonizing the public works agency's responsibilities in coastal management. Notwithstanding the ongoing struggle over financing and responsibilities at the end of the third phase, the public works agency as the largest actor without previous clear commitment to the sandy solution could be added to the epistemic community.

The course of the Hondsbossche Duinen process is remarkable in terms of framing moves. At the beginning, divergent framing moves dominate the process, with the logical result being the rejection of the first project proposal. Little by little, however, convergent framing moves occur and the epistemic community for a specific type of solution slowly grows. It should also be noted that many divergent framing moves target the policy process. This points to the conclusion that in projects with the urgency of the Weak Links the variability in coastal project management

possible in the Netherlands[51] may contribute to the long duration and bumpy realisation of such projects. This contributes to uncertainty in the project management and often low experience of participating actors with the specific type of policy process. Thus, certainty about the policy process at the beginning of a coastal management project may reduce conflict potential from the start. This certainty about the policy process was absent at the beginning of the Hondsbossche Duinen project. Frame conflicts and divergent framing moves contributed to a near-breakdown of the project. Fortunately for the participating actors, the water board found a way to initiate convergent framing moves. As convergent framing moves increased in number, the project slowly turned into a consensual project and the actors managed to overcome their framing divergences.

51 The three projects described in this dissertation have three different project management structures. All parties involved are legally allowed to be project manager. Even private parties as the Pilot Houtribdijk shows.

9.4.4.3 Houtribdijk pilot

In the Houtribdijk pilot, few framing moves were detected. This is partly due to the few actors involved in the project, but also because the initiating actor did not attempt to frame the project extensively. Nonetheless, a number of framing moves similar to those in the Sand Motor project was found. Most framing moves were convergent, as the ministry and the innovation program of the public works agency were positive about the project right from the start. These framing moves related to the policy substance. The remaining actor to convince of the project was the operational manager of the Houtribdijk seawall, who is also employed by the public works agency. Although it seems that the consultancy acknowledged the operational manager's importance in the process, the operational manager was hesitant to give his approval for the project before he could deal with decent project management. So, whereas the initiating consultancy succeeded in getting the innovation program of the public works agency as well as the ministry on board rather early on in the process, the operational manager only accepted the project to take place after the consultancy had made an effort to tick all procedural boxes.

9.4.5 Collective effects of framing: A shared problem definition

Framing has various consequences for actors involved in a policy process. Among others, actors' framing foci may change

- *by themselves (i.e. cognitive framing, subsection 9.4.1),*
- *by changing their scale scope or consensus potential (meta-properties, subsection 9.4.2), or*
- *by interaction with other actors (i.e. interactional framing, subsections 9.4.3 & 9.4.4).*

But framing may also lead to collective effects. In the processes I studied, 'collective' means the aggregate of the policy-relevant actors (In other cases, framing might also have even broader collective effects.). In the three projects in this dissertation, convergence or divergence over framing foci led to collective framing effects. In turn, collective framing effects were at the basis of the decision to implement a certain coastal management solution. The collective effect of the framing activities in the three projects, which will be discussed in the following, concerns the existence or development of a shared problem definition. Also seen as a central aspect of making meaning of policy problems, the problem definition defines the scope of solutions to the policy problem acceptable for individual actors. It entails a collective agreement among involved actors as to the elements of the policy problem, i.e. the content of the problem, what possible and acceptable solutions exist, and how the selection of the most suitable solution should be approached. A shared problem definition among involved actors influences the course of a decision-making process. A shared problem definition at the beginning of a decision-making process may speed up the process, but limit the scope of possible solutions and exclude potentially desirable alternatives. A decision-making process lacking an initial shared problem definition may consider a broader scope of potentially desirable policy alternatives, because of distinct perceptions of the problem, but may also bear a higher risk of conflict and, by extension, the breakdown of the process. Temporal occurrence of the shared problem definition plays a role, too. Hence, the presence or absence of a shared problem definition at the beginning and end of a decision-making process indicates whether or not a meaningful consensus was reached. It may also suggest the existence of

Table 9.3 Framing moves per project

Project + Moment	Actor A	How?	Actor B	By	Framing focus	Addition to epistemic community
Sand Motor						
From the start	Province South-Holland	Accommodated	Innovation Platform	Naming the project a 'pilot'	policy substance	Innovation Platform, national government
Continuously	Province South-Holland	Polarised	Public works agency	Insisting on the project being located in South-Holland	policy substance	-
Gradually	Public works agency	Incorporated	Province South-Holland	Accepting the project relevance	policy substance	PWA
During EIA	Province South-Holland	Reconnected	Municipalities	Agreeing on additional measures to reduce expected nuisance	policy substance	Municipalities Westland & The Hague
After EIA report	World Wide Fund for Nature	Reconnected	Other nature organisations	Reassuring of the absence of ecological disadvantages	policy substance	Nature NGO's
Hondsbossche Duinen						
1st phase	Ministry and public works agency	Incorporated	Province North-Holland	Selecting coastal protection and spatial quality as the 'double objective'	policy substance	Province North-Holland
	Province North-Holland	Polarised	Municipality	Villagers concerns about the chosen hard engineering solution	policy substance	-
	Ministry	Reconnected	Province North-Holland	Suggesting a shared interest in public participation	policy process	Province North-Holland
	Public works agency	Polarised	Province North-Holland	Introducing a new funding program favouring hard engineering	policy process	-
	Municipality	Disconnected	Province North-Holland	Advocating a sandy solution against hard engineering	policy substance	-
	Province North-Holland	Polarised	Public works agency	Insisting the full costs of the project were on the public works agency	policy process	-
	Ministry	Polarised	Province North-Holland	Stressing the task division between public works agency and province with the associated sharing of costs	policy process	-
2nd phase	Water board	Polarised	Municipality	Broadening the scope of the decision-making process once more	policy substance	-
	Water board	Incorporated	Municipality	Limiting the scope of the process to sandy and hybrid solutions	policy substance	Municipality
	Water board	Reconnected	Municipality, ministry	Including the views of civil society and public works agency into search process	policy substance	Municipality, ministry
	Province North-Holland	Accommodated	Municipality	Focusing on and advocating purely sandy solutions	policy substance	Municipality, province North-Holland

Project + Moment	Actor A	How?	Actor B	By	Framing focus	Addition to epistemic community
	Public works agency	Disconnected	Water board	Doubting the validity of the water board's cost calculations for a sandy solution	policy substance	-
3rd phase	Water board	Accommodated	Municipality	Focusing on purely sandy solutions	policy substance	Municipality
	Ministry	Accommodated	Water board	Accepting the water board's proposal	policy substance	Ministry
	Water board	Polarised	Province North-Holland, public works agency	Insisting to share costs with all involved actors and taking over coastal management from the public works agency	policy process	-
	Water board	Reconnected	Public works agency	Granting the public works agency's expertise in coastal management	actor's identity and relationship	Public works agency
	Water board, public works agency	Accommodated	Ministry	Designing an inclusive tendering procedure and succeeding in minimizing project costs	policy process	Ministry
Houtribdijk pilot						
Initiation	Corporate Innovation Program (public works agency)	Accommodated	Consultancy	Signalling the attractiveness of sandy solutions	policy substance	Consultancy
	Ministry	Reconnected	Consultancy	Expressing interest in functioning of sandy solutions in low energy coastal areas	policy substance	Consultancy
Design phase	Consultancy	Accommodated	Operational manager (public works agency)	Acknowledging the importance of the dike manager in the process	policy process	Public works agency
	Flood protection bureau (public works agency)	Incorporated	Consultancy	Appreciating the project proposal with the marginal note of inadequate project management	policy substance+policy process	Consultancy
	Operational manager (public works agency)	Disconnected	Consultancy	Dismissing the process management by the initiator	policy process	-

meaning-making dynamics in cases in which there was no shared problem definition at the beginning, but in which it was present at the end, and vice versa.

The Sand Motor project was an initiative from one actor – the provincial government of South-Holland – who perceived a socio-economic problem in its region and wanted to solve this problem in synergy with experimenting with new technologies. But the provincial government still had to convince other actors of the innovativeness and usefulness of the solution it had in mind. Here, other actors did not perceive the problem content as such. They either did not perceive a problem at all, such as the municipalities or the national policy level, who both knew that the coast was already safe. Or, if they did perceive a problem, it was not the integrated, socio-economic and safety problem the provincial government saw. The public works agency belonged to this group. They accepted that the Sand Motor could help with safety, but disagreed with the location. The issue here is that perceiving a different problem than others or not perceiving a problem at all, has different effects on the other elements of a shared problem definition. A different problem content entails a different solution scope and possible a different view on how to choose the right solution. Not seeing a problem at all even means questioning the proposed solution. In terms of the Multiple Streams Approach, those actors not perceiving a problem at all were presented with a policy option without a problem. Gradually, the provincial government found ways to convince the other actors about the existence of the problem and the suitability of the proposed solution by adducing arguments which resonated. The provincial government had to engage in extensive meaning-making to show actors the dimensions of the policy problem and solution, which it had in mind. In the end, there were no actors left who firmly opposed the problem definition given by the provincial government. Although the public works agency was still arguing about the location of the Sand Motor, it appreciated the problem-solving opportunity which the provincial government's solution offered. At the end of the project, there was a shared problem definition that the Sand Motor represented a desirable experiment to deal with socio-economic and coastal safety problems in tandem.

The Hondsbossche Duinen project is peculiar when it comes to the aspect of shared problem definitions. There was a partially

shared problem definition with regard to problem content – stretches of the coast were not safe from flooding. The responsible ministry had assigned the provincial government to come up with a plan to improve the safety level at those coastal stretches taking into account the spatial quality of the region. However, while the provincial government limited its policy problem to coastal safety, other actors broadened the problem definition to include the socio-economic situation of the region. While the solution, which the provincial government suggested fitted its own problem definition, it exacerbated the problems perceived by other actors. In addition, there was disagreement among actors and especially with the public works agency about the way in which the provincial government was going about making the choice. Most other actors had hoped for more influence in the decision-making process. This misalignment led to the clash of actors later on in the project and the handing over of the project management responsibility to the water board (Chapter 6). Although it did not adopt a broader problem definition right from the start, the water board gradually became convinced that the specific problem context needed a solution which tackled both the safety issue as well as the socio-economic deprivation of the region. Thereby, the water board associated with the shared problem definition which survived until the end of the project.

Actors in the Houtribdijk pilot mostly disagreed about the problem definition. The initiating consultancy saw the potential for experimenting with protection of inland seawalls as the problem content. Encouraged by the innovation program of the public works agency, the consultancy presented an experimental set-up for sandy coastal protection. Although the problem contents of these two actors were aligned, the operational manager of the seawall, who worked for another part of the public works agency, did not accept the necessity to implement such an experiment at his seawall. But the consultancy followed all the rules in the realization of the experiment and so the seawall manager also agreed. So, while there may have been agreement about the way in which to realize the experiment, there was little agreement about the problem content and solution between the initiating consultancy and the seawall manager.

9.5 Concluding remarks

In this chapter, I have considered the five aspects of frames and framing which also make up the elements of Figure 9.1 from a comparative perspective. In the following, I give an overview of the results of the comparative display.

Framing foci. Three framing foci – policy substance, policy process, and actors' identities and relationships – have been discussed. In the two mega-nourishment projects, multifunctionality was the most important policy substance. This policy substance proved easy to latch onto for actors, albeit for different reasons. One advantage of this policy substance is that it can be either embraced completely or only supported for achieving a specific goal, allowing for multiple processes of meaning-making that may lead to success. Knowing about other involved actors' frames is useful in tailoring one's policy substance framing. With regard to policy process, including more stakeholders than strictly necessary is easily compatible with the expectation of multifunctional performance of mega-nourishment schemes. All the more so, because mega-nourishment schemes are already expected to perform on such a broad spectrum of functions that additional interests or design requests will not shift the project focus considerably, which could lead to more conflict-prone situations. In general, actors in Dutch coastal management are quite familiar with each other. In standard processes, a similar set of actors goes through project design together. In regional projects, this may involve the provincial government, affected water boards and the responsible regional organization of the public works agency. Oftentimes, actors know what to expect from each other and what the general identities are. How this plays out in particular projects, depends on the individuals that are delegated by their organizations to a certain project.

Scale transcendence. Scale transcendence varies among the discussed projects. No pattern is perceivable in the projects' scale frames and scale transcendence, except that scale transcendence and scale frames depend on the topographical context and the envisioned type and size of the project. On all three scale dimensions discussed here, the Sand Motor and Hondsbossche Duinen projects rank in the mid- to long-term, mega-sized and inclusive part of the respective

scale. In addition, actors in those projects had largely adopted those scale frames as the 'right' ones for the project. The Houtribdijk pilot was successful despite ranking in the short-term, very small-sized, exclusive regions of the respective scales. The intensity of scale transcendence is, thus, a descriptive aspect of frames and may be used to understand the structure of frames and the outcome of a framing process, but cannot be adduced as a decisive factor in the outcome based on these projects only.

Consensus potential. Two of the three projects considered here – the Sand Motor and the Hondsbossche Duinen – had a high consensus potential based on the overlap in their framing foci. It becomes visible, though that overlap is not a success factor for framing convergence in itself. It depends on the emphasizing and ignoring dynamics, whether these overlaps actually make actors converge and form an epistemic community. For example, in the Houtribdijk pilot, little framing convergence occurred. Although actors' framing foci did somewhat overlap, there was more emphasis on differences. In spite of emphasizing mainly differences, the project was realized, because of the low-key similarity in the policy process framing focus. Consensus potential and dynamics of emphasizing and ignoring in tandem help to understand how the three projects came to be.

Properties of the framing performer. Are interpretive or generic policy entrepreneurs necessary for the realization of the type of innovative coastal management solutions involving sandy solutions, which are presented in this dissertation? As interpretive research aimed at understanding meaning-making is unable to make assumptions with regard to causality, nothing can be said here about the causality embedded in this question. However, it is plausible that the three projects discussed here would have not been realized were it not for the interpretive of generic policy entrepreneurs involved on the project or the project phase level. In the Houtribdijk pilot, the generic policy entrepreneur showed that it is possible for private actors in the Netherlands to realize infrastructural projects. It must be admitted, that the deliberately chosen, remote location contributed to the relative 'ease', with which the project could be implemented. The interpretive policy entrepreneurs in the Sand Motor and Hondsbossche Duinen projects supplied the argumentative attraction contributing to an epistemic community. Owing to the size of these two projects

and their incisiveness in the Dutch coastal management history, the epistemic communities formed may change the general discourse about coastal management solutions in the Netherlands. In addition, there is reason to claim that the Sand Motor project laid the groundwork for the other two projects making use of sandy solutions. First, there is a temporal link, i.e. the Sand Motor was the first of the three.

Properties of the framing activity. In terms of frame convergence, all three projects have been successful. In two of the three projects a decision was made that was backed by an epistemic community with the right actors to enable realization. Although all projects were ultimately finalized successfully, all three represent a different development in terms of framing moves and the smoothness with which the process happened. Based on the available overview of framing moves, a number of factors contributing to project success can be given. For one, the experiment-versus-urgent-project dichotomy played a role in this. Urgent projects are initiated, because human lives or livelihoods are in immediate danger. It is important that the right solution is chosen with regard to those livelihoods, but also with regard to a public investment in the future. Less is at stake with experiments. Although they have the potential to improve or even replace current coastal management solutions in the future, experiments are usually realized in a risk-free situation. This difference may explain why there was so much less conflict in the experimental projects. Notwithstanding, another look at the Hondsbossche Duinen project warrants the conclusion, that a more coherent, initial shared understanding of the desirable policy process among relevant actors could have reduced conflict in this project, too. Hence, a more ordered decision-making process which focuses on the design of a policy process which everyone can agree with, followed by engagement with the policy substance may prove useful, especially in the Dutch case, in which the variability in participating actors with mixed responsibilities and tasks is high. Ultimately, if actors are indeed reflecting on their interactive framing, a focus on framing-convergent framing moves may be more conducive to a successful decision-making process than a strategy of putting the cat among the pigeons.

Collective framing effects. Compared to the Sand Motor project, the Hondsbossche Duinen project began with more alignment in the shared problem definition of involved actors. A part of the prob-

lem content was already agreed upon in the latter. For the protagonist actor in the Sand Motor project, the provincial government of South-Holland, this meant a higher necessity for meaning-making for other actors to accept its version of the problem definition in combination with the solution and process proposed. Although the shared problem definition in the Hondsbossche Duinen project, which existed at the end of the project, did neither come along in a linear way, once the water board had taken over, at least the agreement formed quicker. The epistemic communities backing the Sand Motor and Hondsbossche Duinen projects were strong, because of the coherence in the shared problem definition. In the Houtribdijk pilot, a problem definition shared among all involved actors existed neither at the start nor at the end. There were partial agreements in the problem content and process domain among different actors. However, this meant that the epistemic community for the experimental project was small. In the three projects, a shared problem definition was not always necessary to realize a project. Neither is the experiment/non-experiment aspect of the projects a separation criterion, as one of the projects developed a shared problem definition and was realized, while the other did not. Project size, on the other hand, may well be a factor. The financial investments and potentially far-reaching consequences of the larger-scale projects make broad support from the public and other actors more salient than in the smaller Houtribdijk pilot.

52 However, the specific project history with its relation to the Houtribdijk reinforcement project has to be taken into account.

9.6 Summing up

In this chapter, I discussed the present dissertation research's three core projects in comparison. Specifically, I focused on the interpretive aspects of the research, i.e. framing foci, framing meta-properties, framing performer properties, framing activity properties, and collective framing effects. In the following chapter, I discuss the results of the three empirical and this comparative chapter. The results will be contrasted with the research questions. Furthermore, the repercussions of this dissertation research for the broader coastal management and policy domain will be reiterated. The theoretical and methodological approach will be reflected upon, and orientations for further research will be dwelled on.

THE ROLE OF MEANING-MAKING IN DUTCH COASTAL MANAGEMENT

10.1 Introduction

In this dissertation, I take an interpretive perspective to study the meaning-making processes that led to the realization of three Dutch coastal management projects. The empirical work covered in this dissertation reveals different types of policy framing as the dominant processes of meaning-making. In one case, policy frames initially limit the convergence of actors over solutions. In another case, a proficient meaning-making actor succeeded in framing its proposal as a solution for different problems at the same time. The results help to understand how coastal management is 'made' in the Netherlands as well as open up new avenues for practitioners to position themselves in coastal management processes.

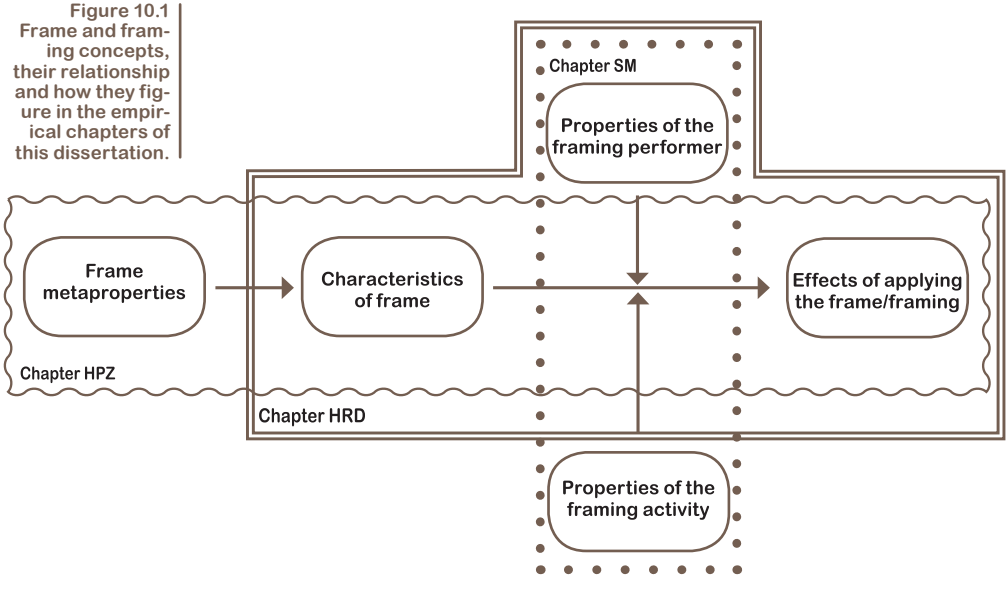


Figure 10.1 Frame and framing concepts, their relationship and how they figure in the empirical chapters of this dissertation.

Throughout, the dissertation falls back on the conceptual figure presented in Chapter 1, which relates different aspects of framing to each other (Figure 10.1). While this figure was underlying the single-case empirical chapters, it reemerged in the comparative chapter. As previously-mentioned the sets of framing aspects which manifested themselves in the respective projects are marked with the colored shape. I now turn to answering the

research questions. Section 10.2 deals with main research question A. (cf. Chapter 1). Similarly, Section 10.3 addresses main research question B. (cf. Chapter 1). As lower order research questions contribute to the answer of overarching questions, I, first, answer those questions step by step and end with an answer to the respective main research question. If applicable, I discuss additional points of interest that emerged concerning either of the overarching research questions. After answering the research questions, I turn to theoretical (Section 10.4) and methodological (Section 10.5) comments, and delineate potential research directions (Section 10.6).

10.2 Adoption of mega-nourishments schemes

The research objective connected to the more practice-oriented research question formulated in Chapter 1 is reiterated to guide the discussion of the research results and the answer to research questions A.1, A.2, A.3 and A. The research at hand set out to…

> *Understand the arguments whereby sandy solutions, such as mega-nourishment schemes, gained traction in the coastal management community in what is arguably a recent episode of the development of coastal management solutions in the Netherlands.*

To recapitulate the research problem to which this research objective applies, mega-nourishment schemes are a recent phenomenon in Dutch coastal management, with the two cases Sand Motor and Hondsbossche Duinen realized in 2011 and 2013, respectively. The Sand Motor was realized in one of the most densely-populated parts of the Netherlands. Besides population growth and ongoing urbanization in the country's west, ambitious political organizations also wanted to attract international businesses to set up shop in the area. On the other hand, the northern part of North-Holland, where the Hondsbossche Duinen case was realized, struggled with at least a perceived economic underutilization, among others due to demographic changes. While the social component of coastal squeeze (see Chapter 1) figured prominently at the location of the Sand Motor in South-Holland, ecological squeeze brought about by the pre-existing seawall was prevalent

53 Due to its relative geographic isolation in the heart of the inland lake IJsselmeer, perceived absence of coastal squeeze at the Houtribdijk may have triggered the definitive choice for the pilot project location. As consequence of absent coastal squeeze, interests in the area were low.

in the Hondsbossche Duinen case. Both coastal management projects show the diversity of coastal squeeze problems along the Dutch North Sea coast[53], i.e. an increasing pressure for coastal areas to function as economic, recreational and nature development zones, while maintaining a certain safety level. In general, interpretations of a policy situation, including preferred solutions to perceived problems, depended on policy-relevant actors' tasks and responsibilities. Due to the diversity of Dutch coastal management, this meant the presence of many different interpretations in decision-making processes. Several aspects of the content of those interpretations attract attention within and across the cases.

10.2.1 A historical lens

A historical view places a research subject in its temporal context. Such an approach links the research subject to – in this case – technological development and a governance structure that has grown a certain culture with regard to preferences in what policy to make and how to make it. Thus, research question A.1 was as follows:

> *What is the position of mega-nourishment schemes in the history of coastal management in the Netherlands?*

Elaborations in Chapters 1-3 present the concept of the mega-nourishment scheme in many ways as a child of its time. On the one hand, throughout history, coastal management benefited from advancing technological knowledge. On the other hand, several societal developments led to its rise in attention and eventually acceptance. First, in the aftermath of the 1953 flood disaster, the first Deltaplan was presented as the apotheosis of man's dominance over nature conceived to curb society's fear of nature. Civil engineers, who dominated the construction of public works at the time (Chapter 2), imbued this plan with a futurist belief[54] in the technological 'maakbaarheid'[55] of nature. However, especially the flexible Eastern Scheldt storm surge barrier, a part of the Deltaplan, led to an unforeseen worsening of the ecological situation in the estuary, revealing the inability of coastal protection measures geared exclusively to coastal safety to meet the expectations. Second, the Netherlands witnessed a period of economic welfare growth during the second half of the 20th century.

As a result, urbanization and globalization increased population pressure in the west of the Netherlands (Chapter 1). With growing wealth also came a rising demand for recreational areas and a rising awareness for ecological and ecosystem impacts of human existence, which implied land use changes in the regions close to the coast. In turn, environmental awareness and afore-mentioned unforeseen environmental problems caused by coastal infrastructure opened up the public works agency for an increased intake of biologists and ecologists.

Together with the advancement in dredging technology and the interest of the public works agency to optimize the coastal management routine, these societal developments led to the routinization of small-scale sand nourishments in the 1990s. After sandy solutions had been recognized as useful additions to the coastal management repertoire and ecological knowledge became more and more engrained in infrastructural decision-making (Chapter 2), it was only a small step to combine these two and unlock sand's potential for more ecosystem-friendly coastal protection. At least, these were and have remained the expectations of the scientific community towards mega-nourishment schemes (see Chapter 3 and below). Once small-scale sand nourishments had become day-to-day business, mega-nourishment schemes aimed at increasing the synergy between an expanded set of objectives became a serious topic of discussion among scientists during the 2000s. While they are seen as a revolutionary breakthrough by some members of the academic community (Chapter 3), longstanding coastal managers from the public works agency disagree and categorize mega-nourishment schemes as a natural, but small evolution of a technology they had been applying for quite some time already. Perhaps, though, both are right. Mega-nourishment schemes are arguably radically different from the technologies proposed in the first Deltaplan in material as well as in scope of objectives targeted, but compared to the routine coastal management program using annual small-scale sand nourishments, they build on a similar principle. In another way, the mega-nourishment schemes discussed in this dissertation are typical for contemporary governance arrangements in the Netherlands, which include a considerable level of participation in the policy process. Both mega-nourishments came about with heavy consultation of a diverse set of actors, evaluating their

54 Futurism was an "early 20th-century artistic movement centred in Italy that emphasized the dynamism, speed, energy, and power of the machine and the vitality, change, and restlessness of modern life" (Encyclopaedia Britannica, 2015).

55 'Maakbaarheid' – "makeability" – means the extent to which something can be made, influenced, or manipulated.

concerns and ideas and in many cases also including them. On the contrary, the first Deltaplan was a typical top-down policy imposed by the national government to safeguard the future. However, it remains to be seen, whether the level of public participation in the mega-nourishment schemes is a phenomenon related to their novel and experimental character, which may subside once the technology becomes routinized. Thus, from a historical perspective, mega-nourishment schemes are a typical product of current coastal management innovation. They evolved out of a routine coastal management method, differ radically from earlier technologies, and are conceived by a broad spectrum of actors with diverse interests. Nonetheless, their goal achievement remains to be studied. Time will have to tell, whether mega-nourishment schemes indeed improve coastal safety and serve its other socio-economic goals or whether they displace coastal management issues to other places or exacerbate other problems, like some of its predecessors did.

10.2.2 A scientific lens

As has frequently been pointed out, the development of technology based on expanding scientific knowledge has played an important role in the history of Dutch coastal management. This leads to the research question involving the scientific perception of mega-nourishment schemes and in particular the Sand Motor. Research question A.2 was formulated as follows:

> *How does the coastal science literature gauge*
> *the expected performance of the Sand Motor concept*
> *in terms of advantages and disadvantages?*

The scientific literature, including peer-reviewed research articles as well as consultancy reports, has mixed expectations about the Sand Motor (Chapter 3). Diversity and specificity of the expected advantages and disadvantages vary considerably across publications. While there are factors, such as the exploratory nature of early reports vs. research articles published around the time the design became more and more concrete, that may explain the diversity and in some instances the vagueness of expectations, this finding points to the difficulty of stating with certainty how an

experimental project will perform. Although the Sand Motor as a mega-nourishment scheme may be seen as a logical development in coastal management technology and effects could be claimed to be extrapolated, its scale is so large and the impact it has on a broad amount of socio-economic factors is so unknown, that scientific certainty about these can simply not be claimed. In retrospect, this analysis begs the question whether a more precautious approach would have been sensible in the light of the absence of scientific consensus about the environmental effects of the Sand Motor.

Another aspect which stands out in the scientific literature is the closeness of some of the mentioned advantages to the discourse in the policy process. Often, the three advantages 'coastal safety', 'recreation', and 'nature development' were mentioned in passing, if the Sand Motor was used as an example for one thing or another. While using the Sand Motor as an example justifies such generality and brevity, the three advantages parallel those that were used by policy-relevant actors to advocate the realization of the Sand Motor. This once again indicates the close proximity between the coastal science community and coastal management practice in the Netherlands and the presumably lively exchange between the two worlds across the science-policy interface. Such lively interaction between science and policy can by no means be taken for granted (cf. Cantasano, Pellicone, and Ietto 2017).

Two aspects have been presented in response to the research question: the imponderabilities of the scientific process of discovery and the scientific ivory tower conundrum. Regarding the former, trial and error has often been successful and led to unexpected insights, but as discussed it depends on the vantage point whether this approach was justified in the Sand Motor case, i.e. extrapolation of routine technology or absence of scientific consensus. Regarding the latter, it is safe to claim that in the Netherlands coastal scientists are not stuck in an ivory tower, perhaps due to its practice orientation and vivid cross-pollination.

10.2.3 A linguistic lens

Language can be seen as the ultimate means of conveyance of framing. One of the differences between the two mega-nourishment cases was their status in coastal management, i.e. experimental and non-experimental. Research question A.3 pertains to this issue:

What is the influence of a language of 'experiments' on the adoption of mega-nourishment schemes?

The status of the projects, e.g. experimental or non-experimental, emerged as a factor in how policy-relevant actors dealt with the possibility of realizing Sand Motor-type mega-nourishment schemes. The Dutch coastal management community was already used to soft engineering solutions for nearly two decades, when discussions about a mega-nourishment scheme – the Sand Motor – became serious. While the expected advantages of mega-nourishments led the afore-mentioned growing pool of proponents to advocate upscaling the small-scale routine nourishment practice, the ground turned out not yet to be prepared for full-fledged, untested implementation. The technology was not yet ready to be used in a non-experimental project, due to the uncertainties it entailed. This is what happened in the Weak Links restoration project in South-Holland, where the provincial government did not succeed in putting a mega-nourishment firmly on the agenda. Once the 'pilot'-terminology was adopted, the implementation of a full-scale experiment came into reach. This was especially useful to bring on board some of the more skeptical policy-relevant actors who did not agree with the broadness of the interpretation of the policy situation. In this way, mega-nourishment schemes were able to develop in the sheltered niche of the pilot project Sand Motor. The Sand Motor project paved the way for the Hondsbossche Duinen project as well as the Houtribdijk pilot. Sufficient framing had been done in the Sand Motor project for national-level actors, i.e. those actors who would be supra-provincially involved in coastal management projects, to be more favorably disposed towards mega-nourishment schemes. Although the Hondsbossche Duinen project had started before, the more the Sand Motor project moved through the environmental impact assessment phase towards realization, the more attentively actors from North-Holland followed that process. In the end, the Sand Motor and Hondsbossche Duinen projects mainly differ in the aspect of resedimentation of sand to other beaches. In a similar manner, the Houtribdijk pilot developed in the wake of the Sand Motor project, after factions at the public works agency had been sensitized to mega-nourishment schemes' potential and funding was readily available for more experimentation.

But what makes a language of 'experimentation' and 'pilots' so attractive? In scientific terms, it means working on the border of the unknown, trying to accumulate new knowledge about the world. But for scientists, such a terminology may not merely mean the normal way of carrying out their trade. It is also a token of the unrelenting attempt to stay ahead in the race for discovery and by extension the race for funding. By contrast, politicians and civil servants employing this terminology may want to increase legitimation among their electorate by endorsing 'hip' or 'sexy' projects. Alternatively, an experimental character may cover other hidden agendas intended with such projects, which may be not as easily achievable otherwise. So, not only does a language of 'experimentation' and 'pilots' put scientists and politicians at the forefront of scientific and social progress. In the concrete cases studied here, that kind of language also softened the expectations towards the introduction of a new coastal management solution and allowed for testing whether Sand Motor-type mega-nourishments lived up to the expectation of reducing coastal squeeze-induced problems.

10.2.4 Adoption factors

The above aspects and discussions relating to the lower order research question combine into the answer for the practice-oriented main research question A. It reads:

> *Which interpretations of the policy situation were relevant for adding mega-nourishment schemes to the accepted set of coastal management technologies in the Dutch coastal management context?*

Above, I have discussed several elements of the answer to this question. The addition of mega-nourishment schemes to the Dutch coastal management repertoire depended on the alignment of policy-relevant actors' interpretations of the policy situation with their interpretations of the utility of mega-nourishment schemes as a coastal management solution. On the one hand, interpretations played a role in the comparison of mega-nourishment schemes with preceding coastal management technologies. Backed by growing academic support (Chapter 3), the idea of a more appropriate coastal management solution to mitigate effects

of coastal squeeze also resonated with policy-makers. For the coastal science community mega-nourishment schemes were radically innovative enough as compared to, e.g., technologies from the first Deltaplan to be inspiring, while they were similar enough to the routine coastal management technology of small-scale sand nourishments to be acceptable for the risk-minimizing ambitions of the public works agency. On the other hand, if coastal squeeze is a multi-dimensional problem (Chapter 1), solutions with the ambition of tackling it, need to perform at least minimally on all those dimensions, i.e. they have to be multifunctional. Framing Sand Motor-type mega-nourishment schemes as desirable coastal management solutions capable of relieving coastal squeeze-induced problems at the Dutch coast, thus, becomes a matter of 'proving' its multifunctionality. The multifunctionality argument and the experimental language represent discursive factors in the adoption and acceptance of mega-nourishment schemes. Both were relevant in the build-up to the realization of the prototypical Sand Motor. However, due to its non-experimental character, experimental language would have been out of place in the Hondsbossche Duinen project. Taken together, resonance of the supposed multifunctionality among actors, regardless of whether their interpretations of the policy situation were broad or narrow with respect to the coastal squeeze dimensions included, and to a lesser extent the experimental language were considerable factors for the successful adoption of mega-nourishment schemes, as realized by the Dutch coastal management community in the Sand Motor and the Hondsbossche Duinen project. In sum, the addition of mega-nourishment schemes to the set of coastal management technologies in the Dutch coastal management context can be argued to be a product of the interpretively favorable characteristics of the concept, which allowed different types of actors to become convinced of mega-nourishment schemes' functionality for various reasons.

10.3 Meaning-making about mega-nourishment schemes

A second theoretical objective focused on…

> *Understanding the mechanisms of meaning-making in Dutch coastal management decision-making*

processes, by analyzing cases, in which innovative, sandy coastal management solutions – such as, but not exclusively, mega-nourishment schemes –were implemented.

Finding out about meaning-making in decision-making about innovative projects in the Dutch coastal policy domain is what this objective comprised. Of course, as a basic human characteristic, it is a given that meaning-making occurs. However, the 'how' and 'why' of different interpretations of Dutch coastal policy situations has become clearer in the course of this research. In this section aspects of meaning-making are discussed. I begin with answering the lower order questions B.1, B.2, and B.3, before synthesizing the answers for the overarching research question B.

10.3.1 Framing versatility and the functionality aspect

The first lower order question B.1 relates to meaning-making mechanisms that lead to consensus or conflict. It asked specifically how interpretations of policy situations would impact upon policy consensus.

How do the interpretations of some policy situations, the solutions embedded in those interpretations, and the processes by which the solutions are chosen result in policy consensus while others do not?

A central linkage for the elaboration of this question is the relationship between the interpretation of the policy situation and the scope of the policy solutions. This relationship was not yet problematized until now, as I presented policy solutions simply as the outcomes of problem interpretations in earlier chapters. Basically, policy-relevant actors would have an interpretation of the 'is'-situation based on their tasks and responsibilities, which would limit what they perceived as acceptable to achieve an 'ought'-situation. However, this teleological linkage between problem interpretation and scope of solutions proves important in the analysis of framing conflicts as well as in the evaluation of the success conditions of different framing situations. Especially the Hondsbossche Duinen and Houtribdijk pilot reveal that a concurrence of policy-relevant actors' interpretations of the policy situation need not

be a pre-condition for the acceptance of multifunctional coastal management solutions. Thus, in the studied cases, policy consensus, which happens when an epistemic community of policy-relevant actors with critical mass exists, came about because the policy substance resonated with problem and solution interpretations. While the interpretation of the policy situation and the scope of acceptable solutions are interwoven, it is necessary to disentangle both in order to understand the meaning-making advantage of multifunctional solutions. As previously mentioned in Chapter 5, differences among projects may be observed concerning meaning-making mechanisms and their effect on the outcome of a policy process, depending on whether the envisaged project in question would constitute a full or a diminished subtype of mega-nourishment schemes (Chapter 5). Hence, in the following, I first develop the answer to question B.1 for the full subtypes, then I summarize the situation at the Houtribdijk pilot as a diminished subtype, and end with a contrast of the two types of projects.

As the first phase – 2004-2006 – of the full subtype project Hondsbossche Duinen revealed (Chapter 6 & Appendix VII), it was much harder for the provincial government of North Holland as an actor with an arguably narrow interpretation of the policy situation to convince other policy-relevant actors with broader interpretations of coastal squeeze in the region to accept a coastal management solution with limited functionality, such as heightening the dike. Thus, due to the limited functionality of the proposed solution, it made no sense for other policy-relevant actors to agree to the solution, because they disagreed about the interpretation of the policy situation to begin with. In addition to convincing other policy-relevant actors of the utility of a more limited solution, the provincial government had to justify its more limited interpretation of the policy situation, too. This meant the need to clarify, why such a limited interpretation would have priority over a broader interpretation. In the initial phase of the Hondsbossche Duinen case, this task proved too hard to accomplish for the provincial government of North Holland. On the other hand, in the Sand Motor case (Chapter 8), the multifunctionality of the proposed solution was deliberately and successfully connected to the interpretations of the policy situation of other policy-relevant actors. Depending on who it was interacting with, the provincial government of South Holland was able to highlight those aspects

which were most salient for those actors' interpretations of the policy situation. In more theoretical terms, the supposed multifunctionality of mega-nourishment schemes simplified reframing of the accepted set of solutions to improve the policy situation and, in turn, speed up epistemic community growth.

In the diminished subtype case of the Houtribdijk pilot, the project was framed specifically so as to have minimal negative effect on other policy and management processes in the area. At the expense of multifunctionality, coastal safety performance was much more emphasized as the policy substance. It was framed as a short-term experiment, which could be realized without much further ado, such as participation meetings. This indicates that a choice was made by the initiating consultancy in this project to focus on a limited interpretation of the policy situation. Although in general the concept had the potential to be developed into a multifunctional design, the consultancy had to find a trade-off between the innovative character demanded by the funding agency, as well as minimizing the disturbance and change in functionality to appease the operational manager of the seawall.

This included limited framing foci with regard to policy substance and policy process for minimum disturbance, but also the use of experimental language to incorporate the goals of the funding agency. This also led to a majority of frame-convergent framing interactions (Table 9.3). 'Containment' could be a label for how the initiating consultancy designed the project and presented it to the operational manager of the Houtribdijk. Presenting the project as experimenting with new technologies and designs to the funding agency, as well as containing the number of functions of the design and the potential nuisance for the operational manager helped the consultancy to realize the project. If the Sand Motor project was an answer to a spatial problem in the province South Holland in addition to testing new ways of coastal protection, and the Hondsbossche Duinen project was the direct reinforcement of a threatened stretch of North Holland coast, the Houtribdijk pilot combined the threatened status of the Houtribdijk seawall with the national government's ambition to experiment with new forms of coastal safety also in inland, low-energy ecosystems. Although the pilot was never meant to be the whole solution to the vulnerability of the seawall, it was presented as a stepping stone to such a solution. In doing so, the consultancy justified

the geographical location of the experiment as well as the type of solution that would be experimented with. While these aspects catered to the interpretations of the policy situation of the funding agency and indirectly the larger Houtribdijk reinforcement project, the interpretation of the policy situation of the operational manager was that there was no problem there that needed solving. Especially so, if it involved inconvenience and nuisance for his day-to-day management tasks. The consultancy tried to incorporate and accommodate the manager's frame as much as possible and, other than that, focused on realizing the project through the official procedural channels. Hence, in this project, it was a limited functionality which helped to realize the project, regardless of the multifunctional potential of the type of solution. The consultancy designed the solution to connect to a limited interpretation of the policy situation.

At first sight, the extent of functionality focused upon in the respective projects seems a considerable difference between the full and diminished subtypes. While the full subtypes succeeded because of a focus on many possible functions, the opposite, i.e. a focus on limited functions, occurred in the diminished subtype project. In the full subtype projects, more reframing occurred among policy-relevant actors, than in the diminished subtype project. The question is, whether the differences in how the projects developed can be ascribed to project scale. To reiterate: the difference between the concept of mega-nourishment schemes and the Houtribdijk pilot as a diminished subtype of the core concept is the latter's smaller scale (Chapter 5). In other words, can scale help us understand what we see going on in the projects? First of all, the sheer geographic size of the full subtype projects affects many land uses directly, such as tourism, ecology and some economic land uses, and also has indirect effects on other land uses on more distant locations. This is much less so in the diminished subtype project. Even if we would imagine a mega-size project at the location of the diminished subtype project (see "Hypothetical Sand Motor" in Figure 10.2), it is questionable whether it would have a similar interest from policy actors, the public or the media. It is more difficult to speculate whether the reverse scenario – a diminished subtype project at a location similar to the full subtypes – would raise as much attention (see "Hypothetical Houtribdijk pilot" in Figure 10.2). As opposed to

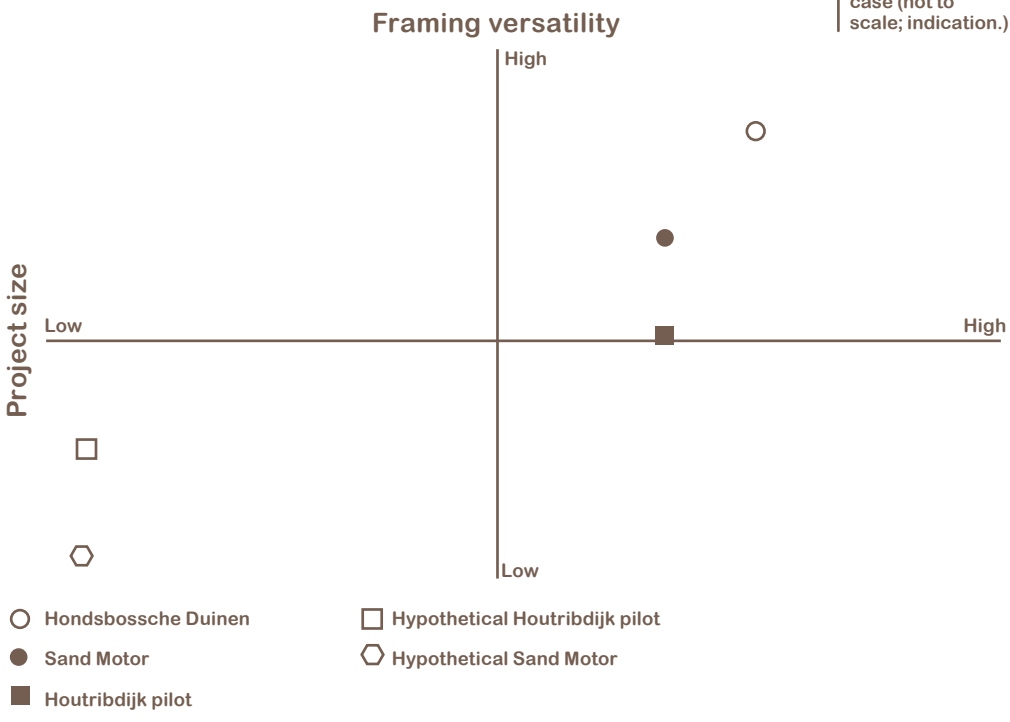


Figure 10.2
Need for framing versatility depending on case (not to scale; indication.)

size only, the proposed location of an experimental project may be more important in influencing the frames of actors and stirring up attention. In consequence, locations with more land uses and land users, such as the coastal squeeze areas in western Netherlands, also need coastal management solutions that resonate with different frames. This functionality demand can be expected to be even more pronounced the higher the impact of the coastal management solution is on the land uses and land users. And that effect on functionality demand grows with the size of the solution and whether the project is intended as an experiment or genuinely has to serve coastal protection. In other words, the more land uses and land users are affected, and the larger the planned solution is, the higher the demand for framing versatility concerning the proposed solution can be expected to be (Figure 10.2). Hence, the distinction between full and diminished subtypes of mega-nourishment schemes does not represent fundamental differences in meaning-making, but it can merely be used as a heu-

ristic categorization applied to research settings. Furthermore, the potential for policy consensus or conflict is closely related to the framing versatility of the type of solution. Such contextual factors as size and location of the proposed solution, as well as current and future land uses and land users influence, i.e. levels of coastal squeeze, influence the need of framing versatility and the minimal extent of epistemic communities.[56]

56 It must be emphasized, that these observations are by no means to be taken as general laws. Instead, they take the status of a pattern emerging from a set of three highly contextual research settings (cf. Chapter 5).

10.3.2 Frame-convergent interactions

Lower order question B.2 deals with the tools interpreters and framers have to co-construct framing interactions:

> *How do interpretive policy entrepreneurs use interactional framing mechanisms to realize an innovative coastal management technology in a complex policy context?*

In Chapter 8, retracing framing interactions revealed the doings of an interpretive policy entrepreneur in the Sand Motor case. At the same time, the comparison of framing interactions across cases (Chapter 9) formed a lead to understanding how the projects played out. These two uses of analyzing framing interactions within a case and between cases illustrate the field of tension between convergent and divergent framing mechanisms. On the one hand, convergent framing mechanisms can help create an epistemic community, as occurred in the Sand Motor case. On the other hand, as in the Hondsbossche Duinen case, phases with mainly divergent and convergent framing mechanisms happened successively. Some actors in this project suggested that escalating a conflict is a useful tool to stir up a decision-making process and remove barriers in the process. In the context of this research's interactional framing mechanisms, this act would be categorized as a divergent mechanism, as it would typically include polarization, i.e. insisting on a certain argument, or disconnection, i.e. dismissing other interpretations. As helpful as this approach might be in specific situations to be continued with frame-convergent actions, based on the first Hondsbossche Duinen phase, actors seem to be ill-advised to follow such a course of action over longer periods of time. This would probably lead to process breakdown instead of the desired effect. Nevertheless, in the two full subtypes of mega-nourishment schemes, in which an interpre-

tive policy entrepreneur could be distinguished to at least to some extent, but also in the diminished subtype case of the Houtribdijk pilot, policy-relevant actors generally succeeded in getting along and trying to understand each other's interpretation of the policy situation. In sum, the successful application of frame-convergent interactional framing mechanisms leading to the growth of an epistemic community surrounding a certain policy substance is the mark of the interpretive policy entrepreneur.

57 In answering this question, I follow the structure of different framing aspects as frequently referred to and visualized in Figure 10.1.

10.3.3 Framing in comparison

The comparative research question B.3 was extensively covered in Chapter 9, which is why I only recapitulate some of the highlights, here.[57] Lower-order research question B.3 read:

> *How do aspects of frames and framing influence the deci sion-making process and the formation of epistemic com munities across different Dutch coastal management cases?*

Framing foci. The comparative analysis of framing foci revealed that the suggested multi-functionality is an argumentative advantage for advocates of mega-nourishment schemes (cf. section 10.3.1). This feature of mega-nourishment schemes is also beneficial for participation in the policy process, because additional design demands introduced by other actors can easily be integrated. Thus, policy-relevant actors may be less reluctant to open up the policy process to others, because doing so may cause less conflict or delay. On the other hand, broadly speaking, in the Dutch coastal management context, actors are familiar with each other's position and interests.

Meta-properties of frames. With regard to meta-properties of frames, mega-nourishment schemes are a rewarding concept. They may be designed on the whole range of institutional, temporal, and geographical scales, as the three cases certify. Connected with the multifunctionality argument, this flexibility allows for strong adaptability to the specific context, with regard to the ecosystem, existing and desired functions, as well as actor surroundings. Besides the involved scale framing potential, mega-nourishment schemes seem to have high consensus potential.

Properties of framing performers. Although every actor is a framing performer, there are also actors who turn out especially proficient in making meaning to form epistemic communities and realize projects. The most clear-cut of those interpretive policy entrepreneurs acted in the Sand Motor case. In the other two cases there was a less pronounced interpretive policy entrepreneur (Hondsbossche Duinen), or it cannot be soundly argued that there was one (Houtribdijk pilot).

Properties of the framing activity. Framing activities in interactions between actors can be frame-convergent or frame-divergent. Both types were found in all three cases to different degrees. While frame-divergent framing activities can be consciously employed to rouse the policy process into action, they can also lead to (near) project breakdown, i.e. the first phase of the Hondsbossche Duinen project. Frame-convergent moves are signs of convincing interactions or efforts of actors to come to terms with other standpoints and arguments.

Collective effects of framing. The way Dutch infrastructure policy-making is structured, performing a policy process in this domain means putting together an epistemic community. The multitude of involved actors on different policy-making levels and the diversity of the tasks and responsibility dispersed among them makes the creation of an epistemic community an implicit goal of the decision-making process in order to be able to realize certain solutions. This is what happened in the Sand Motor and Hondsbossche Duinen cases, and – to a lesser extent – in the Houtribdijk pilot case. However, besides leading to successful realization of a certain solution in each individual project, the cases also suggest the creation of an epistemic community favoring innovative sandy coastal management solutions, which surpassed the project level and achieved a certain cohesion across spatiotemporal scales.

The pyramidal shape of Dutch infrastructure policy decision-making with a ministry and satellite bodies at the top and regional organizations of the public works agency, water boards, provincial governments and municipalities is not a centralistic, top-down implementation apparatus for policies conceived at the top. Rather, the higher tiers of the pyramid are more responsible

for the strategic direction of coastal management, while the lower tiers deal with the day-to-day decision-making, which may also include innovative projects. Due to overlaps in responsibilities between actors and institutionalized processes of learning and knowledge exchange, there are also connections between the lower tiers of the pyramid. In other words, whereas the higher tiers may be seen as relevant in the introduction and perseverance of new coastal management ideas, the lower tiers are relevant in their diffusion. The epistemic community in the Netherlands advocating innovative sandy coastal management solutions and with them mega-nourishment schemes spread across all levels of this policy-making pyramid. So, all parts of that pyramid are important in the uptake and proliferation of new ideas, of which mega-nourishment schemes are one. The advocacy of the mega-nourishment scheme that became the Sand Motor led to an acceptance of that type of solution from the responsible ministry down to the water board and regional public works agency. So much so, that the enthusiasm about mega-nourishment schemes spilled over to other regions in the Netherlands to make the Hondsbossche Duinen project possible. Furthermore, after the Sand Motor, more smaller-scale solutions are tested, of which the Houtribdijk pilot is but one example. This suggests that mega-nourishment schemes and its derivatives gained a foothold in Dutch coastal management. It can be argued that the epistemic community backing this kind of coastal management became cohesive and has to a certain degree been institutionalized.

10.3.4 Mechanisms of meaning-making

I have presented meaning-making as a generic human activity. It describes the processes with which we human beings make sense of our lifeworld and is at the basis of our interactions with other subjects and objects. So, it is not the question whether meaning-making influences decisions in coastal management. Rather, it is interesting to know how this happens. This is what the overarching research question B. pertains to:

> *How does policy-relevant actors' meaning-making of the policy situation influence decision-making processes in the Dutch coastal management domain?*

The answers to the lower order questions have revealed several aspects, which call for synthesizing. In the end, influence on decision-making processes can be understood as the ways by which meaning-making contributes to or detracts from epistemic community increase. The research results indicate that both directions were present in the studied cases. Contribution or detraction can be associated with both the cognitive as well as the interactional framing approaches (Chapter 4). The advantage of mega-nourishment schemes turned out to be the resonance of its policy substance – multifunctionality – with various problem and solution interpretations. This policy substance is part of actors' frames, i.e. the cognitive framing side. The Hondsbossche Duinen case also featured the example of a frame – coastal safety – that detracts from epistemic community growth in the pluralist Dutch coastal management system. Similarly, I distinguished frame-convergent as well as frame-divergent processes in all cases. The effect of frame-divergent processes became especially visible in the Hondsbossche Duinen case, where they almost resulted in project breakdown. While it is possible to employ these processes actively and strategically, this is by no means always the case. And the active and strategic use of the processes is not a pre-condition for labelling an actor an "interpretive policy entrepreneur". The everyday and subconscious character of framing activities also means that interactions between policy-relevant actors are always shaped by interactional framing processes. Finally, the fact that the epistemic community surrounding mega-nourishment schemes has become cohesive and institutionalized across regional policy arenas entails not only that there is already a basic approval for this type of coastal management solutions, but also that it has become increasingly difficult to dismantle this community. The institutionalization of the epistemic community across policy arenas thereby reflects the entanglement of actors' interpretations and the institutional power they wield. Epistemic communities represent a direct link between interpretations of the policy situations, the solutions to perceived problems, and how to get those solutions realized. This reasserts the position of interpretations and language in the complex of political power and superimposes epistemic communities, i.e. communities of interpretive power (cf. the interpretive policy entrepreneur), on policy communities as not necessarily but possibly overlapping layers. In sum, a favor-

able policy substance as well as frame-convergent interactions have led to a more and more stable epistemic community endorsing mega-nourishment schemes as useful additions to the Dutch coastal management repertoire.

10.4 Theoretical considerations: Advancing the 'framing' debate

From its inception on, the framing concept has undergone a diversification, which has not always contributed to its clarity and precision (Chapter 4). Proposals for systematization of the literature about this fragmented concept have not yet been conclusive (Entman 1993, cf. Borah 2011). But the question really is, whether the concept inevitably needs systematization. This is by no means a clear-cut issue, because the question contains a methodological aspect. On the one hand, without systematization there is no common ground for the concept and its discussion. It is also a condition for accumulation of knowledge, i.e. how can our knowledge of frames and framing processes grow, if we do not attempt to integrate what we learn? Without systematization and a clear theoretical framework, it is difficult to derive testable hypotheses and uncover causal relations. On the other hand, the contextuality of phenomena and their embeddedness in webs of meaning (cf. Geertz 2000, 5) complicates the unreflective transplantation of concepts across research sites. This perspective benefits much more from situated, tailor-made concepts based in individuals' lived experience and the semiotics of the locations these individuals live in (cf. Yanow 2014a). Admittedly, these are provocatively phrased perspectives, but the friction between them demonstrates that the perception of severity of the conceptual systematization issue depends on scholars' methodological commitments. Besides, this raises an adjacent question. Would it be methodologically acceptable to construct an empirically-influenced as well as a theoretically-influenced concept and what would be the social-scientific utility of such an exercise? Both more positivist thinking scholars and interpretivist scholars would have reservations about this. The former positivist would argue, that a purely empirical concept tailored to the research context does not help for generalization of results. The latter interpretivist would disagree and counter that a theoretical concept constructed from the scientific literature is not useful, because it "privileges theoretical literature

over lived experience" (Schwartz-Shea and Yanow 2012, 38). Two ways forward seem sensible from where I stand.

One way of dealing with the issue would be to further systematize the conceptual definition of the framing concept. Systematizing conceptual definitions can be done in two ways. First, following Sartori (1970) and Collier and Mahon (1993), a systematic reconstruction of the framing concept could be attempted by gathering the relevant defining properties of the concept from the literature. This will result in an experience-distant concept, which is "fashioned to capture the general features of social life" (Adcock 2014, 91; referring to Clifford Geertz). This is also the way in which I used the concepts to understand the empirical settings I studied. It can also be used for deductive hypothesis-testing and positivist comparison across cases. Second, following Schaffer (2016), the concept can be studied or 'elucidated' in its context, i.e. the concept of framing in policy practice, its meaning, how it is experienced, how it is used, or how it is put to use.

The second way forward would be to systematize not on the level of conceptual properties, but on a more abstract level of meta-dimensions. This approach could yield an extended typology of framing concepts potentially outlined along the dimensions of paradigm, method, interaction/cognition, as suggested by Dewulf et al. (2009) or Shim, Park, and Wilding (2015). Another alternative would be to organize the concept along the lines of questions indicating what is framed, how this is framed, and who frames. So, instead of rigidly defining the concrete properties of the framing concept, such a typological approach could reveal the structuring logics behind the concepts proposed in the literature and present a heuristic framework to support the study of lived experience.

10.5 Methodological considerations

10.5.1 Interviewing techniques

Data generation methods are developed for varying purposes and differ in the kind of results they deliver. Ideally, the choice of data generation method results naturally from the research problem. That does not mean that there is always only one data generation method that fits the research problem. More often, the researcher selects a method from a larger set of methods that will potentially

yield results that fit the research interest well. All of the methods in the larger set will have a fit with the research problem, but will direct the results into different directions. Two of these alternative data generation methods – narrative interviewing and ordinary language interviewing – and what results these would have delivered are discussed here:

A. *In narrative interviewing, the interviewer lets the inter viewee tell their story of a certain research subject. This type of interviewing attempts to reduce interviewer steering of the story to a minimum. In this manner, the interviewee acts as a guide for the interviewer according to the motto "Go where the respondent wants to go". After completion of the whole story by the interviewee, the interviewer can return to certain topics for elaboration. Researchers applying such narrative interviewing are often interested in the story shape of people's meaning-making. The assumption is that – similar to fictitious stories – the narratives people tell start from some kind of problem, explain a development and come to a conclusion using some kind of arc of tension. Deborah Stone's work (2002) on policy stories is a well-known example in this line of public administration research. While narrative analysis starts from individual stories, some also use it to extract meta-nar ratives about specific policy processes (Bontje and Slinger 2017).*

B. *Ordinary language interviewing (Schaffer 2014a) follows a different path.*[58] *In this interviewing style, the interviewer often tries to begin with a judgement question, such as "Does democracy exist in your country?" (Schaffer 2014b). With probing questions and questions for elaboration, this concept – democracy – is then further explored. By keeping to the interviewee's terminology, and leaving potentially steering questions for the end of the interview, the interviewer attempts to minimize influence on the interviewee's responses or at least be very conscious about when questions are steering. This method helps researchers to explore the situated meaning of concepts. In addition, it avoids the front-loading of research with meaning attributed to the research subject by the researcher,*

58 The "ordinary" aspect of this type of interviewing lies in minimizing the use of concepts that are not relevant for the research subject and may already have contested meaning. It is ordinary, because the interviewer relies on the interviewee's common everyday language.

which may occur through the explicit operationalization of concepts into measurable indicators. Instead, ordinary language interviewing leaves the floor to individuals and their own meaning-making.

As the methods chapter describes, I chose semi-structured interviewing as a data generation method for this dissertation research. This choice was motivated by the objective of reconstructing the framing histories of the three coastal management projects under study. Compared to narrative interviewing, the results of the semi-structured interviews are more in the form of short stories. Often, answers about actor interactions or important events in the projects still triggered a narrative answer. However, in the analysis, I was much more interested in the interactions during projects' decision-making processes, how framing figured in them and interviewees' perspectives on them than in establishing the beginning-middle part-end of their individual narrative. I did look at interviewees' different framing foci – their interpretation of policy substance, policy process and actors' identities and relationships – to position them in the framing landscape. This method allowed me to get to the frames of organizations, which may be seen as their policy story. Narrative interviewing would have resulted in the different meta-narratives that were intertwined in the more abstract discourse about coastal management in general and the projects in particular. With regard to ordinary language interviewing, the semi-structured interviewing method was more geared toward finding out about the process of decision-making. Rather than exploring the meaning given to a specific concept by coastal managers, this research was much more interested in the processes that led to policy convergence or divergence in the three projects. With the choice of semi-structured interviewing the level of interviewer influence on interviewees' responses is a little bit higher than with the other two types of interviewing. See Section 10.6.2 for a potential research subject that may involve ordinary language interviewing.

What these three types of interviewing also indicate is related to the distinction between quantitative and qualitative data generation, and in its wake the distinction between more positivism oriented work and interpretivist research. It is often assumed that the amount of questions in a data generation method is directly

related to what type of research is involved. Quantitative survey methods often use a relatively long list of questions with closed answers, while qualitative interviews and interpretivist interviewing methods in particular include much less questions and expect only open-ended answers. The three methods show, however, that the number of questions is irrelevant for such a judgement. It is much more important to gauge the level of researcher influence in the interviews. In the end, this is also related to researchers' philosophical commitments with regard to science. Similar to other frames, such a frame of what science is and how it should be carried out is rooted in the backgrounds of researchers (for mine see biography and philosophical commitments in Chapter 5).

10.5.2 Comparative method

Expanding the original empirical analyses to the other cases clarified why the respective policy framing perspectives were relevant in the respective cases and not others. For example, the comparative analysis concerning interactional framing mechanisms showed that divergent mechanisms occurred frequently in the Hondsbossche Duinen and Houtribdijk pilot cases. On the other hand, the frequency of converging interactional mechanisms in the Sand Motor case points towards the dominance of interpretive policy entrepreneuring in that case. In the former two cases, more compartmentalized and polarized framing foci played a large role in what was going on.

10.6 Research directions

10.6.1 Utility of framing concepts for practice

For a couple of years now, infrastructural decision-making in the Netherlands is being organized according to the so-called "integrated project management" structure. In this kind of structure, a team of specialized managers, e.g. a lead project manager, technical manager, contract manager and an "omgevingsmanager", a strategic area manager, works together to realize projects. The latter type of manager, the "omgevingsmanager", interacts with the public and aligns interests, thereby managing the surroundings of the actor network. Currently, the work of this strategic area manager is based on the "Handboek Strategisch Omgevingsmanagement",

a manual for strategic area management. The findings about meaning-making in Dutch coastal management have potential to be integrated into or elaborate on current practices of strategic area management. Exploring the connections between framing and strategic area management and subsequent translation of the findings can be a fruitful line of inquiry.

10.6.2 Expansion of interpretations on other groups

In this dissertation, the focus is on the interpretations and meaning-making interactions of policy-relevant actors. This has delivered findings on the day-to-day policy-making in Dutch coastal management. However, as afore-mentioned, coasts and their management can be seen as part of the Dutch identity and are certainly an integral part of Netherlands' history. This discourse is strong among individuals in the coastal management community, but it is far from limited to this group. Hence, it may be interesting what the relationship between the coastal areas and Dutch identity is and what role iconic projects such as the Sand Motor play in this. This could tie into research that deals with the experience of climate change by non-scientists and the effects of coastal squeeze on this experience.

10.6.3 Epistemic communities as communities of interpretive power

The theoretical contribution that is widely accepted as the original coinage of the term 'epistemic community' – Peter Haas' "Introduction: epistemic communities and international policy coordination" (Haas 1992) – stands in a scholarly tradition of critical realist writers, e.g. Margaret Archer. In addition, Haas takes the concept of framing, which he also adduces as an activity of the epistemic community, from the rational choice influenced writing of Kahneman and Tversky. Thus, it would be interesting to see what a more interpretive perspective would do with the concept of epistemic communities. Exchanging the realist and rationalist view in favor of a more subjectivist and meaning-oriented view could lead to valuable insights into the questions why knowledge – e.g. about the climate – is sometimes taken as authoritative, why knowledge is sometimes discarded as 'just an opinion', and how

epistemic communities influence this process. In other words, what does knowledge mean to communities of interpretive power, and how do such communities influence the categorization of knowledge as questionable or undisputed?

10.7 Closing reflections

This dissertation research set out to understand the role of meaning-making in coastal management settings in the Netherlands. By the retrospective study of three distinctly innovative coastal management cases, several aspects emerged concerning the construction and negotiation of meaning, as well as the particular role of mega-nourishment schemes as innovations in the Dutch coastal management domain. Different types of framing mechanisms have been observed to play a part in the coming about of innovative coastal management alternatives. As a generic, human sense-making and interaction mechanism, the framing perspective contributed to a better understanding of the argumentative processes underlying coastal management innovation. Taking the historical lens, the implementation of mega-nourishment can be understood as a consistent step in coastal management involving the application of the available technological means and the drive to improve coastal protection prominent in coastal management for a long time already. While locations for mega-nourishment schemes along the Dutch coast seem sparse, the exploration of other potential sites is still ongoing. Taken together, the Dutch governance tradition, its coastal management history, as well as its geographic situation with its socio-economic core squeezed against the country's western coast have been a welcoming breeding ground for mega-nourishment schemes to develop.

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APPENDIX

I – List of reviewed sources (chapter 3)

	Author(s)	Year	Type[a]	Source topic	Comparison with
1	Cleveringa et al.	2005	REP	Sand Motor	small-scale sand nourishments
2	Slim and Löffler	2007	REP	Sand Motor	small-scale sand nourishments
3	Jonker and Van Veen	2008	REP	Sand Motor	small-scale sand nourishments
4	Stronkhorst et al.	2010	REP	Sand Motor	small-scale sand nourishments
5	Van Slobbe (2010)	2010	ART	Sand Motor	small-scale sand nourishments
6	Mulder and Tonnon	2011	ART	Sand Motor	small-scale sand nourishments
7	Bureau Landwijzer et al.	2012	REP	Sand Motor	small-scale sand nourishments
8	Hermans, Slinger, and Cunningham	2013	ART	Sand Motor	small-scale sand nourishments
9	Stive et al.	2013	ART	Sand Motor	small-scale sand nourishments
10	Van Slobbe et al.	2013	ART	Sand Motor	small-scale sand nourishments
11	Lulofs and Duijn	2013	REP	Sand Motor	small-scale sand nourishments
12	Vikolainen	2013	REP	Sand Motor	small-scale sand nourishments
13	De Vriend, Van Koningsveld, and Aarninkhof	2014	ART	Sand Motor	small-scale sand nourishments
14	Van Wesenbeeck et al.	2014	ART	Sand Motor	small-scale sand nourishments
15	Dulfer et al.	2014	REP	Sand Motor	small-scale sand nourishments
16	Hill	2015	ART	Sand Motor	small-scale sand nourishments
17	Van Loon-Steensma et al.	2012	REP	Sand Motor	hard-engineering practices
18	Van den Hoek et al.	2012	ART	Sand Motor	hard-engineering practices
19	Tangelder et al.	2013	REP	Sand Motor	hard-engineering practices
20	Van der Nat et al.	2016	ART	Sand Motor	hard-engineering practices

a. REP = report; ART = peer-reviewed article.

II – Advantages mentioned in reviewed sources (chapter 3)

	Author(s)	Year	Ecological advantages						Safety advantages				Economic advantages			
			Limited ecosystem disturbance	Nature development	Improvement of biotic conditions	Natura 2000 compensation	Freshwater stock	Erosion mitigation	Coastal protection	Flexibility	Beach recovery after extreme weather events	Buffer against sea-level rise	Cost-effectiveness	Recreation	Innovation	Housing
Sand Motor + small-scale sand nourishments																
1	Cleveringa et al.	2005	X	X	X	X	X		X	X				X	X	X
2	Slim and Löffler	2007		X	X				X	X	X			X		
3	Jonker and Van Veen	2008		X		X			X	X		X		X	X	
4	Stronkhorst et al.	2010	X	X		X	X					X	X	X		X
5	Van Slobbe	2010		X				X				X				
6	Mulder and Tonnon	2011		X	X				X			X		X	X	
7	Bureau Landwijzer et al.	2012	X	X	X	X	X	X	X					X		
8	Hermans, Slinger, and Cunningham	2013	X	X	X				X	X				X	X	
9	Stive et al.	2013		X					X				X	X	X	
10	Van Slobbe et al.	2013		X			X			X			X	X		
11	Lulofs and Duijn	2013	X	X					X					X	X	X
12	Vikolainen	2013	X	X	X					X				X		
13	De Vriend, Van Koningsveld, and Aarninkhof	2014	X	X						X			X	X		
14	Van Wesenbeeck et al.	2014	X	X												
15	Dulfer et al.	2014		X					X					X		
16	Hill	2015	X	X					X	X				X		
Sand Motor + hard-engineering practices																
17	Van Loon-Steensma et al.	2012		X					X	X	X		X	X		
18	Van den Hoek et al.	2012		X						X						
19	Tangelder et al.	2013	X	X					X	X			X	X		
20	Van der Nat et al.	2016														

III – Disadvantages mentioned in reviewed sources (chapter 3)

	Author(s)	Year	Ecological disadvantages					Safety disadvantages	Economic disadvantages			
			Deterioration of beach habitat and biota	Freshwater quality	Beach siltation	Sand losses	Other Natura 2000 obligations	Reduced swimmer safety	Costs	Reduced beach access	Port siltation	Interrupted coastal view
Sand Motor + small-scale sand nourishments												
1	Cleveringa et al.	2005	X									
2	Slim and Löffler	2007	X	X								
3	Jonker and Van Veen	2008						X				
4	Stronkhorst et al.	2010			X			X	X	X	X	X
5	Van Slobbe	2010										
6	Mulder and Tonnon	2011										
7	Bureau Landwijzer et al.	2012							X			
8	Hermans, Slinger, and Cunningham	2013						X	X	X	X	
9	Stive et al.	2013										
10	Van Slobbe et al.	2013										
11	Lulofs and Duijn	2013		X			X	X	X		X	
12	Vikolainen	2013										
13	De Vriend, Van Koningsveld, and Aarninkhof	2014										
14	Van Wesenbeeck et al.	2014										
15	Dulfer et al.	2014										
16	Hill	2015										
Sand Motor + hard-engineering practices												
17	Van Loon-Steensma et al.	2012	X			X			X	X		
18	Van den Hoek et al.	2012		X				X				
19	Tangelder et al.	2013							X			
20	Van der Nat et al.	2016		X								

IV – Interview guide: Hondsbossche Duinen (Dutch)

In opdracht van het Corporate Innovatieprogramma (CIP) van Rijkswaterstaat doet het Water Governance Centre (WGC) onderzoek naar leermomenten tijdens de voorbereiding van infrastructuurplannen en/of -projecten m.b.t. waterveiligheid. Dit onderzoek zal worden uitgevoerd door het Centrum voor Schone Technologie en Milieubeleid van de Universiteit Twente.

Ewert Aukes, MSc., voert het onderzoek uit. Hij promoveert tevens bij de Universiteit Twente op een aanpalend onderwerp in relatie tot perspectieven van stakeholders in beleidsprocessen.

Het onderzoek zal zich richten op de individuele perspectieven van deelnemers aan het voorbereidingsproces voor de Hondsbossche en Pettemer zeewering (HPZ) als onderdeel van de Zwakke Schakels Noord-Holland. Hierbij zal specifiek gekeken worden naar de visie van procesdeelnemers op kosten en baten (maar ook voor- en nadelen i.h.a.) van de project-alternatieven die de revue gepasseerd zijn. Vervolgens is het de vraag of deze visies voldoende aan bod zijn gekomen in de besluitvorming. Het resultaat van het onderzoek moet suggesties geven hoe de besluitvorming zo in te richten is dat de bestaande visies op hun waarde meegenomen worden.

Om tot deze informatie te komen zou de onderzoeker graag een interview met u willen voeren dat maximaal 1,5u zal duren.

Ervaring en mening

Voordat we beginnen met specifieke vragen over de percepties van actoren/stakeholders in het project Hondsbossche en Pettemer Zeewering, wil ik graag een aantal algemene vragen stellen:

- Wat is uw ervaring met waterbeleid en participatieprocessen?

In het verleden werd er vaak een 'harde' manier van waterbouw gebruikt; nu is er een ontwikkeling zichtbaar richting de 'zachte' waterbouw, gebruikmakend van natuurlijke dynamiek.

- Wat zijn voor u de essentiële verschillen tussen de 'harde' en 'zachte' manier van waterbouw?
  - Wat vindt u de voor- en nadelen van deze twee verschillende manieren?
  - Waarin zitten de kosten en baten van de twee manieren en hoe verhouden deze zich tot elkaar?
- Wat is uw mening over deze twee verschillende manieren van waterbouw?

Verwachtingen over het project

- Wat is/was uw functie en taak binnen het project?
- Wat waren uw eerste algemene verwachtingen wat betreft het project en de werkzaamheden?
  - Welke voor- en/of nadelen verwachtte u voor uzelf en anderen?
  - Hoe keek u aan tegen kosten en baten van het project?
  - Welke onzekerheden speelden een rol in het project?
  - Hoeveel vertrouwen in de goede afloop van het project had u in het begin?
- Welk algemeen beeld van het project hebt u in het begin geschetst richting anderen?
  - Waarom hebt u dit beeld op deze manier geschetst?
  - Met welke intentie schetste u dit beeld?
  - Welke kanalen hebt u hiervoor gebruikt?

Belangrijkste meningsverschillen/discussiepunten

- Wat waren volgens u de belangrijkste meningsverschillen met betrekking tot kosten en baten binnen het project?
  - Wanneer gedurende het besluitvormingsproces hebben meningsverschillen tussen de partijen plaatsgevonden?
  - Hoe intensief beleefde u de (verschillende) meningsverschillen?
  - Hebt u het idee dat meningsverschillen in de meeste gevallen bijgelegd konden worden?
  - Hoe zijn binnen het project de kosten en baten verdeeld onder de deelnemende partijen?
  - Welke onenigheid over de verdeling van kosten en baten hebt u waargenomen?
  - Waarom is de uiteindelijke verdeling een eerlijke verdeling van kosten en baten?
  - Zijn er belangenconflicten tussen de verschillende partijen?
- Welke verschillende standpunten met betrekking tot kosten en baten hebt u tijdens het project bij andere bestuurders/stakeholders waargenomen?
  - Welke groepen van stakeholders met soortgelijke standpunten hebt u waargenomen?
  - Hoe verhouden zich deze andere standpunten tot elkaar en tot uw eigen mening?
  - Hoe open stonden de stakeholders voor andere meningen?

- Hoe verschillen de waargenomen standpunten t.o.v. kosten en baten van elkaar?
- Welke ontwikkelingen hebt u in de standpunten van anderen waargenomen?
- Zijn de verschillen tussen standpunten gedurende het project afgenomen? Waarom wel/niet?

• Op welke manier bent u en zijn anderen met de genoemde meningsverschillen omgegaan?
- Waarom is er gekozen om op deze manier met het thema om te gaan?
- Wat was het doel van de gebruikte strategie?
- Waren de gebruikte strategieën doeltreffend?
- Kunt u specifieke personen identificeren zonder wie het proces was stuk gelopen?
- Hoe hebben zij een stuklopen van het proces kunnen voorkomen?

• Wat is uw huidige standpunt wat betreft de genoemde meningsverschillen?
- Wat zijn de achterliggende redenen voor uw huidige standpunt?
- Welke ontwikkeling heeft uw standpunt doorgemaakt?
- Waarom is uw standpunt wel/niet gewijzigd?
- Welk argument zou uw standpunt doen veranderen?
- In welke mate wordt uw standpunt maatschappelijk geaccepteerd en gedragen?

Bouwopgave en ontwerpen

• Hoe beperkend of verruimend was de bouwopgave in de keuze van het type oplossing?
- Wie heeft de bouwopgave geformuleerd?
- Waren bepaalde soorten oplossingen bij voorbaat uitgesloten?
- Werd in de bouwopgave van bepaalde soorten oplossingen afgeraden?
- Is de bouwopgave gedurende het proces nog veranderd?

• Wanneer is gedurende het proces een gedetailleerd ontwerp gekomen als uitgangspunt voor discussies?
- Hoe is men tot zo een gedetailleerd ontwerp gekomen?
- Welke verschillende standpunten zijn in dit gedetailleerde ontwerp verwerkt?
- Wat waren uw eigen ideeën over de voor- en nadelen van dit gedetailleerde ontwerp?
- Welke ideeën over voor- en nadelen van het gedetailleerde ontwerp zijn ter sprake gekomen?
- Hoe is omgegaan met de verschillende ideeën

over voor- en nadelen van het gedetailleerde ontwerp?

Participatie en samenwerking

- Welke samenwerkingsverbanden tussen stakeholders en bestuurders zijn er tijdens het project ontstaan?
  - Wat waren uw verwachtingen betreffende de samenwerking met anderen binnen het project?
  - Welke voor- en/of nadelen verwachtte u voor uzelf en anderen?
  - In hoeverre werkte u samen met andere partijen binnen het project?
  - Welke resultaten leverde de samenwerking op?
- Wat zijn uw bevindingen over de participatie binnen het project?
  - Wat waren uw verwachtingen betreffende de inbreng van nieuwe perspectieven en participatie van stakeholders binnen het project?
  - Hoe verwachtte u dat nieuwe perspectieven ingebracht en stakeholders betrokken zouden worden in de planvorming en de uiteindelijke besluitvorming?
  - Hoe verwachtte u dat uw standpunt een rol zou spelen in de besluitvorming?
  - Bent u tevreden met de manier waarop uw standpunt meegenomen is in de besluitvorming?
  - Welke resultaten levert de participatie op?
  - Hoe denkt u dat de stakeholders de participatie zelf ervaren?
- Op welke manier is getracht de mate van betrokkenheid van externe partijen te verhogen binnen het project?
  - Waarom is er gekozen om op deze manier de mate van betrokkenheid te be•nvloeden?
  - Wat was of is de effectiviteit van de strategie?
- Wat zijn volgens u de belangrijkste resultaten van het project en de participatie van stakeholders binnen het project?
  - Wat zijn de sterke en zwakke punten van het project en de alternatieve oplossingen?
  - Wat zijn de sterke en zwakke punten van de alternatieve oplossingen die zijn afgekeurd?
  - Welke voordelige en/of nadelige effecten heeft het project voor u, andere gebruikers en in het algemeen?
  - Welk resultaat, dat nu niet is behaald, had u graag willen boeken?
  - Kunt u aangeven of het begrijpelijk is dat

bepaalde door u gewenste uitkomsten niet zijn behaald?

Taken en verantwoordelijkheden

- Hoe zijn de taken en verantwoordelijkheden tussen de verschillende overheden, bestuurders en stakeholders verdeelt bij dit project?
  - Wie was de opdrachtgever?
  - Wat zijn de belangrijkste factoren die gerechtvaardigd moeten worden voor de opdrachtgever?
  - Zijn taken en verantwoordelijkheden verschillend per fase van het project?
  - Welke bestuurders en stakeholders moeten bij een besluitvormingsproces van het huidige soort betrokken worden?
  - Welke wettelijke verplichtingen zijn er rondom participatie?
  - Welke bestuurders en stakeholders hadden uiteindelijk de mogelijkheid om besluiten te nemen (knopen door te hakken)?
  - Hoe sterk was de druk die vanuit hogere overheidsniveaus voelbaar was om het proces op een bepaalde manier uit te voeren?
- Wat waren uw eigen taken en verantwoordelijkheden binnen het project?

V – Interview guide: Houtribdijk pilot (Dutch)

In de interviews voor de pilot voorlandoplossing Houtribdijk ook altijd de relatie met het project versterking Houtribdijk uitzoeken.

Ervaring en mening

- Wat is uw ervaring met waterbeleid en participatieprocessen?

In het verleden werd er vaak een 'harde' manier van waterbouw gebruikt; nu is er een ontwikkeling zichtbaar richting de 'zachte' waterbouw, gebruikmakend van natuurlijke dynamiek.

- Wat zijn voor u de essentiële verschillen tussen de 'harde' en 'zachte' manier van waterbouw?
  - voor- en nadelen
  - kosten en baten en verhouding tot elkaar
- Wat is uw mening over deze twee verschillende manieren van waterbouw?
- Wat kan zachte waterbouw voor het overkoepelende project dijkversterking Houtribdijk betekenen?

Verwachtingen over het project

- Hoe kwam het experiment pilot voorlandoplossing Houtribdijk tot stand?
- Wat is de rol van de pilot voorlandoplossing Houtribdijk in het grote versterkingsproject vanuit administratief oogpunt?
- Wat is/was uw functie en taak binnen het project?
- Hoe zijn de taken en verantwoordelijkheden tussen de verschillende stakeholders verdeelt bij dit project?
  - Opdrachtgever
  - (Belangrijkste) ontwerpeisen
  - Verschil taken en verantwoordelijkheden per projectfase
  - Verplichtte/vrijwillig betrokken stakeholders
  - Wettelijke verplichtingen participatie
  - Eindverantwoordelijke stakeholders
  - Druk vanuit hogere overheidsniveaus

- Hoe beperkend of verruimend is/was de bouwopdracht voor het overkoepelende project in de keuze van het type oplossing?
  - Wie heeft de bouwopgave geformuleerd?
  - Uitsluiting/afraden bepaalde soorten oplossingen
  - Verandering bouwopgave gedurende proces
- Hoe is binnen deze opdracht de ruimte ontstaan voor de pilot?

- Wat waren uw eerste algemene verwachtingen wat betreft het project en de werkzaamheden?
  - voor- en nadelen voor uzelf en anderen
  - kosten en baten van het project
  - onzekerheden
  - vertrouwen in de goede afloop
- Welk algemeen beeld over de pilot voorlandoplossing Houtribdijk draagt u uit?
  - waarom op deze manier
  - intentie
  - kanalen
- Wat is volgens u de invloed van dit pilotproject op het grotere project versterking Houtribdijk?
- Wat wordt er met de uitkomsten van de pilot gedaan?

Belangrijkste discussiepunten

- Wat waren/zijn volgens u de belangrijkste discussiepunten met betrekking tot kosten en baten binnen het project?
  - Wanneer plaatsgevonden?
  - Intensiteit van meningsverschillen
  - Bijlegging meningsverschillen
  - Verdeling kosten en baten onder deelnemende partijen
  - Onenigheid over verdeling kosten en baten
  - Eerlijkheid uiteindelijke verdeling van kosten en baten
  - Belangenconflicten bij de verschillende partijen
- Welke verschillende standpunten met betrekking tot kosten en baten hebt u bij anderen waargenomen?
  - Groepen stakeholders met soortgelijke standpunten
  - Verhouding andere standpunten tot elkaar en tot eigen mening
  - Openheid stakeholders voor andere meningen
  - Verschillen waargenomen standpunten t.o.v. kosten en baten
  - Ontwikkelingen in standpunten van anderen
  - Afname verschillen tussen standpunten gedurende het project
- Op welke manier bent u en zijn anderen met de genoemde meningsverschillen omgegaan?
  - Doel van de gebruikte strategie
  - Doeltreffendheid van de gebruikte strategieën
  - Cruciale personen in het proces
  - Voorkomen stuklopen proces

- Wat is uw huidige standpunt wat betreft de genoemde meningsverschillen?
  - Achterliggende redenen
  - Ontwikkeling standpunt
  - Rede wijziging standpunt
  - Potentieel argument verandering standpunt
  - Maatschappelijke acceptatie en draagvlak standpunt

Samenwerking en participatie

- Welke samenwerkingsverbanden zijn er tijdens de pilot en het overkoepelende project ontstaan?
  - Verwachtingen betreffende samenwerking met anderen
  - Verwachtte voor- en nadelen voor uzelf en anderen
  - Resultaten samenwerking
- Wat zijn uw bevindingen over de participatie binnen de pilot en het overkoepelende project?
  - Verwachtingen inbreng nieuwe perspectieven en participatie
  - Verwachtte manier van inbrengen en participeren stakeholders in planvorming en uiteindelijke besluitvorming
  - Verwachtte rol eigen standpunt
  - Tevredenheid rol eigen standpunt
  - Resultaten participatie
  - Zelf-ervaring participatie stakeholders
- Op welke manier is getracht de mate van betrokkenheid van externe partijen te verhogen binnen de pilot en het overkoepelende project?
  - Rede keuze manier participatie
  - Effectiviteit strategie
- Wat zijn volgens u de belangrijkste resultaten van het project en de participatie binnen de pilot en het overkoepelende project?
  - Sterke en zwakke punten
  - Sterke en zwakke punten van niet gekozen oplossingen
  - Voordelige en nadelige effecten voor u, andere gebruikers en in het algemeen
  - Niet gerealiseerde wensen en begrip hiervoor

VI – Interview guide: Sand Motor (Dutch)

Briefing
Hartelijk dank dat U mij te woord wiltstaan over het project Zandmotor. Het interview gaat over hoe de waarnemingen van deelnemers aan het besluitvormingsproces veranderden gedurende het project en hoe deze veranderingen het verloop van het project beïnvloedden. Voor wij beginnen heb ik nog twee vragen:

1. Zou U tijdens het gesprek willen proberen om duidelijk te benoemen, wanneer U uit eigen ervaring spreekt en wanneer de informatie van horen-zeggen is?

2. Ik wil het gesprek graag opnemen voor verdere verwerking. Gaat U hiermee akkoord?

Als U geen verdere vragen heeft, zou ik graag willen beginnen.

Algemeen
- Hoe bent U betrokken geweest bij het project Zandmotor?
- Voor welke organisatie bent U bij het project betrokken geweest?
- Hoe lang bent U betrokken geweest?

Doorslaggevende momenten & probleemstellingen
Het project Zandmotor heeft een lange geschiedenis. Deze geschiedenis kunt U zich ook voorstellen als een reeks van aaneengeschakelde gebeurtenissen. Sommige van deze gebeurtenissen waren belangrijker dan anderen voor de uitkomst van het project, namelijk de implementatie van een zandige kustveiligheidsoplossing bij Ter Heijde.

- Wat waren volgens U de doorslaggevende momenten gedurende het project Zandmotor? Waarom?

Daarnaast gaat elke deelnemer aan het besluitvormingsproces met bepaalde probleemstelling een vergadering in. Deze probleemstellingen kunnen gedurende het project veranderd zijn.

- Wat was Uw probleemstelling voor het project Zandmotor tijdens het doorslaggevende moment?
- Kunt U zich nog herinneren, welke probleemstellingen andere projectdeelnemers hadden tijdens doorslaggevende momenten?
- Hoe veranderden de probleemstellingen tijdens of na het doorslaggevende moment?

Zoals ik het zie, zit aan een probleemstelling ook een bepaalde persoonlijke favoriete oplossing vast.

- Hoe beïnvloedden de veranderende probleemstellingen telkens de officiële voorkeursoplossing van het project Zandmotor?
- Wat was volgens U de beste oplossing voor de probleemstelling?
- In hoeverre waren andere procesdeelnemers het met Uw favoriete oplossing eens gedurende het project?

Waarneming
Voor mij is het interessant of de waarnemingen over het besluitvormingsproces gedurende het project zijn veranderd of niet. Daarnaast wil ik weten hoe die waarneming samenhangt met de door u genoemde doorslaggevende momenten. Als eerste hebben procesdeelnemers een idee over de inhoud van het beleid.

- Hoe veranderde tijdens of na de doorslaggevende momenten de manier waarop men over de inhoud van het project praatte?

Als tweede kunnen procesdeelnemers ook ideeën hebben over de inrichting van het besluitvormingsproces.

- Hoe veranderden deze ideeën bij Uzelf en anderen tijdens de doorslaggevende momenten?

Als derde hebben procesdeelnemers ook een voorstelling van de standpunten van anderen in het proces en wat de verhoudingen tussen deelnemers zijn.

- Welke veranderingen in posities en verhoudingen tussen procesdeelnemers heeft U rondom de doorslaggevende momenten waargenomen?

Verandering van waarnemingen
Ik wil nog iets specifieker ingaan op de veranderingen die hebben plaatsgevonden tijdens het besluitvormingsproces. Als er een verandering van de waarneming van een procesdeelnemer heeft plaatsgevonden, kan dit op verschillende manieren zijn gebeurd. Deze veranderingen kunnen betrekking hebben op de drie aspecten over het besluitvormingsproces die eerder besproken zijn: proces, beleidsinhoud, posities en verhoudingen.

- Hebben bepaalde procesdeelnemers door het bekrachtigen van een eigen standpunt een conflict verergerd?
- Welke standpunten van procesdeelnemers zijn door anderen verworpen?

- Welke standpunten van andere procesdeelnemers zijn door anderen overgenomen?
- Werden sommige standpunten alleen in schijn of in afgezwakte staat overgenomen?
- Welke nieuwe onderwerpen zijn door procesdeelnemers ingebracht waardoor overeenstemming werd bereikt?

Actoren/Nieuwe respondenten
Het hele project kende heel veel deelnemers. Sommigen waren daarin meer van belang dan anderen.

- Welke procesdeelnemers zijn volgens U zodanig belangrijk geweest voor het proces dat ik ze nog zou moeten spreken?
- Heeft U daarvan contactgegevens of kunt U mij in contact brengen?

Debriefing
Hiermee zijn wij aan het einde van het interview.
Als het onderzoek afgerond is zou ik U graag nog een verslag willen toesturen met de belangrijkste conclusies.
Heeft U nog vragen? Hartelijk dank voor uw tijd.

VII – Detailed case description: Hondsbossche Duinen

The history of coastal defenses at the study location dates back to medieval times. Besides, the existent sea wall is the only 'hard' reinforcement of the Dutch North Sea coast otherwise dominated by dune areas. These two observations are at the basis of the widely acknowledged cultural heritage value of the sea wall. Starting from the origins of the reinforcement project, this section traces the framing developments throughout the preparation stage until the construction contract was signed. We divided the project into three phases based on changes in the project management.

The 'Weak Links'

During a routine inspection in 2001, most of the Dutch coastal defenses met the safety standards then in force. In the following years, refined hydraulic knowledge about wave behavior triggered an unplanned inspection of the flood safety of the Dutch coastal defenses revealing ten weak spots. Reinforcing these ten weak links became the main coastal flood protection task in The Netherlands, for which €745 million were earmarked. The Ministry of Transport and Public Works, the Dutch PWA, provinces at the North Sea coast and the respective water boards used the metaphor of a chain of defenses to symbolize the state of the coastal defense system, in which the inadequate stretches were represented as weak links ('Zwakke Schakels'), threatening the functioning of the whole chain if broken. This metaphor turned the improvement of the weak links into a matter of national security.

The same actors decided to aim for both coastal defense and improving the quality of the landscape, creating the so-called 'double objective' ('dubbeldoelstelling'). This implied an ambitious, combined coastal development task, instead of separating coastal defense and spatial quality tasks. The symbolic naming of the 'double objective' shows that actors at the time were willing to look for synergies between policy domains, thereby showing the intention of spanning sectoral boundaries between their organizations (Bressers and Lulofs 2010). Defining the double objective was a remarkable step, also in other respects. The double objective conflicted with the ministry's and, by extension, the PWA's policy of executing projects cost-effectively and functionally.[59]

59 This policy is called 'sober en doelmatig' (translation: cost-effective and functional). Under this policy, coastal defenses have to be functional in terms of coastal safety performance as well as cost-effective.

Nevertheless, these actors accepted coastal defense projects not only aimed at flood safety, leading in turn to conflicts within the organizations themselves. It was especially argued that solutions relying mainly on sand as constructive material, i.e. "sandy solutions", facilitate both goals, but would always be more expensive initially than a hard reinforcement and such higher costs did not match the policy standard.

The Policy Process

Phase 1
Province Solitaire

In 2004, the Ministry of Infrastructure and Environment mandated the province of North-Holland to present a reinforcement proposal for the detected weak spot, preparing the sea wall for strong storms, taking into account new hydraulic conditions, and contributing to spatial quality. The ministry restricted itself to the role of higher-level strategic policy maker throughout the project. It advocated a participatory policy process with the relevant expertise from different governmental organizations in the project management. As such, the ministry sought not only to reinforce the weak spots but also to improve the efficiency of public investments by looking for synergy effects. A cross-organizational project bureau as used in another Dutch province should serve as a best practice example, according to the ministry. The PWA's regional, executive organization appeared as advisor and funding agency. In this function, the PWA had to evaluate the province's proposal according to pre-defined criteria.

As advised by the PWA, the minister of infrastructure and the environment rejected the province's reinforcement proposal in 2006 for two major reasons. First, its estimated cost of €340 million exceeded the available budget. Second, the province ignored the opinion of inhabitants behind the sea wall. This proved important, because part of the village behind the sea wall had to be removed to implement the provincial proposal. Thus, the ministry restated its call for public participation in the process. Since the provincial proposal was made public, local protests against the plan gradually increased. So, the ministry joined the local population's call for another, less destructive solution for reinforcing the sea wall.

A minor drawback of the proposal was the province's choice to use the scenario of maximum sea level rise for their calculations. Instead, the province should adhere to the ministry policy of using the medium scenario. In the perspective of the ministry, using the maximum scenario leads to overinvestment.

In the same year of the minister's rejection of the provincial project proposal, the PWA introduced a new national flood protection program. It formed another organization alongside existing sub-organizations within the PWA that assessed project proposals for their alignment with the 'cost-effective and functional' policy of the ministry. This program also received evaluation tasks making it another actor in the project. For this national flood protection program, heightening the dike was the only solution fitting the criteria:

"Primarily, at the flood protection program we said: 'sand is […] efficient, but not cost-effective, functional and robust'. Because that is really only the sea wall."

Project manager regional PWA, personal communication, 27th February, 2014.

An ongoing topic of discussion between the provincial government and the ministry was related to the allocation of costs to the two involved objectives. The provincial government insisted that the ministry should pay for the complete project based on the double-objective agreement. The ministry claimed to have agreed on paying for flood safety only; the province and other actors should pay for spatial quality. The ministry stressed the clear-cut division of tasks between ministry and province: flood safety and spatial quality, respectively.

Respondents categorize the province's project leadership as "a bad job" (policy advisor Ministry of Infrastructure and Environment, personal communication, 18th August 2014). The province seemed to concentrate mainly on the safety aspect of the project, while positive spatial quality side effects of its proposal remained unclear. On the contrary, potential side-effects for the local population were perceived to be mainly negative. If only safety is taken into account, reinforcing the sea wall might be cost-effective and functional. But when considering spatial quality and economic potential as well, the total picture might shift completely. The province also completely neglected other actors (policy advisor Ministry of Infrastructure and Environment, personal communication, 18th August 2014). For example, listening to the munici-

palities could have made the province realize mounting opposition to the plan. On the other hand, the PWA and the water board could have contributed valuable procedural and technical knowledge, which the ministry denies the province had. Although the province boasts a "general democratic" attitude, it came up with a solution that other actors perceived to be even more detrimental to the already alarming economic situation in the region (provincial official, personal communication, 19th March 2014). While the province claims to have the interests of the population in mind and always to be looking for synergy, this was not the case during the province's project leadership.

At the local level the municipality closest to the dike was interested in flood safety and an improvement of the economic situation. Flood protection is not the responsibility of the municipality but of higher-level and specialized governmental organizations. Nevertheless, the municipality attempted to raise the awareness of the current problems in the region and of the potentially disastrous consequences of selecting the sea wall-heightening solution. To achieve this, the municipality used its official political channels as well as more informal ways to lobby for what was in its eyes the best solution for the region. That is the reason why, from the start, the municipality advocated the sandy solutions with its potential economic benefits: increasing revenues from tourism. Still, the municipality was aware of its limited influence in the policy process.

The work of the province during this period was individualistic and overambitious. There was "zero cooperation", the "water board was not really consulted heavily" and the provincial alderman and project manager thought "we'll take care of it!" (Policy advisor Ministry of Infrastructure and Environment, personal communication, 18th August 2014). For some, it was a pity that the province only made such little use of the PWA and water board expertise available to it during the first phase (policy advisor Ministry of Infrastructure and Environment, personal communication, 18th August 2014). Actually, for the water board executive, the project only began in 2007 – the year in which the water board got in the lead. So, also from its own perspective, the water board was not a policy-relevant actor in this first phase of the project.

The PWA feels it continuously had to clarify its role during the first project phase. And this clarification necessitated mantra-like storytelling, because municipalities and civil initiatives were con-

stantly appealing to the PWA to help them prove the province wrong (project manager regional PWA, personal communication, 27th February, 2014). Nonetheless, the PWA insisted that this was none of its business. At the same time, it felt the top-down approach involving traditional coastal management alternatives which the province was taking was indeed wrong, as it diverged from national policy (project manager regional PWA, personal communication, 27th February, 2014). Although the PWA abided to this dilemmatic role with clenched teeth, from its own point of view, it carried out this role properly (project manager regional PWA, personal communication, 27th February, 2014).

Frames and framing in phase 1

Framing conflicts between actors in the first project phase stemmed from framing differences in policy substance and process. On forehand, the double objective agreement defined the playing field for the framing of the reinforcement project. On the one hand, the double objective combined two traditionally separate policy goals. On the other hand, by explicitly naming these two goals, instead of, for example, subsuming them under one unifying header, coastal safety and spatial quality were pitted against each other and easily separable for actors with fragmented responsibilities. Thus, the double objective had consequences for the framing of policy substance as well as the policy process.

At the start, the large actors in the project – PWA, province and water board – were not lined up in their framing. The province's sense-making of the necessary policy process seemed to be guided by task and role orientation, i.e. simply realizing the project. This sense-making of the province also limited the scope for the substance of policies, as by excluding the interests of other actors from the process, the province missed the opportunity to think of less intrusive solutions for the local population. The ministry, showing a clear preference regarding the type of policy process, punished this provincial approach towards the policy process with the rejection of the proposal. In doing so, the ministry confronted the province with the fact that it was undermining the interests of those people it was supposed to represent. In policy framing terms, the province could have selected the actors to be involved with more foresight. As a result of this punishment, the province underwent

a frame reflection regarding the sense-making of actors' identities and relationships who should be included in the policy process. The PWA's problem definition in this period was clinical and task-oriented: a dike has to be reinforced, and it does not matter how, as long as it fits our financial and safety performance criteria. In the PWA's opinion, tasks and responsibilities in the policy process were clearly delineated and it acted accordingly. Thus, the policy substance was sharply categorized into solutions fitting the criteria assumingly and those solutions which do not. Moreover, the PWA worked from a goal-oriented, executive tradition favoring quick and efficient work, disliking broad, participatory processes. The municipality focused on maximizing its economic potential and categorized alternative solutions accordingly (i.e. framing the policy substance). It put a lot of effort in trying to be heard by the project leader in a process in which it did not officially have a part.

Phase 2
Water board in charge

Research on hydraulic conditions revealed the technical infeasibility of heightening the existing sea wall as the provincial proposal suggested. Thus, in early 2007, the province was glad to "shirk its responsibility" and delegated it to the water board (policy advisor Ministry of Infrastructure and Environment, personal communication, 18th August 2014). According to the ministry, this was an exit for the province to evade the negative public opinion: "So [the province] suffered a terrible blow and could escape with the newest hydraulic conditions" (policy advisor Ministry of Infrastructure and Environment, personal communication, 18th August 2014).

Now that the water board was officially leading the reinforcement project, it began recalculating all solutions, which "did not make [the water board] popular in the region" (water board executive, personal communication, 27th February, 2014). While this reaction from the local population and its governmental representatives is all too understandable, so is the water board's: "If we have a sea wall somewhere, […] and it has to be reinforced, then you generally think: 'I am going to reinforce that sea wall'" (water board executive, personal communication, 27th February, 2014). Hence, from the water board's perspective, including heightening the sea wall as an option reflected thorough project management. However,

the water board came to the same conclusions as the previous provincial proposal: the additional height necessary to make the sea wall safe would devour at least the first row of houses behind the sea wall. The water board's conclusion vis-à-vis this outcome was different than the province's:

"It is not just a small adaptation of the sea wall, it is a giga-intervention. […] If you talk about doubling the size of a sea wall, then that is a new sea wall from my point of view. So, if you talk about a new sea wall, you may also think of new solutions".

Water board executive, personal communication, 27th February, 2014.

The water board began considering solutions purely with sand as well as hybrids of sand and solid structures. Future-orientedness, flexibility and landscape fit also played a role in the water board's reframing towards sandy solutions, as the water board executive argued. Surprisingly, he did not mention the additional benefits for the local population as argument for focusing on sandy solutions, although proposals had been rejected before due to their detrimental effects on the local population. Of course, the local population valued this shift of focus, because the village would remain intact. The water board also involved civil society and the PWA. The fact that the water board took over is referred to as a 'lifesaver' for the project (policy advisor Ministry of Infrastructure and Environment, personal communication, 18th August 2014).

In the meantime, the province began lobbying for sandy solutions, too. Contradictorily, the provincial official claims the province advocated a sandy solution all along and that it is even the merit of the province that the sandy solution made it. In the provincial official's opinion, at the beginning, the water board was the opponent, because it wanted to keep in the hard solution: "The water board was still rather conservative at that moment" (provincial official, personal communication, 19th March 2014). Interpreting this provincial position is far from straightforward, as the first proposal of the province did not include a sandy solution. So, how does advocating a sandy solution correspond with presenting a hard reinforcement on the province's part? One reason could be the high sand prices at the time, due to which sandy solutions were unable to compete financially with sea wall reinforcement. Another reason could be, that the province denies its pre-2007 position. It would make sense for the province to stress that they had always repre-

sented the interests of the region, while other policy-relevant actors were more concerned with costs.

Although the water board gradually shifted its focus towards sandy solutions, its open-mindedness simplified communication with the PWA, which in turn privileged the safety aspect vis-à-vis spatial quality and traditionally preferred proven technology. Despite that simplification, the PWA is not a unified actor, but consists of a multitude of organizations with fragmented tasks and goals: "everyone had an opinion" (water board executive, personal communication, 27th February, 2014). Among others, this multitude included (a) the policy organization aiming for innovation in coastal projects; (b) the funding organization – the national flood protection program – aiming at cost-effective and functional coastal reinforcements; and (c) the regular coastal maintenance program seeing their responsibilities lost. Dealing with all these was a Cerberean task for the water board: "The three public workers [three opinions] were terrible for us" (water board executive, personal communication, 27th February, 2014).

The province gradually retreated from the main project, leaving the safety task completely to the water board with increasing influence from the PWA. This retreat was mainly due to an external factor. Losing a large sum during the financial crisis, the province became averse to investing in the years to follow (project manager regional PWA, personal communication, 27th February, 2014). Hence, the province hoped that the PWA agreed with its interpretation of the double objective consensus: the available national funds should be used for both safety and spatial quality. Unfortunately for the province, the PWA disagreed, only intending to invest in its own task: safety. In addition, the PWA expected the province and water board to contribute financially for every non-safety-related element which they wanted to realize. The water board took a neutral position in this debate between the province and the PWA and commented on the situation as an uninvolved outsider (water board executive, personal communication, 27th February, 2014). A reason for this could be that the water board functioned more like a facilitator in the project: It took the lead with regard to the safety task and coordinated the spatial quality which was the province's responsibility. As a consequence of these financial expectations, the province chose to focus on the spatial quality measures, which were projected to be less costly.

By 2008, the water board was preparing the notification of intent for the mandatory environmental impact assessment. At that time, the province already leant far towards sandy solutions, which again conflicted with the intents of the water board's broad approach to include non-sandy solutions in the environmental impact assessment, too. Another 2008 development with impact on the national level was the report of the so-called Second Delta committee aiming to plot the new Dutch water policy for the coming century. This report advised to introduce a Delta commissioner, whose focus should be the implementation of the report's findings, among others the promotion of sandy solutions to coastal management.

When the water board presented its preferred solution in 2009, the funding organization (sub-organization of PWA) re-ran the cost calculations, because it could not believe that the sandy solution could be less expensive than the hard solution. The PWA wanted the water board to reconsider its choice, thereby risking to have to fight the local opposition again. In this situation, it was especially difficult for the water board to determine the interests at play. The water board suspected that the double objective was specifically designed as an incentive for the water boards to contribute to the flood protection program and to sandy solutions. According to the water board executive, this difference in opinion between water board and PWA is an example of how person's background influenced perceptions and fed into the intensive resistance he experienced "from that world" (water board executive, personal communication, 27th February, 2014).

Frames and framing in phase 2

As project leader, the water board framed the problem and the policy process in a completely different way than the province before. A major difference was the framing of the policy process. Whereas the province acted alone and excluded other actors' opinions, the water board's process design was more participatory. Furthermore, it was easier for the water board to communicate with other actors such as the PWA, because it was open to all kinds of solutions. This openness, however, stemmed from a sense-making that the choice for the right solution for the project can only be thorough, if all options are considered and none selected on forehand. So, the water board's openness to all sorts of solutions was the result of

not wanting to be partial. The downside of framing the process so thoroughly was suggesting that the sea wall-heightening solution could still be chosen. In doing so, the water board unwittingly put the regional actors into a coalition against itself (categorization of actors' identities and relationships). Once the initial calculations of the heightening solution were carried out, however, the water board realized that other solutions might potentially fit better. So, a change in naming from "sea wall reinforcement" to "new sea wall construction" triggered a frame reflection in the policy substance at the water board; it opened up for the coastal development frame.

In the meantime, the province began lobbying for sandy solutions: a frame reflection in the sense-making of the policy substance. Later on in the second project phase, when it began to focus on maximizing the economic and spatial benefits of the project, the province switched to a piggybacking stance and joined the municipalities in this.

Another influential development on the national level was the strengthening of the sense-making of the coastal development frame through the constitution of a national-level Delta commissioner. This made the policy climate even more favorable for sandy solutions than it already was, because of the innovation-orientedness of the ministry.

Phase 3
Dual leadership

The transition from the second phase of water board leadership to the third phase of cooperation is marked by several events in 2009 and 2010. In 2009, the water board director changed. Previously employed at the PWA, the new director was well networked there. Perhaps more important, he knew the PWA's organizational culture and language. As an additional advantage for the local population, he was an advocate of sandy solutions. The water board warmly welcomed such an asset in their organization. Now that the water board had a sand-thinker as a director, it soon began endorsing sandy solutions as the preferred alternative. This came as a great relief for the local population, as this meant, that the water board was not an opponent anymore. Although the new director was experienced at streamlining different PWA opinions, building a coalition with his former employer was still difficult. At that

point, the PWA remained the only sceptic about the sandy solution.

Another event marking the transition into a new project phase is the acceptance of the water board's preferred alternative by the minister in 2010. Two additional conditions were coupled to the acceptance of the preferred alternative, though. The budget was capped at €250 million and 20 years of maintenance had to be included in the contract. These conditions opened up two new frontlines for the water board. One frontline with the province concerned the budget cap and the other with the PWA concerned the maintenance condition.

First, because the budget cap was lower than the prospective project costs, the water board and the province realized they had to contribute financially all the same. Subsequently, the two began negotiating their respective share of the excess costs. But, as mentioned before, the province had become reluctant about investing. In this situation, the water board argued, the less the province wanted to contribute, the more the project proposal had to be stripped to match the budget cap. At the end of this process, the water board continuously claimed more responsibility in the project and the province had almost completely withdrawn from the safety part of the project.

Second, the maintenance of coastal defenses is the responsibility of the PWA. So, the PWA foresaw a contest over this responsibility, if a third party was assigned with this task. For that reason, the PWA demanded a larger role in the project – a role exceeding that of passive plan evaluator it had up to this point. On the one hand, the PWA was afraid of losing part of its responsibilities. On the other hand, it doubted the water board's capability of managing the whole project alone, due to a lack of the necessary expert knowledge. The data also suggest that the PWA wanted more say in the process, because the project supposedly went so wrong in the beginning. The PWA saw conflict as the means to reach this end. The water board resisted this interference, because it wanted to turn the project into a prestige project. It felt backed by the fact that the minister's rejection was addressed to the water board. In reaction, the PWA positioned itself more and more uncooperatively. In turn, the increased interference by the agitated PWA and its sub-organizations annoyed the water board. This constellation promised to become problematic, once the water board's proposal had to be evaluated, as this was the PWA's task. Only a high-level

meeting at the end of 2011 cleared the air. During this meeting, water board and the PWA agreed to finalize the project together. In the water board's opinion, the high-level meeting was arranged by them to get the project up and running again after a stagnating period induced by the multitude of voices within the PWA, slowing down the process. Actually, for the PWA, this high-level meeting was the critical turning point leading to the success of the project.

For the home stretch of the project, the cooperating partners – water board and PWA – bundled their expertise. They established an integrated project management organization, in which the PWA went from adviser and assessor to join the project management. Both parties call this combination of PWA knowledge about coastal systems and water board knowledge about water management the "best of both worlds" (stakeholder manager water board, personal communication, 7th January 2014; project manager regional PWA, personal communication, 27th February, 2014). The water board supervised the construction contract, while the PWA organized maintenance. In principle, the original idea was to have equal numbers of people in this project organization from the water board and PWA. In the end, the PWA was not represented in the project organization anymore due to staff changes and the PWA's reluctance to grant their staff time for the project (water board executive, personal communication, 27th February, 2014). In line with the PWA's diminishing contribution, it recognizes the water board's achievements for the project. Still, "the water board wouldn't have managed it [the project alone] and the big change we made in 2011 was to be prepared to carry the risk together" (project manager regional PWA, personal communication, 27th February, 2014). To be sure, in this phase of the project, there were officially two (sub-)projects dealing with coastal safety and spatial quality separately. Spatial quality was in the hands of the province together with municipalities and nature organizations.

The studied period of the project ends with the tendering procedure and the subsequent awarding of the tender to a contractor. A description of the tendering procedure is especially relevant for the sense-making of the policy process and the actors' identities and relationships. By now, the PWA and water board wanted to include the perspectives of other stakeholders in the elaboration of the final project plan. As a result of the inclusive tendering procedure, the definitive costs of the project amounted to €140 million,

much less than the allowed budget. Whereas large infrastructure projects tend to exceed budgets and take longer than planned, this was not the case for this project. For two reasons the definitive costs were lower than the maximum allowed budget. Firstly, the tender was set out at €170 million, already much less than the budget cap. Secondly, the project management used an uncommon tender procedure of the PWA: the 'competition-orientated dialogue' ('concurrentiegerichte dialoog'). In this procedure, the project organization did not ask the contractor to design a specific plan. Rather, it was an open planning process: the project management set a maximum budget and added other requirements, for example 'economically and societally sound investments' ('EMVI-criteria'). Subsequently, contractors developed their plan in competition with other contractors. In two sequential round tables, various societal stakeholders could propose additional ideas for the contractors' final plan. Contractors were allowed to try and build these additional ideas into their plans as well as possible. The final assessment of the contractors' project proposals was done by a panel of external experts, which had to judge the proposals on recreational, natural and technical features. In the end, contractors had an interest in pushing the tender price down as much as possible to increase chances of winning the tender.

The ministry appreciated the fact that the final cost of improving the project was much lower than the budget ceiling. The remaining budget then flowed back into the general flood protection budget. The final plan features a sand body of about 30 million m^3 in front of the existing sea wall. The sea wall loses its flood safety function, but stays intact as a cultural-historic landmark in the landscape.

Frames and framing in phase 3

During the third phase, the framing configuration among the policy-relevant actors has stabilized. No frame reflections are detected any more. However, an important change in the responsibility for the project has occurred: the PWA with its "Coastal defense" frame has joined the project management. Hence, it is still worth distinguishing the phase from 2009/2010 to 2013, because the afore-mentioned change in project management occurs in this period, which is of considerable influence on the project. While it was already con-

siderably simpler for the water board to cooperate with the PWA, this improved even more when its new director arrived. Before, the water board's framing was process based ('for good project management, you need to include all possible options'). With the new director, the grounding of the framing in the policy substance had grown even stronger ('sandy solutions are the preferred option'). This is not a frame reflection in the sense used in this article, as the water board is still in 'coastal development mode'. Rather, whereas the sandy solution from a process-based framing was extrinsic, it has now become an intrinsic goal in a substance-based framing. In addition to the water board's change in frame motivation, the population in the region now updated its sense-making of the water board's identity. Hence, committing to sandy solutions additionally improved the water board's relation with the local population: it became much more understanding. By committing to sandy solutions, the water board did no longer have to deal with the province either, because the province was convinced that the water board was also representing its interest.

In the water board's sense-making, the PWA acted as a fragmented organization with too many different stories about the project and strong demands towards the water board. But the ministry's conditional acceptance of the project proposal changed the PWA's position. It triggered a revision of the sense-making of the policy substance by the PWA, urged by the top-down element of the principal-agent-relation of the ministry and the PWA. Nevertheless, when sandy solutions as policy substance were acceptable for the PWA, it also opened up to a broader approach in the policy process. This opening-up is also reflected in the integrated project management structure introduced by the PWA. At first, cooperation with the water board was intensive, but it seems that with decreasing importance of the project for the PWA, its willingness to contribute also waned.

The chosen tendering procedure reveals the frame reflection trajectory, which policy-relevant actors have followed. Once the preferred alternative had undergone the environmental impact assessment and was accepted by the minister, tendering was the last legal step before construction. The choice of tendering process proves the broadness of the sense-making of the policy process, which the policy-relevant actors had attained the hard way during the project.

VIII – Detailed case description: Houtribdijk pilot (Dutch)

Er is verschil van inzicht onder de geïnterviewden over de oorsprong van het idee om bij de Houtribdijk te experimenteren met een zandige oplossing. In de beginfase van de besluitvorming over de dijkversterking Houtribdijk was er onzekerheid over de kosten van een zandige oplossing voor dit project. In deze context lijkt er een suggestie vanuit het Corporate Innovatie Programma van Rijkswaterstaat in de richting van Ecoshape te zijn gedaan om het kostenplaatje voor zandige oplossingen in dit type omgeving verder uit te zoeken. Ook was er volgens de projectmanager van de pilot op nationaal niveau de wens om zo een experiment uit te voeren en meer zicht te krijgen op enkele vragen over de zandige oplossing en systemen met beperkte dynamiek.

De uiteindelijke opdrachtnemer, het Ecoshape Consortium, speelt in het vervolg een rol. Dit consortium van kennisinstellingen en commerciële partijen heeft als doelstelling om "(natte) infrastructuur [te] ontwikkelen en tegelijkertijd kansen [te] creëren voor de natuur" (Ecoshape Consortium en Building with Nature 2014). Concreet, waren de hoofdambities bij het experiment bij de Houtribdijk om te laten zien dat zand echt werkt als beschermingsoptie en om de aanwezige onzekerheden over zandige oplossingen weg te nemen. Dit betreft bijvoorbeeld de vaak genoemde potentiele kostenvoordelen. Maar ook andere meerwaarden die aan een zandige oplossing gekoppeld kunnen zijn of bewust gekoppeld kunnen worden. Een andere uitkomst van de pilot zou de concretisering van toetsingscriteria voor zandige oplossingen kunnen zijn.

Na studie van de golven, en meer algemeen de dynamiek, aan de Markermeerzijde van de Houtribdijk is bij Arcadis het idee ontstaan om te experimenteren met een zandlichaam op die plek. Er is toen geopperd om met een damwand, die als opsluitconstructie moest dienen, een hoeveelheid zand aan een kant vast te houden om het golfeffect op dit zandpakket te onderzoeken.

Arcadis heeft toen samen met de baggerbedrijven binnen het Ecoshape Consortium het voortouw genomen om dit idee uit te werken. Toentertijd kwam er bij het HWBP2-innovatiebudget voor project overstijgende innovaties geld vrij. Van de vier aanvragen die Ecoshape voor dit innovatiebudget had ingediend is er uiteindelijk 1 gehonoreerd. Daarmee was een bedrag van

€3,7mln gemoeid. Met €0,7mln inbreng van de Ecoshape projectpartners komt het totale projectbudget dus uit op €4,4mln. Het project valt volgens bestudeerde documenten onder het programma 'Natuurlijk Goedkoper', dat wederom ook op initiatief van Ecoshape tot stand is gekomen.

De innovatieafdeling van het hoogwaterbeschermingsbureau was vanaf het begin gecharmeerd van het idee van Ecoshape. Desalniettemin moest er vanuit het hoogwaterbeschermingsbureau hard getrokken worden om concretisering van het idee tot een plan te bewerkstelligen. Het was voor de projectorganisatie ook moeilijk om een goede personele bezetting bij elkaar te krijgen, mede omdat de capaciteit bij Rijkswaterstaat laag was.

Bij de beheerder was er in het begin dan ook onduidelijkheid over hoe de projectorganisatie er uitzag. Dit leidde tot een afwachtende houding ten opzichte van de pilot bij de beheerder. Uiteindelijk kon er een projectorganisatie neergezet worden, die ruwweg de kenmerken van integraal projectmanagement heeft. In de projectorganisatie zijn medewerkers van Rijkswaterstaat en van de partijen van Ecoshape vertegenwoordigd. De projectmanager van de pilot ziet de pilot dan ook als een voorbeeld van co-creatie, waaraan Rijkswaterstaat en Ecoshape samen gebouwd hebben. De pilot was niet onderhevig aan procedureel vastgelegde participatie-eisen. Ook een MER procedure was niet verplicht. Wel moest er een waterwetvergunning aangevraagd worden. Door de afwezige toetsingskaders voor zand was dit geen eenvoudige oefening.

Uiteindelijk is op 20 mei 2014 het aanlegcontract door Rijkswaterstaat en Ecoshape getekend. De voorbereidingen – rapporten en vergunningen – voor dit moment hebben uiteindelijk acht maanden in beslag genomen. De projectorganisatie wil de realisatie vóór de bouwvak van Midden-Nederland en binnen zes weken afronden.

De locatie van de pilot voorlandoplossing Houtribdijk ligt ter hoogte van Trintelhaven, ongeveer halverwege de Houtribdijk, aan de Markermeerkant. De weg, die over de Houtribdijk loopt, is ook op deze plek niet over te steken. Bovendien is het verboden om op deze plek uit de auto te stappen. Het definitieve experiment behelst, zoals genoemd, de constructie van een damwand van 150m lengte. Om tot de dimensies van de damwand te komen zijn metingen van de ondergrond uitgevoerd. Daarnaast zijn ook berekeningen gemaakt om het effect van het heien voor de aanleg

van de damwand op de dijk in te kunnen schatten. Bovendien is de locatie ook onderzocht op archeologische overblijfselen en explosieven. De hoeveelheid zand voor het experiment wordt becijferd met 130.000m^3, waarvan 30.000m^3 reserve voor het geval de rest niet genoeg is. Dit zand wordt uit een zandval op de vaarweg Amsterdam-Lemmer gehaald, waarvoor Boskalis een concessie heeft. De combinatie Van Oord/Boskalis is opdrachtnemer in het project. Het zand zal verdeeld worden in vier deelvakken van elk 100m. De ene helft van de deelvakken zal een steiler talud hebben dan de andere helft. Een van de twee vakken van elke talud wordt beplant terwijl de ander de kans krijgt om 'toevallig' te begroeien. Zo wil de projectorganisatie onderzoeken hoe begroeiing en golfoploop elkaar beïnvloeden. Het geheel zal worden gemonitord op meteorologie, hydrodynamica, morfodynamica en vegetatieontwikkeling. Dit monitoringsprogramma zal tot het einde van de pilot in 2018 voortgezet worden.

De betrokken partijen in de pilot voorlandoplossing Houtribdijk zijn Ecoshape en Rijkswaterstaat. Daarbij zijn binnen Ecoshape Van Oord/Boskalis, Deltares en Arcadis te onderscheiden. Waar Van Oord/Boskalis verantwoordelijk is voor de aanleg, doet Arcadis het werkprogramma en Deltares het monitoren. Ook bij Rijkswaterstaat zijn meerdere partijen te onderscheiden, te weten Rijkswaterstaat Midden-Nederland als beheerder en het hoogwaterbeschermingsprogramma.

60 'Naar een integraal kustbeleid voor Zuid-Holland' (Stokmans 2003).

IX – Detailed case description: Sand Motor

What happened before?

The Sand Motor as a mega nourishment did not appear out of thin air. A number of factors played a role in its genesis. First, the project Sand Motor and the technique of mega nourishment can already be traced back to 1981 when the civil engineer turned politician Ronald Waterman published a report named 'Toward an integrated coastal policy for Zuid-Holland'.[60] This report, soon to be known as 'plan Waterman' pleaded for more space for housing, work, recreation and nature (Stokmans 2003). It intended to reach these multiple objectives with a combination of integrated coastal management and Building with Nature – a philosophy for spatial and infrastructure projects aiming at combining objectives and harnessing the forces of nature as much as possible to achieve such combined objectives. While it was initially a political plan, Building with Nature was later picked up by the scientific community as well. Second, in the early 1990's, The Netherlands reoriented its coastal management policy. In 1993, triggered by ongoing coastal erosion and subsequent loss of coastal areas' protective character, the national government implemented the so-called 'base coastline' as the coastline to be maintained. In the meantime, new dredging technologies enabled the use of large volumes of sand to counter coastal erosion by dropping it on the beach or submerging it in front of the beach. Making use of these new technologies, the PWA as the responsible governmental agency began a routine sand nourishment program. Since then, the average annual amount of sand used for beach nourishments has increased to 12 million m^3 in 2012 and is projected to rise to 20 million m^3 to cope with additional sea-level rise (Ministerie van Infrastructuur en Milieu and Ministerie van Economische Zaken Landbouw en Innovatie 2011). Third, in 2001, during a periodical evaluation of the safety level of the Dutch coast, several weak spots were identified, one of which was the area, where the Sand Motor was ultimately located. In the end, the large land reclamation that had been suggested to improve the safety level at that location was discarded in favor of a solution improving the dune area. But the provincial alderwoman of province South-Holland was captivated by the advantages promised by large land reclama-

tions: flood safety as well as spatial quality and positive economic impact. As is speculated, she negotiated a large seaward land reclamation pilot as compensation for discarding it in the routine improvement project (Provincial project manager, personal communication, 21st October, 2015).

The project

The province and its alderwoman needed remarkably little time to realize the project, especially seeing that it was an experiment of considerable size (Provincial project manager, personal communication, 21st October, 2015). While the provincial director of the coastal policy program estimated the beginning of the project in 2006/2007, the officially documented kick-off with the signing of an ambition agreement only occurred in march 2008 (see Table to the right). For him, an exceptionally important event was the pitch talk for infrastructural projects at the parliament where the province succeeded in getting the project on the national infrastructure agenda.

Events of official procedures in project Sand Motor

Date	Event
03-03-2008	Agreement of ambition
18-12-2008	Notification of Intent for Environmental Impact Assessment
01-02-2010	Final report Environmental Impact Assessment
15-06-2010	Maintenance agreement
01-03-2011	Beginning of construction works by dredging companies
18-03-2011	Letter of discontinuation to steering group by provincial alderwoman

The next step for the province was to construct a business case around this idea of a mega nourishment, which was done by a project group.[61] In this business case only those costs and benefits of the project were taken into account that could be monetarized (Provincial project manager, personal communication, 21st October, 2015). Unfortunately for the province of Zuid-Holland, the benefits it was striving for – recreational and nature improve-

61 The project included a project group and a steering group. The former was composed mainly of provincial employees and technical experts and its task was to manage the project on the day-to-day business level. The steering group consisted of higher-level civil servants, representatives of municipalities surrounding the designated location and engineering representatives. Its task was managing the project on the strategic level.

62 This innovation platform was founded by Dutch Prime Minister Balkenende in 2003 to boost the innovation capacity of The Netherlands.

ment of the area – are indirect, non-monetarizable, social benefits. Indeed, the direct benefits in the business case were too low to balance the estimated costs and the business case was discarded. In hindsight, the business case, as an appraisal technique for direct costs and benefits, proved unfit for the situation at hand. As a result, the province needed to find another way to realize the provincial alderwoman's ambition.

An alternative pathway opened up, when the province pitched the project at the Dutch innovation platform.[62] This pitch talk did not immediately lead to decision-making on the realisation of the project, but it promoted the project's outreach to the national government level. Members of the innovation platform were convinced by the innovativeness of the project and began to endorse it publicly. One of the results is the public announcement by the prime minister to construct an island shaped as a tulip off the Dutch coast, much in the vein of the prestigious palm-shaped islands constructed at the Arab peninsula (Boeters 2008). But as is often the case in policy-making, the attribution of origin of a policy is contended. While many involved actors perceive earlier roots, according to the Dutch commission for environmental impact assessments (EIA) the project Sand Motor stems from the innovation platform itself (Commissie voor de milieueffectrapportage 2014).

The ensuing planning phase and the EIA report have been perceived as low-conflict (Policy advisor municipality Westland, personal communication, 14th July, 2015; Provincial project manager, personal communication, 21st October, 2015). In fact, some even called it a 'problem-free' (Dutch: 'probleemloos') project, thereby not meaning coastal protection in general which is an acknowledged issue, but the instrument choice, as there was no safety urgency nor necessity to improve the coast at the proposed location (cf. Provincial project manager, personal communication, 21st October, 2015). This is not to say that there were no conflicting interests, as exemplified by the position of the sand nourishment in the sea. The province Zuid-Holland wanted the Sand Motor to be visible and not submerged in front of the coast. After all, an expensive prestige project is only worth little, if it is invisible and it is impossible for a political representative to open it ceremonially. Various municipalities in the vicinity of the proposed location had more practical concerns such as nuisance through

sand or tourists, but also swimmer safety. The province dealt with these practical concerns pragmatically by staying in close contact with critical, worried actors (Policy advisor municipality Westland, personal communication, 14th July, 2015). The PWA was more concerned with coastal protection solutions.[63] From this standpoint and its standard policy of cost-effective and functional coastal management, the PWA initially favored submerged project designs. At this point, a little more detail about relative differences between invisible and visible sand nourishment designs is called for. The main difference between these designs lies in their divergent cost-benefit balances. While submerged nourishment designs are usually lower in cost, their score on direct benefits is low to inexistent, not to mention the incalculability of their effect on indirect benefits. Visible beach nourishments, on the contrary, are more expensive than their submerged counterpart and often higher in their indirect benefits, as was mentioned before. Favoring one or the other, thus, is a result of an actor's interests and preparedness to incur additional costs for unwarranted benefits. Hence, the PWA favored the lower-cost submerged option, because this option fit its standard policy and its disinterest in non-safety benefits, albeit direct or indirect. In the end, the ministry hierarchically ordered the persistently skeptical PWA to construct the project. The province, on the other hand, was prepared to pay additional costs for a project design that maximized indirect benefits in the recreational, natural and economic sector. Surprisingly, this situation was not insurmountable as, in the end, two factors reconciled the involved actors' interests. First, few actors had interests at the proposed location itself (Provincial project manager, personal communication, 21st October, 2015). At first, nearby municipalities were unsympathetic towards the plan, but their legal influence at the proposed location was low, because the coast is national property. This ownership structure also meant that no other procedures such as expropriation had to be done. Second, from the start, the project was approached and communicated as an experiment or pilot. Characterizing the project as such had two advantages. First, the national government had funds reserved for infrastructural innovation experiments, which facilitated the financing of the project. Second, an experimental coastal management project did not need to contribute to protecting the coast, due to the uncertainty of its functioning. So,

63
'Cost-effective and functional' ('Sober en doelmatig') was the slogan of the PWA. This slogan describes their task metaphorically: guarantee flood safety at low costs.

the coast would not be unsafe, if the experiment failed. A fortiori, the national government could now approach the project as testing an alternative coastal management strategy. As a result, the urgency of the project, at that point, was lower than with a regular coastal reinforcement project. In turn, other more critical actors became less resistant (Provincial project manager). Interestingly enough, few of the respondents mentioned this part of the planning process as a crucial moment. The reason for this might be that people remember negative events better than positive ones. Assuming that the planning phase was rather peaceful and friendly, this phase was not worth going into detail about for respondents.

After this phase, the phase of the EIA followed. As the project moved on, a change occurred in the time scale perception of the province. When the end of the legislative period of the alderwoman began drawing nearer and nearer, the urgency of finalizing the project increased for the province as well. After all, the alderwoman wanted to open the new beach strip herself and add the project to her own list of achievements. As a consequence, the project organization had to step up its efforts. Hence, all the procedures including that of the EIA had to be rushed (Provincial project manager, personal communication, 21st October, 2015). This is also reflected in the time between the Notification of Intent and the final report of the EIA, which was about 14 months (see Table 8.3). Furthermore, until the EIA report was published, there was no single clear-cut design for the Sand Motor. The EIA report at last proposed three different possibilities for the shape of the Sand Motor and favored one of these for its presumed environmental advantageousness. In this period, nature organizations began voicing loud critique. Although they accepted that indeed nature would be developed with the project, they argued that all nature benefits would be nullified, because of the fragmentation of the designated nature areas with cycling paths and other recreational infrastructure. At this point the World Wildlife Fund for Nature (WWF), an authoritative actor in the environmental field, rose to defend the Sand Motor. It was the WWF's view that the created ecosystem would be robust enough to withstand these interventions. This was an important move in rallying actors around the Sand Motor (Member of the project group, personal communication, 23rd September, 2015).

Then, the financing phase came. Negotiations about the division of costs did not occur in the steering group nor in the project group. Actually, for the municipal policy advisor – a member of the steering group (!) – it was opaque, how the negotiations went. It turned out, the program director of the province had negotiated the distribution of the costs with the PWA. The PWA would pay €58 million from a fund for crisis and recovery initiated during the financial crisis to boost innovative projects. However, to be eligible for the next funding deadline under this fund, decision-making had to speed up, putting even more pressure on the process. As easy as it was to negotiate funding with the PWA, it was less easy for the provincial program director to convince his provincial council to spend €12 million on the Sand Motor (Provincial program director coast, personal communication, 11th May, 2015). Especially social democrats were critical about the project. Although social democrats and liberals traditionally have a difficult relationship in the provincial council of Zuid-Holland (Provincial project manager, personal communication, 21st October, 2015), they managed to come together and the Sand Motor project could go through in the end.

X – Concept formation: core concepts, full and diminished subtypes

Differentiation of full and diminished subtypes (cf. Collier and Mahon 1993, 849).

Full subtypes

Concept type	Concept	Defining properties[a]					
Core concept	Dog	A[b]	B	C			
Subtypes	Retriever	A	B	C	D[c]		
	Sheep dog	A	B	C		E	
	Spaniel	A	B	C			F

Diminished subtypes

Concept type	Concept	Defining properties[d]				
Core concept	Mother	A[e]	B	C	D	E
Subtypes	Genetic mother	A	B			
	Birth mother	A		C		
	Nurturing mother	A			D	
	Stepmother	A				E

a. Defining properties of subtypes are *in addition* to those of the core concept.
b. A, B, and C: Hypothetical set of general attributes of dogs.
c. D, E, and F: Hypothetical attributes that differentiate specific types of dogs.
d. Defining properties of subtypes are *contained within* the core concept.
e. A: Female; B: Provides 50% of genetic makeup; C: Gives birth to child; D: Provides nurturance; E: Married to father.

No.	Participant[a]	Date	Duration[b]	Interviewer[c]	Remarks	Audio File Name[d]	Transcript File Name	Transcript Type	Transcriber[c]
1	HD-HHNK-01/ HD-HHNK-02	07-01-14	0:33:11	EA	Caseverloop HD; interviewee-lijst	HD-HHNK-01+HD-HHNK-02.MP3	HD-HHNK-01+HD-HHNK-02.rtf	Full	EA
2	HD-HHNK-03	27-02-14	1:02:49	EA	Recorder viel uit bij laatste vraag → opgeschreven	HD-HHNK-03.MP3	HD-HHNK-03.rtf	Full	EA
3	HD-RWS-01/ HD-RWS-02	27-02-14	0:53:33	EA	---	HD-RWS-01+HD-HHNK-02.MP3	HD-RWS-01+HD-HHNK-02.rtf	Full	EA
4	HD-GEM-01	04-03-14	1:05:54	EA	---	HD-GEM-01.MP3	HD-GEM-01.rtf	Full	EA
5	HD-HHNK-04	04-03-14	0:49:12	EA	---	HD-HHNK-04.MP3	HD-HHNK-04.rtf	Full	EA
6	HD-PNH-01	19-03-14	1:15:06	EA	---	HD-PNH-01_pt 1.MP3; HD-PNH-01_pt 2.MP3	HD-PNH-01.rtf	Full	EA
7	HD-GEM-02	27-03-14	1:23:47	EA	---	HD-GEM-02.MP3	HD-GEM-02.rtf	Full	EA
8	HD-MIN-01	18-08-14	1:11:42	EA	Potentiele onscherpte door familieomstandigheden. Interviewee begon zelf met een verhaal over de verloop van de case vanuit MinlenM perspectief. Veel vragen op die manier beantwoord.	HD-MIN-01.MP3	HD-MIN-01.rtf	Full	EA
9	HD-BIPZ-01	02-09-14	onbekend	EA	Geen mogelijkheid gehad om mijn eigen vragen te stellen. Interviewee trok gesprek volledig naar zich toe.	Recording not allowed	HD-BIPZ-01.rtf	Outline	EA
10	HP-ARC-01	06-06-14	0:50:10	EA	Caseverloop HP	HP-ARC-01.MP3	HP-ARC-01.docx	Full	EA
11	HP-RWS-01	05-09-14	0:49:51	EA	Interviewee was bezig met Kamervragen en kwam wat gehaast over. Interviewafspraak bijna vergeten.	HP-RWS-02.MP3	HP-RWS-02.docx	Full	EA
12	HP-ARC-02	03-09-14	0:46:19	EA	---	HP-ARC-02_pt 1.MP3; HP-ARC-02_pt 2.MP3	HP-ARC-02.rtf	Full	EA
13	HP-ARC-03	10-09-14	n/a	EA	Telefonisch interview. Opname mislukt → alles handmatig meegeschreven.	geen	HP-ARC-03.rtf	Outline	EA
14	HP-RWS-02	12-09-14	n/a	EA	Vragen schriftelijk beantwoord in doc door interviewee. Was een "worsteling". Voelde zich niet expert genoeg op het project.	geen	HP-RWS-02.docx	Outline	EA
15	SM-RWS-01	22-07-15	0:30:00	EA	Interviewee dacht niet veel te kunnen bijdragen vanwege rol buiten besluitvorming. Telefonisch interview maakte opname onmogelijk.	geen	SM-RWS-01.docx	Outline	EA

16	SM-PZH-01	11-05-15	0:55:12	EA	---	SM-PZH-01.MP3	SM-PZH-01.docx	Full	EA
17	SM-RWS-02	06-07-15	0:54:48	EA	---	SM-RWS-02.MP3	SM-RWS-02.docx	Full	SA
18	SM-GWL-01	14-07-15	0:33:07	EA	---	SM-GWL-01.MP3	SM-GWL-01.docx	Full	EA
19	SM-PZH-02	16-09-15	1:16:25	EA	---	SM-PZH-02.MP3	SM-PZH-02.docx	Full	SA
20	SM-PZH-03	23-09-15	0:58:22	EA	---	SM-PZH-03.MP3	SM-PZH-03.docx	Full	SA
21	SM-PZH-04	29-10-15	1:24:34	EA	Skype interview, recorded with extra software	SM-PZH-04.MP3	SM-PZH-04.docx	Full	SA
22	SM-PZH-05	30-11-15	1:12:45	EA & LB	Interview together with other PhD candidate of NatureCoast project	SM-PZH-05.MP3	SM-PZH-05.docx	Full	SA
23	SM-PZH-06	21-10-15	0:55:10	EA	---	SM-PZH-06.MP3	SM-PZH-06.docx	Full	SA
24	SM-PZH-07	29-10-15	0:49:40	EA	---	SM-PZH-07.MP3	SM-PZH-07.docx	Full	SA
25	SM-RWS-03	30-10-15	0:37:16	EA	---	SM-RWS-03.MP3	SM-RWS-03.docx	Full	SA
26	SM-RWS-04	30-10-15	0:24:26	EA	---	SM-RWS-04.MP3	SM-RWS-04.docx	Full	SA
27	SM-IPF-01	09-10-15	0:08:13	EA	Only one question, respondent was not very involved with the project	SM-IPF-01.MP3	SM-IPF-01.docx	Full	SA
28	SM-RWS-05	02-12-15	0:55:27	EA	---	SM-RWS-05.MP3	SM-RWS-05.docx	Full	SA

a. Participant codes are defined based on the following structure: 'Project code'-'organization code'-'participant no.' from that organization; Case codes: HD = Hondsbossche Duinen; HP = Houtribdijk pilot; SM = Sand Motor.
b. Time in h:min:sec.
c. Interviewer and transcriber codes: EA = Ewert Aukes; LB = Lotte Bontje; SA = Student assistant.
d. As stored at the University of Twente BMS-Datalab.

Summary

For as long as humans began to settle, coastal areas proved attractive sites for socio-economic processes. In the Netherlands, intensifying economic processes such as urbanization and globalization have raised and continue to raise pressure on land use in those areas. Add to that natural floods and the increasing threat climate-change-induced sea level rise poses, and a situation of complex societal interactions emerges, embodied by the term of "coastal squeeze" (Chapter 1). As demands on land use rose, the requirements for coastal management also changed: ecological, recreational and economic opportunities became more prominent in design processes for coastal safety projects (Chapter 2). One attempt to combine those spatial functions with coastal safety is the mega-nourishment scheme – a large amount of sand (>5 million m^3, or 2000 Olympic swimming pools) deposited on and in front of the beach to increase the coastal protection level in the long term. Coastal management experts see the mega-nourishment scheme as an innovative technology, because before Dutch coastal managers used smaller nourishment amounts of sand to protect coasts for a few years only. However, the mega-nourishment scheme came a long way to be accepted as an option in the Dutch coastal management repertoire. While first ideas already date back to the 1980s, it was not until 2011 that a broad actor coalition led by a Dutch provincial government succeeded in implementing the first mega-nourishment scheme. But this was not without resistance. A period of raising awareness about the innovative idea and facing opposition on the part of the advocates of mega-nourishment schemes preceded its construction in 2011. At the same time, a scientific discourse advocating experimentation with mega-nourishment schemes developed. Many experts expected the advantages of mega-nourishment schemes to outweigh the disadvantages (Chapter 3).

A problem setting including such a complex policy domain led to a focus on interactions between policy-relevant actors and their exchange of arguments pro and con the acceptance of mega-nourishment schemes. Policy situations with such a diversity of interests and of policy options run the risk of getting bogged down in discussions about controversial policy problems and solutions. This holds especially, if the policy debate involves an innovative, unknown, and untested policy option, such as the mega-nourish-

1 Infrastructure projects of the Dutch public works agency feature strategic area management. This type of management organizes the communication with the societal surrounding of the project and serves as a kind of Public Relations.

ment scheme. Definitions of a given problem, scopes of possible and acceptable solutions to a previously-defined problem and perceptions of the landscape of policy-relevant actors fall within the realm of meaning-making. Meaning-making, simply defined, comprises all mental processes necessary to understand ourselves, our position in and our relationship with our surroundings. Taking such a meaning-oriented perspective, this dissertation focuses on the role of actors' frames and interactions between those frames in effectuating policy choice (Chapter 4). Frames can be seen as mental structures enabling people to bring order into their surroundings and make sense of them. At the same time, these structures limit the possibility for people to "see things differently". This is only one way of understanding how individuals make meaning.

Taking a meaning-oriented research perspective also has consequences for the ways in which we can know things about our research subjects (Chapter 5). A meaning orientation entails understanding patterns of meaning-making, instead of explaining causal relations between independent and dependent variables. Hence, this way-of-knowing ("epistemology") often links to a way-of-being ("ontology"), which assumes the existence of multiple social realities among people involved. People can see things differently, but, in principle, none of those perspectives is normatively privileged, i.e. no perspective is truer than another.

A dual objective guides the work in front of you (Chapter 1). First, the research explored which frames were successful in the adoption of mega-nourishment schemes in the Netherlands. This objective traces the political arguments that convinced a majority of the policy-relevant actors. Second, the research aimed at revealing those processes of meaning-making relevant for mega-nourishment schemes to come about. While the findings relating to this second objective may be relevant for strategic area management [1] as well, its focus is on positioning meaning-making processes in coastal management in its scientific, conceptual context.
Two overarching research questions follow from these two research objectives:

A. *Which interpretations of the policy situation were relevant for adding mega-nourishment schemes to the accepted set of coastal management technologies in the Dutch coastal management context?*

B. How does meaning-making of the policy situation influence decision-making processes about mega-nourishment schemes in the Dutchcoastal management context?

I studied three cases to answer these research questions, two of which were mega-nourishment schemes – the Sand Motor and the Hondsbossche Duinen project – and the third was a small-scale experiment with sand in the Dutch Markermeer: the Houtribdijk pilot project (Chapter 5). In all three cases, I conducted qualitative, in-depth interviews with policy-relevant actors, i.e. employees of governmental organizations directly involved in the decision-making processes for the projects. Afterwards, I analyzed the interviews by focusing on how the interviewees framed various aspects of the coming about of the projects and how they perceived the development of debates among actors in retrospect. In the absence of observed interaction data, the interviews resulted in indirect data for actors' framing interactions. "Framing" describes the different processes with which people communicate purposefully or sub-consciously with others about a matter at hand. This way of communicating is always permeated with the meaning made through a frame. During the reconstruction of the projects' frame developments and framing interactions, eventually the most relevant meaning-making process for every particular project emerged.

The first empirical elaboration is the Hondsbossche Duinen project at the North Sea coast in the province of North Holland (Chapter 6). It involved approximately 30 million m^3 sand being deposited, amounting to a volume of 12.000 Olympic swimming pools and a surface of 400 football fields. The design included vegetation and a dune valley for fortification and the creation of recreational facilities. Throughout this project, actors' frames converged more and more. But two changes in project management were necessary for this. The first change was from the provincial government of North Holland to the water board "Hoogheemraadschap Hollands Noorderkwartier". This happened, because some actors emphasized the differences between their own and others' frames, instead of building on existing similarities. During the second change, the public works agency came on board in a combined project management with the water board.

This cooperation, unusual for Dutch coastal management, led to success, because it focused on the similarities between frames.

I devote a second empirical elaboration to the small-scale Houtribdijk pilot project at the coast of the inland waters of the Dutch Markermeer (Chapter 7). This project involved experimentation with the effect of vegetation on nourished sand bodies in inland waters. For this, the Houtribdijk between Lelystad, Flevoland, and Enkhuizen, North Holland was nourished with 130.000 m^3 of sand. This amount compares to a volume of 52 Olympic swimming pools and a surface of 10 football fields. The Houtribdijk pilot is an example of what can happen in terms of frames and framing if a private party initiates the project. In this specific instance, the frames of the few involved actors did not so much aim for cooperation, but for an efficient realization of the project according to formal procedures. This low involvement of actors with each other kept exchange among frames to a minimum.

The Sand Motor project is the third empirical case discussed in this dissertation (Chapter 8). Constructed in 2011, this was the first mega-nourishment scheme at the Dutch North Sea coast with approximately 21 million m^3 of sand, comparable to a volume of 8.400 Olympic swimming pools and a surface, just after construction, of 180 football fields. The most observable meaning-making processes in the interviews for this project were the ways in which frames interacted. In the realization, one actor – the provincial government of South-Holland – played a large role in convincing other actors of his idea. This actor was very successful in framing his message as such that other parties became advocates of the proposed solution, too. The term 'interpretive policy entrepreneur' captures this ability. It describes an actor who can convince others by making meaning in a way that they can easily relate to. These case studies are not only relevant as stand-alone examples of innovative nourishment schemes in the Netherlands. Through comparing the projects with each other, I gained additional insights (Chapter 9). In this comparison generalization of the findings was not the objective, but seeing similarities and differences between the cases. On the one hand, the comparison included structural aspects of the projects, such as the way in which higher governance levels supported the respective project and the exchange between the political and scientific spheres. On the other hand, I compared the three projects concerning their inter-

pretive aspects. This included which arguments were important in the decision-making processes, in how far the discussions exceeded temporal, institutional and geographical scales, what role interpretive policy entrepreneurs played, and what the character of framing interactions across the cases was.

Based on the three empirical cases and their comparison, conclusions can be drawn about the research questions (Chapter 10). Mega-nourishment schemes' suggested multifunctionality accelerated their adoption into the Dutch coastal management repertoire (Research question A.). Multifunctionality is not only a versatile argument allowing actors with different interests to connect easily, but it also promises the mitigation of effects of coastal squeeze. Advocates of mega-nourishment schemes had to convince skeptics of the utility of experimenting with this technology to prove that it was indeed multifunctional. In the Sand Motor case, this experimental language was another adoption factor, though inferior to the multifunctionality argument, which helped advocates to realize the project. The influence of meaning-making on decision-making processes can be understood as the ways in which actor coalitions formed around specific interpretations of policy problems and associated solutions (Research question B.). In the three cases, I found framing processes contributing to such coalition forming ("convergent"), and processes detracting from it ("divergent"). Both types of processes can be employed deliberately. However, these processes also occur subconsciously in the natural manner of communication among humans through framing. Due to more and more convergent meaning-making, the coalition advocating mega-nourishment schemes stabilized on different governmental levels and in different sectors. This has leading to broad acceptance of mega-nourishment schemes in Dutch coastal management.

The dissertation opens up at least three directions for future research. First, the knowledge of interpretations and policy processes can be translated into guidelines for practitioners. Profound knowledge of frames, framing and the processes that connect interpretations of policy situations to outcomes of projects offers support for practice. Second, the research focused on actors from governmental organizations, but left out societal actors, e.g. non-governmental organizations, civil initiatives, or the general public. Probing whether those groups also embrace

the interpretations that would lead to successful implementation may add valuable knowledge about the relation between governments and their constituency. Third, it is relevant to study how interpretations – in times when opinions challenge scientific findings – influence the categorization of knowledge as 'questionable' or 'undisputed'. Think of the way in which high-ranking politicians doubt the existence of climate change.

In sum, this dissertation draws attention to the societal drivers of coastal squeeze. Furthermore, it studies the adoption of a coastal management innovation – the mega-nourishment scheme – which may contribute to mitigating the effects of coastal squeeze. On the one hand, this research's meaning-orientation improves our understanding of policy processes in Dutch coastal management. On the other hand, it stresses the importance of meaning-making as a basic cognitive process that is not only important in policy-making, but just as much in everyday decision-making.

Samenvatting

Sinds de mens is begonnen zich te vestigen, zijn kustgebieden aantrekkelijke locaties voor socio-economische processen. In Nederland verhoogt de intensivering van economische processen zoals verstedelijking en globalisering in deze kustgebieden sindsdien de druk op het landgebruik. Voeg hier nog natuurlijke overstromingen en de groeiende bedreiging van door klimaatverandering veroorzaakte zeespiegelstijging aan toe, en er ontvouwt zich een situatie van complexe sociale interacties – belichaamd door het begrip van de "coastal squeeze" (Hoofdstuk 1). Terwijl de vraag naar land groeide, veranderden ook de eisen die aan kustmanagement gesteld worden: ecologische, recreatieve en economische kansen namen in ontwerpprocessen voor kustveiligheidsprojecten een steeds prominentere rol in (Hoofdstuk 2). Een poging om deze ruimtelijke functies met kustveiligheid te combineren is de mega-suppletie – een enorme hoeveelheid zand (>5 miljoen m^3, oftewel 2000 olympische zwembaden) die voor of op het strand wordt gestort om de kustveiligheid voor de lange termijn te garanderen. Kustmanagementexperts zien de mega-suppletie als een innovatieve technologie, omdat Nederlandse kustmanagers voorheen kleinere hoeveelheden zand gebruikten om de kust voor een beperkt aantal jaren te beveiligen. Het heeft echter de nodige tijd geduurd voordat de mega-suppletie geaccepteerd werd als een optie in het Nederlandse kustmanagementrepertoire. Waar eerste ideeën reeds in de jaren '80 werden geopperd, slaagde een brede coalitie van actoren er pas in 2011 in om de eerste mega-suppletie te realiseren. Hiervoor moest de nodige weerstand overwonnen worden. Er ging namelijk een periode aan de realisatie in 2011 vooraf, waarin de voorstanders van de mega-suppletie bewustzijn voor dit innovatieve idee creëerden en de tegenstand tegemoet traden. Tegelijkertijd ontwikkelde zich een wetenschappelijk discours die opkwam voor het experimenteren met mega-suppleties. Veel experts verwachtten namelijk dat de voordelen van mega-suppleties de nadelen teniet zouden doen (Hoofdstuk 3).

Een probleemstelling in een zodanig complex beleidsdomein resulteerde in een focus op interacties tussen beleidsrelevante actoren en hun uitwisseling van argumenten voor en tegen. Beleidssituaties met een zodanige diversiteit van belangen en beleidsopties lopen het risico vast te lopen in discussies over con-

1 Bij infrastructuurprojecten van Rijkswaterstaat wordt het zogenaamde strategische omgevingsmanagement ingezet. Dit soort management organiseert de communicatie met de maatschappelijke omgeving van het project en dient als een soort Public Relations.

troversiële beleidsproblemen en -oplossingen. In het bijzonder geldt dit, wanneer een innovatieve, onbekende en ongetoetste beleidsoptie zoals de mega-suppletie het onderwerp van het debat is. Probleemdefinities, het bereik van mogelijke en acceptabele oplossingen hiervoor en de waarneming van diverse actoren vallen binnen het domein van de betekenisgeving. Betekenisgeving bevat alle cognitieve processen die noodzakelijk zijn om onszelf, onze positie in en onze relatie met onze omgeving te begrijpen. Dit proefschrift neemt dan ook een betekenis-georiënteerd perspectief aan. Het concentreert zich op de rol van frames van actoren en de interacties tussen deze frames in de verwezenlijking van beleidskeuzes (Hoofdstuk 4). Frames worden gezien als cognitieve structuren die het mensen mogelijk maken om orde te scheppen in hun omgeving en er betekenis aan te geven. Tegelijkertijd beperken deze structuren de mogelijkheden voor mensen om "dingen anders te zien".

Een betekenis-georiënteerd perspectief heeft ook consequenties voor de manier waarop wij dingen te weten kunnen komen over onze onderzoeksonderwerpen (Hoofdstuk 5). Een oriëntatie op betekenis brengt namelijk het begrijpen van patronen van betekenisgeving met zich mee, in plaats van het verklaren van oorzaak-gevolgrelaties tussen onafhankelijke en afhankelijke variabelen. Daarom is deze manier van weten ("epistemologie") vaak gekoppeld aan een manier van zijn ("ontologie"), die aanneemt dat er verschillende sociale realiteiten bestaan. Mensen kunnen dingen verschillend zien, maar geen van deze perspectieven is principieel normatief bevoorrecht. Dat wil zeggen, geen perspectief is "warer" dan een ander.

Het werk dat voor u ligt wordt geleid door een dubbele doelstelling (Hoofdstuk 1). Ten eerste verkent het onderzoek welke frames succesvol waren in de acceptatie van mega-suppleties in Nederland. Deze doelstelling traceert de politieke argumenten die een meerderheid van de beleidsrelevante actoren overtuigden. Ten tweede poogt het onderzoek die betekenisgevingsprocessen te onthullen die relevant waren voor de realisatie van mega-suppleties. Hoewel de bevindingen met betrekking tot deze tweede doelstelling ook relevant zijn voor strategisch omgevingsmanagement[1], gaat het vooral om de positionering van betekenisgevingsprocessen in kustmanagement in een wetenschappelijke, conceptuele context.

Er volgen twee overkoepelende onderzoeksvragen uit deze onderzoeksdoelstellingen:

A. *Welke interpretaties van de beleidssituatie waren relevant voor de toevoeging van mega-suppleties aan de geaccepteerde verzameling van kustmanagement-technologieën in de Nederlandse kustmanagementcontext?*

B. *Hoe beïnvloeden betekenisgevingsprocessen van de beleidssituatie de besluitvorming over mega-suppleties in de Nederlandse kustmanagementcontext?*

Ik heb drie cases bestudeerd om deze onderzoeksvragen te beantwoorden. Twee van deze cases waren mega-suppleties: de Zandmotor en het Hondsbossche Duinen-project. De derde case was een kleinschalig experiment met zand in het Nederlandse Markermeer: het pilotproject Houtribdijk (Hoofdstuk 5). In alle drie cases heb ik diepte-interviews gehouden met beleidsrelevante actoren, dat wil zeggen met medewerkers van overheidsorganisaties die direct betrokken waren bij de besluitvorming. Deze interviews heb ik geanalyseerd door te letten op de manier waarop de geïnterviewden verschillende aspecten van de totstandkoming van de projecten frameden en hoe zij de ontwikkeling van het debat tussen actoren terugblikkend waarnamen. In afwezigheid van geobserveerde interactiedata resulteerden de interviews in indirecte data voor de framing-interacties van actoren. "Framing" beschrijft de verschillende processen waardoor mensen bewust of onbewust met anderen communiceren over een bepaald thema. Deze manier van communiceren is altijd doordrongen van de betekenis die door een frame wordt gegeven. Tijdens de reconstructie van de frame-ontwikkelingen en framing-interacties kwamen uiteindelijk voor elk project de meest relevante betekenisgevingsprocessen boven.

De eerste empirische uitwerking is het Hondsbossche Duinen-project aan de Noordzeekust in de provincie Noord-Holland (Hoofdstuk 6). Met dit project was ongeveer 30 miljoen m^3 zand gemoeid, een volume van 12.000 olympische zwembaden en een oppervlakte van 400 voetbalvelden. Het ontwerp omvatte beplanting en een duinvallei ter bevestiging en het creëren van recreatiefaciliteiten. Gedurende dit project kwamen de frames van de actoren steeds dichter bij elkaar. Hiervoor waren twee

veranderingen in de projectleiding nodig. Bij de eerste verandering ging de projectleiding over van de provinciale overheid van Noord-Holland naar het waterschap Hoogheemraadschap Hollands Noorderkwartier. Dit gebeurde, omdat sommige actoren de verschillen tussen elkaars frames benadrukten, in plaats van te werken aan de bestaande overeenkomsten. Bij de tweede verandering werd Rijkswaterstaat onderdeel van een gecombineerd projectleiderschap samen met het waterschap. Deze ongewone samenwerking was een succes, omdat er meer gelet werd op de overeenkomsten tussen de frames.

Een tweede empirische uitwerking wijd ik aan het kleinschalige pilotproject Houtribdijk aan de binnenmeerkust van het Markermeer (Hoofdstuk 7). In dit project ging het om experimenteren met de effecten van beplanting op gesuppleerde zandlichamen in binnenwateren. Hiervoor is er aan de Houtribdijk tussen Lelystad en Enkhuizen 130.000m³ zand aangebracht (vergelijkbaar met het volume van 52 olympische zwembaden en de oppervlakte van 10 voetbalvelden). Het pilotproject Houtribdijk is een voorbeeld van wat er kan gebeuren met betrekking tot frames en framing als een particuliere partij het initiatief neemt voor een project. In dit specifieke geval zochten de frames van de betrokken actoren niet zozeer naar samenwerking, maar naar een efficiënte uitvoering van het project volgens de geldende procedures. De lage betrokkenheid van actoren minimaliseerde de uitwisseling tussen de frames.

De Zandmotor is de derde empirische case die in dit proefschrift wordt bediscussieerd (Hoofdstuk 8). Gerealiseerd in 2011 was dit de eerste mega-suppletie aan de Nederlandse Noordzeekust met ongeveer 21 miljoen m³ zand, vergelijkbaar met het volume van 8.400 olympische zwembaden en de oppervlakte van 180 voetbalvelden kort na de realisatie. De meest opvallende betekenisgevingsprocessen in de interviews voor dit project waren de manieren waarop frames met elkaar in wisselwerking stonden. Tijdens de ontwerp- en realisatiefase van het project speelde één actor – de provinciale overheid van Zuid-Holland – een grote rol bij het overtuigen van andere actoren. Deze actor was zeer succesvol in het framen van zijn boodschap waardoor andere partijen ook voorstander van het voorgestelde idee werden. Het begrip van de 'interpretatieve beleidsentrepreneur' legt deze vaardigheid vast. Het beschrijft een actor die anderen kan overtuigen door

betekenis te geven op een manier waar zij zich gemakkelijk mee kunnen identificeren.

De drie casestudies zijn niet alleen relevant als op zichzelf staande voorbeelden van innovatieve suppletie in Nederland. Door de cases met elkaar te vergelijken heb ik bijkomende bevindingen gedaan (Hoofdstuk 9). In deze vergelijking was niet de generalisatie van de bevindingen van belang, maar het vinden van de overeenkomsten en verschillen tussen de cases. Aan de ene kant bevatte de vergelijking structuurkenmerken van de projecten, zoals bijvoorbeeld de manier waarop hogere overheidsniveaus het project steunden en de uitwisseling tussen de politieke en wetenschappelijke domeinen. Aan de andere kant vergeleek ik de interpretatieve aspecten van de drie projecten. Dit behelsde welke argumenten belangrijk waren in het besluitvormingsproces, in hoeverre de discussies institutionele, geografische en tijdsschalen overstegen, waar interpretatieve beleidsentrepreneurs een rol speelden en wat het karakter was van de framing-interacties.

Op basis van de drie empirische cases en hun vergelijking kon ik conclusies over de onderzoeksvragen trekken (Hoofdstuk 10). De beweerde multifunctionaliteit van mega-suppleties versnelde hun opname in het Nederlandse kustmanagementrepertoire (Onderzoeksvraag A.). Multifunctionaliteit is niet alleen een veelzijdig argument dat het voor actoren met verschillende belangen makkelijk maakt een idee te accepteren, maar het belooft ook de vermindering van de effecten van de coastal squeeze. Voorstanders van mega-suppleties moesten sceptici overtuigen van het nut van experimenteren met deze technologie om te bewijzen dat zij daadwerkelijk multifunctioneel was. In de Zandmotorcase was deze experimentele taal een andere factor in de acceptatie, weliswaar ondergeschikt aan het multifunctionaliteitsargument, maar het hielp de voorstanders het project te realiseren. De invloed van betekenisgeving op besluitvormingsprocessen kan worden gezien als de manieren waarop actorcoalities zich vormen rondom specifieke interpretaties van beleidsproblemen en -oplossingen (Onderzoeksvraag B.). In de drie cases heb ik framing-processen gevonden die bijdragen aan coalitievorming (“convergent”), en processen die coalitievorming voorkomen (“divergent”). Beide procestypes kunnen doelbewust ingezet worden. Echter, in de natuurlijke manier van communiceren tussen mensen door frames vinden deze processen sowieso onbewust plaats.

Door steeds meer convergente betekenisgeving stabiliseerde de coalitie voor mega-suppleties op verschillende overheidsniveaus en in verschillende sectoren. Dit heeft tot een brede acceptatie van mega-suppletie in het Nederlandse kustmanagement geleid.

Het proefschrift biedt tenminste drie mogelijkheden voor toekomstig onderzoek. Ten eerste kan de kennis van interpretaties en beleidsprocessen vertaald worden naar richtlijnen voor de praktijk. Diepgaande kennis van frames, framing en van de processen die interpretaties van beleidssituaties verbinden met de uitkomsten van projecten biedt ondersteuning voor de dagelijkse praktijk. Ten tweede richtte het onderzoek in dit proefschrift zich op actoren van overheidsorganisaties, maar hield het zich niet bezig met maatschappelijke partijen, bijvoorbeeld niet-gouvernementele organisaties, burgerinitiatieven of het brede publiek. Nagaan of deze groepen vergelijkbare interpretaties hebben die tot succesvolle realisatie zouden leiden zou waardevolle kennis opleveren over de relatie tussen de overheid en haar kiezers. Ten derde is het relevant om te bestuderen hoe interpretaties – in tijden waarin meningen wetenschappelijke bevindingen betwisten – kennis als 'twijfelachtig' of juist 'ontegenzeggelijk' categoriseren. Denk bijvoorbeeld aan de manier waarop hooggeplaatste politici het bestaan van klimaatverandering in twijfel trekken.

Samengevat vraagt dit proefschrift aandacht voor de maatschappelijke drijfveren van coastal squeeze. Verder bestudeert het de acceptatie van een kustmanagementinnovatie – de mega-suppletie – die zou kunnen bijdragen aan de vermindering van de effecten van coastal squeeze. Aan de ene kant verbetert de betekenisoriëntatie van dit onderzoek ons begrip van beleidsprocessen in het Nederlandse kustmanagement. Aan de andere kant benadrukt het het belang van betekenisgeving als fundamenteel cognitief proces dat niet alleen van belang is bij het maken van beleid, maar evenzo bij het nemen van alledaagse besluiten.

Zusammenfassung

Seit Menschen begannen sich niederzulassen, erwiesen sich Küstengebiete trotz der mit ihnen zusammenhängenden Risiken als attraktive Orte für sozio-ökonomische Prozesse. In den Niederlanden erhöhten intensivierende wirtschaftliche Prozesse wie Verstädterung und Globalisierung den Druck auf die Landnutzung in diesen Gebieten und tun dies weiterhin. Kommen da noch natürliche Überströmungen und die durch Klimawandel verursachte, wachsende Bedrohung durch den Anstieg des Meeresspiegels hinzu, dann entsteht eine Situation komplexer gesellschaftlicher Interaktionen, verkörpert durch den Begriff „coastal squeeze“ (Kapitel 1). Während die Ansprüche an die Landnutzung zunahmen, veränderten sich gleichzeitig die Anforderungen an das Küstenmanagement: in Planungsprozessen für Küstenschutzprojekte sollten Ökologie, Wirtschaft und Erholungsmöglichkeiten stärker ins Gewicht fallen (Kapitel 2). Eine der Möglichkeiten, diese räumlichen Funktionen mit Küstenschutz zu kombinieren, ist die Megastrandaufspülung – eine riesige Menge Sand (>5 Millionen m^3, oder etwa das Volumen von 2000 Olympische Schwimmbädern), die vor oder auf dem Strand aufgeschüttet wird um die Küstensicherheit auf lange Sicht zu garantieren. Küstenschutzexperten sehen die Megastrandaufspülung als eine innovative Technologie, da niederländische Küstenmanager zuvor Aufspülungen mit kleineren Mengen Sand nutzten, mit denen die betreffenden Küstenabschnitte allerdings nur für ein paar Jahre abgesichert werden konnten. Die Megastrandaufspülung ist jedoch nicht vom einen Tag zum anderen als Variante für das niederländische Küstenmanagementrepertoire akzeptiert worden. Während bereits in den 1980er Jahren erste Ideen aufkamen, sollte erst 2011 eine von einer niederländischen Provinzialregierung angeführte große Koalition von Akteuren erfolgreich die erste Megastrandaufspülung realisieren. Dies gelang jedoch nicht ohne Widerstand. Der Konstruktion in 2011 ging eine Periode der Bewusstseinsentwicklung voraus, in der sich Befürworter der innovativen Idee ausführlich der von verschiedenen Seiten vorgebrachten Kritik stellten. Zeitgleich entwickelte sich ein wissenschaftlicher Diskurs, der sich für erweitertes Experimentieren mit Megastrandaufspülungen einsetzte. Viele Experten erwar-

teten nämlich, dass die Vorteile der Megastrandaufspülung überwiegen würden (Kapitel 3).

Die bemerkenswerte Komplexität dieser Problemlage führte dazu, die Wechselwirkungen zwischen den policy-relevanten Akteuren und den Argumentationsprozess für und wider die Akzeptanz von Megastrandaufspülungen als Forschungsschwerpunkt zu wählen. Die Diversität an Interessen und Politikoptionen, wie sie hier angetroffen wird, kann dazu führen, dass Policy-Situationen in Diskussionen über kontroverse Policy-Probleme und -Lösungen stagnieren. Dies ist erst recht möglich, wenn es um eine innovative, aber unbekannte und unerprobte Policy, wie die Megastrandaufspülung, geht. Die Definition eines bestimmten Policy-Problems, die Bandbreite möglicher und akzeptabler Lösungen für vordefinierte Probleme und die Wahrnehmung der Vielzahl Policy-relevanter Akteure fallen in den Bereich der Sinngebung. Einfach definiert beinhaltet Sinngebung alle geistigen Prozesse, die notwendig sind, um uns selbst, unsere Position in und die Beziehungen zu unserer Lebenswelt zu verstehen. Eine solche sinnorientierte Perspektive annehmend, richtet sich diese Dissertation auf die Rolle von Akteurframes und deren Wechselwirkung bei dem Zustandekommen politischer Entscheidungen (Kapitel 4). Frames können verstanden werden als geistige Strukturen, die es Menschen ermöglichen, Ordnung in ihre Lebenswelt zu bringen und diese zu verstehen. Gleichzeitig schränken diese Strukturen unsere Möglichkeiten ein, „die Dinge anders zu sehen".

Ein sinnorientierter Forschungsansatz hat außerdem Konsequenzen für die Art und Weise, auf die wir etwas wissen können über unsere Forschungsgegenstände (Kapitel 5). Der Fokus auf die Sinngebungsprozesse der beteiligten Akteure erfordert das Verstehen von Sinngebungsmustern, was etwas anderes ist als das Erklären von kausalen Beziehungen zwischen abhängigen und unabhängigen Variablen. Daher ist diese Art der Erkenntnis („Epistemologie") oft verbunden mit einer Vorstellung des Seins („Ontologie"), die die Existenz unterschiedlicher sozialer Realitäten unter den beteiligten Menschen voraussetzt. Menschen können Dinge unterschiedlich sehen, aber keine dieser Wahrnehmungen ist grundsätzlich anderen übergeordnet, d.h. keine Wahrnehmung ist wahrer als andere.

Die vorliegende Dissertation wird von einem doppelten Forschungsziel geleitet (Kapitel 1). Erstens untersucht die Studie,

welche Frames erfolgreich waren bei der Akzeptanz der Megastrandaufspülung in den Niederlanden. Dieses Forschungsziel verfolgt die politischen Argumente, die eine Mehrheit der Policy-relevanten Akteure überzeugten. Zweitens versucht diese Studie jene Sinngebungsprozesse offen zu legen, die sich als relevant für das Zustandekommen der Megastrandaufspülung erwiesen. Während die Forschungsresultate, die sich auf das zweite Forschungsziel beziehen, auch dem Strategischen Umgebungsmanagement[1] nutzen, ist ihr Zweck doch die Positionierung der Sinngebungsprozesse des Küstenmanagements in einem wissenschaftlichen, konzeptuellen Kontext.

Aus den zwei Forschungszielen ergeben sich zwei übergeordnete Forschungsfragen:

A. *Welche Interpretationen der politischen Situation waren maßgeblich bei der Hinzufügung der Megastrandaufspülung zur anerkannten Sammlung von Küstenmanagementtechnologien im niederländischen Küstenmanagementkontext?*

B. *Wie beeinflusst die Sinngebung der politischen Situation die Entscheidungsprozesse für Megastrandaufspülungen im niederländischen Küstenmanagementkontext?*

Ich beantworte diese Forschungsfragen anhand von drei Fallstudien, wovon zwei eine Megastrandaufspülung betreffen (der Sandmotor und das Hondsbossche-Duinen-Projekt), während die dritte ein Experiment kleinen Maßstabes betrifft: das Pilotprojekt Houtribdijk (Kapitel 5). In allen drei Fallstudien habe ich umfassende, qualitative Interviews mit Policy-relevanten Akteuren geführt, d.h. mit Mitarbeitern von Regierungsorganisationen, die direkt an der Entscheidungsfindung in den jeweiligen Projekten beteiligt waren. Es folgte die Analyse der Interviews, wobei die Frage zentral stand, wie die Interviewten die unterschiedlichen Aspekte des Zustandekommens des jeweiligen Projekts frameten und wie sie die Entwicklung der Diskussionen unter den Akteuren rückblickend wahrnahmen. Mangels direkt observierter Interaktionsdaten, resultierten die Interviews in indirekten Daten über die Framing-Interaktionen der Akteure. „Framing" beschreibt jene Prozesse, mit denen Menschen zielgerichtet oder unbewusst mit Anderen über bestimmte Dinge kommunizieren. Diese

1 Bei der niederländischen Straßen- und Wasserbaubehörde gibt es bei Infrastrukturprojekten das Strategische Umgebungsmanagement. Diese Art von Management soll die Kommunikation mit der gesellschaftlichen Umgebung des Projekts organisieren und fungiert als eine Art Public Relations.

Kommunikation ist immer durchdrungen von dem durch Frames vermittelten Sinn. Während der Rekonstruktion der Frame-Entwicklungen und Framing-Interaktionen tritt für jedes Projekt irgendwann der wichtigste Sinngebungsprozess zutage.
Die erste empirische Erarbeitung ist das Hondsbossche-Duinen-Projekt an der Nordseeküste Nord-Hollands (Kapitel 6). Das Projekt betraf die Aufspülung von ca. 30 Millionen m³ Sand, was etwa einem Volumen von 12.000 Olympischen Schwimmbädern und der Oberfläche von 400 Fußballfeldern entspricht. Der Entwurf umfasste Bepflanzung, ein befestigendes Dünental und die Schaffung von Freizeitanlagen. Im Verlaufe des Projektes kamen die Akteurframes immer näher zueinander. Für diese Entwicklung waren jedoch zwei Veränderungen im Projektmanagement notwendig. Die erste Änderung betraf den Übergang des Projektmanagements von der Provinzregierung Nord-Holland auf den Wasserverband „Hoogheemraadschap Hollands Noorderkwartier". Dies geschah, da Akteure die Unterschiede zwischen ihren Frames betonten, statt auf die vorhandenen Überschneidungen einzugehen. Während der zweiten Änderung trat die Agentur für Öffentliche Arbeiten, Rijkswaterstaat, dem Projektmanagement bei. Diese für das niederländische Küstenmanagement ungewöhnliche Zusammenarbeit zwischen der Agentur und dem Wasserverband führte letztendlich zum Erfolg, da die Zusammenarbeit auf den Frameüberschneidungen der Akteure aufbaute.

Eine zweite empirische Erarbeitung betrifft das Pilotprojekt Houtribdijk an der Binnengewässerküste des niederländischen Markermeers (Kapitel 7). Bei diesem Projekt wurde mit dem Effekt von Bepflanzung auf aufgespülte Sandkörper in Binnengewässern experimentiert. Hierfür wurde am Houtribdijk zwischen Lelystad in Flevoland und Enkhuizen in Nord-Holland 130.000 m³ Sand aufgespült. Diese Menge ist vergleichbar mit dem Volumen von 52 Olympischen Schwimmbädern und der Oberfläche von 10 Fußballfeldern. Das Houtribdijk Pilotprojekt ist ein Beispiel dafür, was bei einer Privatinitiative in Bezug auf Frames und Framing geschehen kann. In diesem spezifischen Fall zielten die Frames nicht auf Zusammenarbeit, sondern auf eine effiziente Realisierung des Projektes übereinstimmend mit den formellen Prozeduren. Das niedrige Engagement der Akteure hielt den Frameaustausch minimal.

Das Sandmotorprojekt ist die dritte empirische Fallstudie, die in dieser Dissertation behandelt wird (Kapitel 8). Mit der Realisation

in 2011 war es die erste Megastrandaufspülung an der niederländischen Nordseeküste mit ca. 21 Millionen m^3 Sand, vergleichbar mit dem Volumen von 8.400 Olympischen Schwimmbädern und der Oberfläche von 180 Fußballfeldern. Die am meisten wahrnehmbaren Sinngebungsprozesse in diesem Projekt, die sich in den Interviews abzeichneten, sind die der Framing-Interaktionen. Ein Akteur – die Provinzialregierung Süd-Hollands – spielte während der Realisation eine große Rolle bei der Überzeugung anderer Akteure. Dieser Akteur war so erfolgreich im Framing seiner Botschaft, dass andere Akteure ebenfalls Befürworter seiner Idee wurden. Der Begriff des ‚interpretativen Policy-Unternehmers' erfasst diese Fähigkeit. Er beschreibt einen Akteur, der andere überzeugen kann, indem er auf nachvollziehbare Art Sinn gibt.

Diese Fallstudien sind jedoch nicht nur als alleinstehende Beispiele innovativer Strandaufspülungstechnologien in den Niederlanden zu betrachten. Der Vergleich der Projekte miteinander lieferte zusätzliche Erkenntnisse (Kapitel 9). Das Ziel dieses Vergleichs war nicht die Generalisierung der Forschungsergebnisse, sondern die Feststellung der Ähnlichkeiten und Unterschiede. Einerseits umfasste der Vergleich Strukturaspekte des Projekts, z.B. die Unterstützung des jeweiligen Projekts durch höhere Regierungsebenen und der Austausches zwischen dem politischen und dem wissenschaftlichen Feld. Andererseits verglich ich die interpretativen Aspekte der drei Projekte. Dazu gehört, welche Argumente wichtig waren bei der Entscheidungsfindung, inwiefern die Diskussionen institutionelle, geographische und Zeitskalen überschritten, welche Rolle interpretativen Policy-Unternehmern spielten und welchen Charakter die Framing-Interaktionen hatten. Anhand der drei Fallstudien und ihres Vergleichs können Schlussfolgerungen bezüglich der Forschungsfragen gezogen werden (Kapitel 10). Die unterstellte Multifunktionalität der Megastrandaufspülungen beschleunigte ihre Aufnahme in das niederländische Küstenmanagementrepertoire (Forschungsfrage A.). Multifunktionalität erweist sich nicht nur als vielseitiges Argument, das die Verbindung von Akteuren mit unterschiedlichen Interessen erleichtert, sondern sie verspricht auch eine Milderung der Effekte des coastal squeeze. Bevor die Multifunktionalität der Megastrandaufspülungen bewiesen werden konnte, mussten die Befürworter Skeptiker vom Nutzen des Experimentierens mit dieser Technologie überzeugen. Im Fall des Sandmotors war

diese experimentelle Sprache ein zusätzlicher Faktor, der den Befürwortern half, das Projekt zu realisieren. Unter dem Einfluss der Sinngebung auf die Entscheidungsfindung werden jene Prozesse verstanden, durch welche sich Akteurkoalitionen um spezifische Interpretationen von Policy-Problemen und -Lösungen bilden (Forschungsfrage B.). In den drei Fallstudien habe ich Framing-prozesse gefunden, die solche Koalitionsbildung unterstützen („konvergent"), sowie solche, die von Koalitionsbildung ablenken („divergent"). Beide Prozessarten können zielbewusst eingesetzt werden. Diese Prozesse laufen bei zwischenmenschlicher Kommunikation aber auch unbewusst ab. Durch immer mehr konvergente Sinngebung hat sich die Koalition der Befürworter von Megastrandaufspülungen inzwischen auf unterschiedlichen Regierungsebenen und in unterschiedlichen Sektoren stabilisiert. Dies hat zu einer breiten Akzeptanz der Megastrandaufspülung im niederländischen Küstenmanagement geführt.

Die vorliegende Dissertation eröffnet mindestens drei zukünftige Forschungsrichtungen. Erstens, die Erkenntnisse zu Interpretationen und Policy-Prozessen können umgewandelt werden in Richtlinien für die Praxis. Profunderes Wissen von Frames, Framing und Prozessen, die die Interpretationen von Policy-Situationen mit Projektergebnissen verbinden, hilft der täglichen Praxis. Zweitens, die vorliegende Dissertation konzentriert sich auf Akteure von Regierungsorganisationen, lässt jedoch andere gesellschaftliche Akteure, wie Nichtregierungsorganisationen, Bürgerinitiativen oder die breite Öffentlichkeit, außer Betracht. Zu prüfen, ob sich diese Gruppen ebenso mit den Interpretationen identifizieren, die zu erfolgreicher Realisation geführt haben, kann wertvolle Erkenntnisse über die Beziehung zwischen Regierung und der Gesellschaft im Allgemeinen liefern. Drittens, die Erforschung des Einflusses von Interpretationen auf die Kategorisierung von Wissen als ‚fragwürdig' oder ‚unumstritten' liefert in Zeiten der Anfechtung wissenschaftlicher Erkenntnisse durch Meinungen wichtige Erkenntnisse über den Machtsaspekt der Interpretation. Man denke nur an die Art und Weise, wie hochrangige Politiker die Existenz des Klimawandels anzweifeln.

Zusammengefasst macht die vorliegende Dissertation aufmerksam auf die gesellschaftlichen Triebfedern des coastal squeeze. Außerdem untersucht es die Akzeptanz einer Innovation im Küstenmanagement, der Megastrandaufspülung, die die

Effekte des coastal squeeze vermindern könnte. Einerseits steigert die Sinnorientierung der vorliegenden Studie unser Verständnis der Policy-Prozesse im niederländischen Küstenmanagement. Andererseits betont sie den Stellenwert der Sinngebung als grundlegenden, geistigen Prozess, der nicht nur für die politische Entscheidungsfindung relevant ist, sondern ebenso für das Treffen alltäglicher Entscheidungen.

About the author

Ewert Johannes Aukes was born in Duisburg, Germany, in 1985. Growing up in the industrial Ruhrgebiet area with politically engaged parents sensitized him to environmental and social topics early on. A five-year stay in northern Italy where Ewert attended a European school helped him develop his skills to work across borders of language and culture. After graduating from high school back in Duisburg in 2004, Ewert spent ten months serving his mandatory community service in a home for the elderly. Meanwhile, his affinity with environmental and social issues had resulted in his enrolment in the Bachelor program of Environmental Science at Wageningen University.

During his studies, Ewert developed an interest in social and political theory as well as a preference for qualitative methods, owing to their rich and contextual character. His major task during his internship at the Öko-Institut in Berlin was to produce an overview of forest policies from the UN level down to the German Länder. Completing a Bachelor's thesis on EU chemicals governance and a Master's thesis dealing with the impact of modernity on individual patterns of practice, Ewert's academic education exhibits his interest in policy backgrounds as well as the everyday lives of people. His Master's thesis earned him the degree of Master of Science in Environmental Sciences, specialized in Environmental policy and management, in 2012.

Ewert began his PhD research on meaning-making processes in Dutch coastal management innovation at University of Twente in April 2014. He carried out his research in the STW Naturecoast project – a project bringing together twelve PhD candidates and three post-doctoral researchers from scientific backgrounds spanning the disciplines. With an ambition of interdisciplinarity, Naturecoast engaged with user groups to bring the research as well as the researchers themselves as close to practitioners and their struggles as possible. In the course of his research, Ewert converted his findings into scientific peer-reviewed publications, publications for practitioners, as well as into consultancy reports for the Dutch government. He presented his work at international scientific conferences, the Ministry of State of the Netherlands, as well as in front of an international coastal engineering audience. He was also able to communicate his research in several educational

settings to students at the Bachelor and Master level, as well as supervise thesis research. His PhD research has encouraged Ewert in his evolving interest in methods for unearthing meaning and meaning-making processes with regard to the policy process, but also with regard to social processes in general. An important event in this evolution was the discovery of interpretivist science. Currently, Ewert is involved as a post-doctoral researcher in finalizing the STW Naturecoast project, in which he was previously a PhD candidate. Besides publishing further results of his PhD research, his task is to make sure that the results of the individual PhD studies are integrated and combined into a tangible outcome towards the end of the project in 2018. In this, he assists in wrapping up the results of the governance studies undertaken during Naturecoast and provides general support for writing and publishing tasks.