



Understanding coastal zone innovation: The ‘Waterdunen’ project as an ecology of practices

Timo Derriks^{a,*}, Karin Peters^b, René van der Duim^b

^a HZ University of Applied Sciences, Edisonweg 4, 4382 NW, Vlissingen, the Netherlands

^b Cultural Geography Group, Wageningen University & Research, Droevendaalsesteeg 3, 6708 PB, Wageningen, the Netherlands

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ABSTRACT

The coastal zone has many uses; people live, work and recreate in these areas, protect nature and create protective barriers between the sea and the people living near the coast. In this study, we examine the unfolding of the ‘Waterdunen’ project in the Dutch province of Zeeland as a form of coastal development. By using practice theory, and specifically the notion of ‘ecology of practices’, we unravel factors that hindered or stimulated coastal development related to different practices: coastal defence, salt-water nature development, recreation and tourism, dwelling and farming. Our analysis of newspaper articles, project publications and interviews showed that for Waterdunen to happen, tourism and recreation and salt-water nature development needed to be bundled whereas farming and dwelling practices had to be unbundled, sometimes even through (the treat of) expropriation. We gained detailed insights into the coastal development process by examining underlying cultural-discursive, material-economic and socio-political arrangements. The approach presented in this article shows a promising potential for also studying other developments related to coastal zone transformation.

Management implications: Our study suggests that policymakers and managers are better off when they move beyond a mere description of stakeholders, their interests and powers at play and instead approach policy in a more modest and subtle way by trying to understand the more fundamental nature of the processes they seek to influence. Analyzing how practices co-exist, overlap or interfere with one another invites more deliberate interventions also taking care of the cultural discursive arrangements that underlie most social practices. By doing so, a promising mode of enquiry is for example participatory destination and land use planning.

1. Introduction

Coastal areas are popular holiday destinations. This is also the case in the province of Zeeland, the Netherlands. Visitor numbers are increasing per year, for example from 2.4 million in 2017 to 2.6 million in 2019, resulting in a total of 4.76 million visitor nights (Bosboom, 2019). However, a coastal zone is more than just a tourist destination. People also live and work there and parts of the land consist of nature or is used to defend its inhabitants against risks associated with natural coastal hazards, such as storms and flooding (Hall, 2001).

In the rural region in Zeeland, coastal defence works are combined with new possibilities for recreation and nature conservation into one project: ‘Waterdunen’, the focus of this study. The site is located in the southwestern part of Zeeland, see Fig. 1. The name ‘Waterdunen’ refers to a village known since 1357, which was flooded and eventually given back to the sea in 1510. The area of approximately 300 square

kilometres is a hot spot for birds traveling between Scandinavia and Gibraltar. The main aim of the Waterdunen project is to stimulate regional development in terms of recreation, nature and economy. In 2004, the nature conservation organization ‘Het Zeeuwse Landschap’ presented the idea of Waterdunen to the ‘Gebiedscommissie’ (a public organization responsible for this region’s development) and suggested changes in land use: agriculture should make way for ‘new nature’, an expansion of the coastal zone and the development of unique salt-water nature with tidal influences, making it an even better spot for birds to rest and feed. This new nature should also allow tourism and outdoor recreation.

With the history of Zeeland’s 1953 flooding disaster in mind, allowing the sea to flood the land was and is contested. The province of Zeeland can literally be seen as land located in the sea. Already centuries land was won from the sea by land reclamation, providing communities with a place to live and work safely behind the dykes. For many people

* Corresponding author.

E-mail addresses: t.derriks@hz.nl (T. Derriks), karin.peters@wur.nl (K. Peters), rene.vanderduim@wur.nl (R. van der Duim).

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in these communities, both expropriation of land and depoldering therefore implied an infringement of their cultural identities.

In this article, we examine how Waterdunen has unfolded as a form of coastal development. Coastal development is often referred to as Integrated Coastal Zone Management (ICZM) and seen as a dynamic process that brings “together governments and societies, sciences and decision makers, public and private interests for the production and implementation of a program for the protection and development of coastal systems and resources” (Cicin-Sain et al., 1998, p. 39; see also Birdir et al., 2013). Within this body of literature sometimes tourism and recreation development are studied with an explicit focus on land use change (Ababneh et al., 2019; Bergstén et al., 2018; Cohen-Hattab, Gelbman, & Shoval, 2018; Xu et al., 2016). However, to our knowledge there are no studies that specifically focus on land use planning and change in relation to coastal tourism and recreation, nature and farming practices. As we also will highlight in the case of Waterdunen, land change sometimes involves land expropriation, or at least the threat to expropriate. In the Netherlands expropriation is political sensitive, legally relatively easy as it does not require new laws, but only rarely executed (Rossum, 2021). To unravel the factors that hindered or stimulated the development of and land use changes involved in Waterdunen, we will make use of practice theory (Nicolini, 2012) and

show how an ecology of practices approach (Kemmis et al., 2013) can be used to further our understanding of coastal development processes. More specifically, we will analyse how the social practices of coastal defence, nature conservation, tourism and recreation, living and farming are entangled in complex processes of bundling and unbundling.

We will now first present the concept of ecology of practices, the idea of bundling and unbundling of practices and how this relates to coastal development processes. Second, we will explain the methods employed in data collection and analysis. Third, we will introduce Waterdunen as an ecology of practices and share its origin, identify the practices involved and provide a timeline of the most important developments. Fourth, we will show how particular cultural-discursive, material-economic and socio-political arrangements influenced the Waterdunen project. We end with a brief discussion and conclusion.

2. Ecology of practices

According to Nicolini (2012: 219), a practice is “real-time doing and saying something in a specific place and time”. Generally, practices can be understood as routinized ‘doings and sayings’ performed by knowledgeable and capable human actors, also referred to as ‘carriers of the



Fig. 1. Outline of the Waterdunen project (<https://www.zwdelta.nl/node/37/fotos>) and its location at the southwestern coast of The Netherlands (see: openstreetmap.org).

practice', involving material objects and infrastructures. In other words, "focusing on practices is thus taking the social and material doing (of something: doing is never objectless) as the main focus of inquiry" (Nicolini (2012). Kemmis and Brennan Kemmis (2014) describe practices as socially established cooperative human activities that besides 'doings' and 'sayings' also involve relatings: the ways in which people relate to one another and the world. These 'doings', 'sayings' and 'relatings' 'hang together' in characteristic ways in a distinctive 'project' (Rönnerman & Kemmis, 2016).

For Kemmis et al. (2013) and Kemmis and Mahon (2017) 'doings and sayings' imply relationships between people and things, organized and arranged in time and space. The sayings, doings and relatings of a particular practice are shaped by those of other practices. For example, the words used in one practice may become the words of another practice. In this way, connections between practices are constantly formed, continually changing in small and occasionally bigger ways.

In order to analyse the interdependent relations between practices, Kemmis et al. (2013) introduce the concept of 'ecologies of practice'. Processes in which practices are bundled or unbundled take place in an ecology of practices. These will not only change the ecology of practices but also the practices themselves. Moreover, according to Kemmis and Grootenboer (2008), practices are embedded in 'practice architectures' which are the cultural-discursive, material-economic, and social-political orders and arrangements that prefigure and shape the content and conduct of a practice, shaping the distinctive 'sayings', 'doings' and 'relatings' of a particular kind of practice (Kemmis et al., 2013). These arrangements make practices possible; they are enabling and constraining preconditions for the conduct of practices. So practices "are not merely set in, but always already shaped by, the particular historical and material conditions that exist in particular localities or sites at particular moments" (Kemmis et al., 2013, p. 33). These three arrangements are brought to a site and jointly compose the practice architectures. The cultural-discursive arrangements make the sayings of the practice possible, through the medium of language and in semantic space. The focus is on what is said in and about the practice. The material-economic arrangements make the doings of the practice possible by emphasizing what is done in the practice and with what material arrangements and set-ups. The socio-political arrangements make the relatings of a practice possible; the study of which concentrates on how people relate to one another and the world, and on relations of power (Rönnerman & Kemmis, 2016).

The Waterdunen project, seen as coastal development process to be realized through the bundling and unbundling of involved practices, is not just a matter of changing the understandings (cf. sayings), skills, and capabilities (cf. doings) or values and norms of associated practitioners, but also means that the practice architectures that enable and constrain practitioners' actions and interactions need to change (Kemmis & Grootenboer, 2008). In the following, we will show how dynamic interactions between the practice architectures of spatial planning, coastal defence, salt-water nature development, recreation, holidaying, dwelling and farming affected bundling and especially unbundling. We do this by examining the cultural-discursive, material-economic and socio-political arrangements that underlie the challenges of the bundling and unbundling, which characterize this development process.

3. Materials and methods

Practice theory invites us to look at how practices related to the Waterdunen project changed the ecology of practices. It allows to see how practices are prefigured and shaped the development process. To understand Waterdunen in terms of a changing ecology of practices, the first author combined interviews with key informants with desk research.

First, data was collected by means of 682 newspaper articles, which were published between April 2004 and October 2016. The large majority of these articles were printed or shared online in regional

newspapers 'PZC' and 'BNdeStem'. All these newspaper articles covered the Waterdunen project, with many of them having a complete, explicit focus and a specific title addressing particular aspects of Waterdunen, its scope, development and challenges.

The large amount of regional news items allowed the scanning and selection of key informants. Whereas obviously more people were involved in the development of Waterdunen, nine key informants representing governmental agencies, NGOs and action groups were purposefully selected. These key informants were often mentioned or cited in newspaper articles and played a role for several years during the project. In selecting, the aim was to welcome a variety of involved organizations to share their thoughts and experiences. Since the project had evoked heated debates over the years, people were hesitant to be interviewed. Nine key informants were interviewed, see Table 1. In relation to the sensitivity of the topic, a few of the approached informants replied that all had been said in the media already and that they did not want to go over the ins and outs again.

In addition to analysing newspaper articles and interviewing the key informants, 57 project communications, studies and reports were examined, which were available online on either Waterdunen's own website or the website of the province of Zeeland. Besides these reports, three research projects focusing in Waterdunen (see Begijn, 2011; Brouwer & Biermann, 2011; Groot et al., 2014) were also examined.

In this study, the operationalisation of practice theory addresses the doings and sayings of the practices involved in Waterdunen and how they hang together in an ecology of practice. In this, making and breaking links between practices of coastal defence, salt-water nature development, recreation and tourism, dwelling and farming were studied.

Practice theory is a package of theory, method and vocabulary, with its own affordances and limitations. By defining practices and tracing connections between practices, the research focus is on how these practices developed and how they affected the developmental processes. It enabled the unfolding of an ecology of practices. Central questions in interviews and desk research concentrated on the development of the Waterdunen project in general, and addressed for example in specific: What was most challenging in the development process and why? How were challenges overcome? Which practitioners, practices, behaviours and interests played an important role in the process? How and why? Which aspects hindered or furthered the project on which moments? To what extent did commitment to and opinions about Waterdunen change? What were essential elements and relations between practices and what makes them so characteristic? The transcribed interviews, media articles and project documents together allowed to paint a picture on the involved practices and how the ecology changed over time.

All collected data was coded and analysed using NVivo12. The interviews, newspaper articles and project documents enabled to differentiate between several periods of the Waterdunen process, each of them marked by a clear making or breaking of links between practices. In the data analysis, we first focused on writing a thick description of the most significant events in the project. Using these events, we created a

Table 1
Overview of 9 key informants.

#	Organisation	Role/concern
1	Regional state government	Project leader Waterdunen
2	Molecaten Holiday Parks	Director
3	Werkgroep Groede/Waterdunen	Co-chair work group in favour of Waterdunen
4	Vrienden van Waterdunen NEE!!!	Chair work group against Waterdunen
5	Regional farmers association	Co-chair, farmer in the larger region
6	Municipality of Sluis	Alderman
7	Rijkswaterstaat	Project coordinator
8	Rijkswaterstaat/Freelance advisor	Project consultant, mediator
9	Regional state government	Regional deputy

timeline showing the Waterdunen project in terms of milestone events in the process. Besides the chronological description, a-priori coding was used to analyse characteristics of involved practices, meanings, sayings, doings, materials, and their relations to other practices. In combination with in vivo coding the ecology of practices was composed, followed by posteriori coding on the cultural-discursive, material-economic, and social-political arrangements.

4. Waterdunen as an ecology of practices

Before the introduction of the Waterdunen project, the designated and surrounding areas already could be seen as an ecology of practices. By residing in their houses and living their lives in the area, dwelling of inhabitants in the polders was closely connected to the area's farming practices; often farming was done by the same practitioners or they were relatives of each other. As such, dwelling symbolizes the individual's anchoring in the environment. Recreation practices by inhabitants, but also tourists staying in the region, consisted of cycling, hiking or enjoying the seaside.

Once realized, the project of Waterdunen aimed to offer a combination of connections between recreation, holidaying and salt-water nature development. In addition, it was envisioned to also develop experiential saline agricultural farming. By joining forces, the private initiators and governmental actors imagined an area from which both traditional farming and dwelling would be banished – or in our terms - unbundled. So the basic idea was to bundle recreation, holidaying, salt-water nature development and, to a minor extent, saline farming, whereas dwelling and farming needed to be unbundled. As this study will show, the practice of coastal defence played an essential role in bundling, as fostered by the practice of spatial planning.

4.1. Waterdunen timeline

The following brief overview highlights the most significant events:

- In April 2004, an article was published in the local newspaper informing its readers about Waterdunen. Nature conservation organization 'Het Zeeuwse Landschap' shared their vision of approximately 300 square kilometres of nature and recreation where at that point in time there were farms and houses;
- In October 2005, the combination with coastal defence became evident, as shared in the media and related to the idea of Het Zeeuwse Landschap. It also became clear that the existing, family owned, campsite De Napoleonhoeve would disappear to make room land inwards for the strengthening of coastal defences. A new holiday park would be created on 40 square kilometres with camping facilities in the dunes and 400 recreational units. Another 100 square kilometres would be allocated for recreational nature, and 100–150 square kilometres would be allocated for salt-water nature development; for which tidal culverts would be constructed to allow salt water to flow in;
- In December 2005, the Molencatengroep (a tourism firm) that bought campsite De Napoleonhoeve with the objective to realize a new and unique holiday park, Het Zeeuws Landschap, Rijkswaterstaat, the province of Zeeland, the municipality of Sluis and Waterschap Zeeuws-Vlaanderen signed a collaboration agreement, excluding the farmers. The farmers in the area united themselves and warned that they would not sell their land;
- In June 2007, the Molencatengroep, Het Zeeuws Landschap, the province of Zeeland and the municipality of Sluis signed an agreement in which they agreed on the level of ambition and cooperation, and the division of tasks, costs, responsibilities and financial resources. The total project investment was calculated to be between € 173 and 193 million, and required 290 square kilometres of agricultural lands;

- In October 2008, the term 'integration plan' was introduced, which would allow for land expropriation if voluntarily selling could not be realized;
- In November 2008, the provincial government agreed on taking over coordination of the Waterdunen project from the local municipality, due to the scope and relevance of the project;
- In September 2010, almost half of the 350 square kilometres of land was in possession of the regional state authorities;
- In December 2010, the national government approved the integration plan, despite the many protests throughout the years and questions concerning the development procedure and land prices paid;
- In January 2011, the request to expropriate land was filed, something that was possible now that the integration plan was approved;
- In March 2011, permanent campers of campsite De Napoleonhoeve were informed that they had to leave the premises by the end of 2012, as coastal defence preparation works would start;
- In November 2012, almost all land was transferred. Shortly after, it was announced that the work would start in the summer of 2013 and that it would take three year to complete the coastal defence works and develop the nature;
- Between 2013 and 2019, the campsite was demolished and land preparation took place, existing roads were deconstructed, explosives were found and cleared, water channels created and the new landscape was developed. It took longer than three years due to challenges in land works and funding;
- Defence works were completed in the beginning of 2019, including the tidal culvert, the creation of sand dunes, landscaping that directs the in- and outflow, and a surrounding channel around it to prevent salt water from seeping into the ground water;
- In the remaining of 2019, there were no physical signs of the holiday resort yet, and the area was not open to the public. The basis for the planned landscapes had been realized.
- In 2022, visitors are allowed in the Waterdunen area to enjoy nature on several hiking tracks. Molecaten is designing the holiday park. The tidal culvert is operational, allowing tidal currents to flow in and out of the area that enables the salt-water nature development

Changing the ecology of practices in order to realize Waterdunen was the result of not only the bundling but also the unbundling of associated practices. Especially the unbundling of agricultural farming practices proved to be a challenging and lengthy process.

5. Arrangements in Waterdunen

We will now discuss this coastal development process in terms of which and how cultural-discursive, material-economic and social-political arrangements influenced the Waterdunen project.

5.1. Cultural-discursive

Throughout the years the need for Waterdunen and its specific development has been understood and discussed by proponents and opponents using a number of – mostly opposite – arguments, especially related to the future of farming, nature development, coastal defence and the inflow of salty water. As a result, particular ways of 'sayings' and 'thinkings' have affected processes of bundling and unbundling.

Those in favour stated in (policy) documents and during meetings that Waterdunen would bring a combination of different benefits (see for example [Provincie Zeeland, 2010](#)). They argued that the unique nature development combined with recreational possibilities would improve the quality of life of those living close enough to frequently visit the area. The project was also believed to attract tourists, because of the new accommodations, but also because of all kinds of other facilities for tourists in the vicinity. The development and exploitation of Waterdunen would lead to new jobs and economic spin-off in the region. From

this point of view, those in favour of the project preferred tourism and recreation linked with nature development to arable farming and dwelling. However, the farmers and to some extent also the local residents challenged the unbundling of arable farming in the Waterdunen project, as they depended on these lands for their livelihoods.

One reader of the local newspaper wrote:

Keep in mind that we depend on farmers, or do you also have the idea that the milk, potatoes and vegetables only come from the supermarket? (De Wever, 2009)

Farmers and residents also challenged the unbundling, and more importantly, because they were emotionally attached to these lands. For them farming was directly related to their identity of being a 'Zeeuw' or a 'farmer'. They lived and farmed on the same lands as their parents and grandparents before them. As interviewee #5 said:

I know what my grandfather would have said if they wanted to expropriate his lands: "These lands are mine, as well as of my ancestors." It does not really matter what price is paid for those lands, it is a matter of emotions.

Obviously, this 'thinking' was challenged by those in favour of Waterdunen, who believed that the traditional ways of agricultural farming were no longer feasible. In their view, mechanization and technological innovations negatively influenced the economic value of farming. Consequently, an increasingly small number of people are employed in farming. An interviewed alderman (#6) for example argued:

Farming in general is fine, but in economic sense ... Related to agricultural mechanization, there is little labour involved. Yes, a few contracting companies and that's it. Before, indeed every farmer employed 20 to 25 people, certainly in high season. If you drive around in the area now, you see large machines on land and sometimes a chauffeur, but sometimes you also only have machines without a driver.

Next, but related, is the debate on the value of 'nature' itself. For those opposed to Waterdunen, polders and farming represented nature. In their opinion, all nature in this area was man-made anyway. Waterdunen for the sake of 'true' nature development was therefore contested.

Moreover, because of the extreme flood in 1953 for people in Zeeland coastal security is a very important issue. Therefore, there was a strong debate about the best strategy in terms of efficiency as well as aesthetics. The general belief in the media and confirmed by basically all informants was that simply reinforcing the existing dykes would probably be the most efficient in terms of costs and time, but this would also lead to a less appealing landscape. Creating dunes, including a tidal culvert that allows seawater to flood in, would be more challenging but – as believed by those in favour of Waterdunen – much more appealing. Combining this aesthetics with recreation, making the 'weak link' in the Dutch coastal defence strong again and creating an area for nature development behind the dykes, seemed a 'win-win-win' situation to them.

Related to nature development the discussion focused on the tidal culvert and the inflow of salt water. For 'Zeeuwse' residents in general, it means a lot that the lands have been won from the sea. The reclamation and cultivation of these lands has long been part of their history and as such part of their cultural identity. The flooding of large parts of Zeeland in 1953 resulted in even stronger emotional and symbolic ties to the land. The idea of allowing water to flow through the dykes into 'the land' behind it made them feel uncomfortable. For this reason, some of those opposed to the project argued that Waterdunen is a form of depoldering, while the definition of depoldering is to return land to the sea permanently. People in Zeeland are proud at earlier land reclamations. A tidal culvert does allow the inflow of salt water, but in a regulated manner. Inflow of salt water includes the possibility of salinization,

not only in the designated area but also of surrounding farmlands, thus threatening the quality of the soil and traditional farming practices. In modern farming, it is possible to use saline resources but that type of agriculture did not seem to be an option because of the wish of farmers and residents to keep salt water (the sea) out of their polders. As the interviewed deputy (#9) argued:

Salt water on agricultural lands, that is like cursing in church.

The farmers who own land in the Waterdunen development area united and were represented by one of these owners; He confirmed the perception above in the newspaper (Van der Slikke, in Berkelder, 2008) and related it to the general objections against Waterdunen:

We have the same principle objections as other opponents of depoldering. We don't see anything in salt water. Furthermore, our firms, or parts of it, need to disappear.

One last - and highly important - issue that especially challenged the unbundling of practices in order to realize Waterdunen was the extent of voluntariness of land transfers. In the first few years, it was not clear to farmers which part of the land was included in the Waterdunen project. The search for land area was not defined in spatial planning, also to prevent land speculation. This lack of clarity made farmers very unsure about whether to invest or not. Farmers were partly reassured because they thought that if land was not voluntarily sold, Waterdunen would not be realized. As it was somewhat a secret which lands were needed and bought for the project, it was the things that were not made explicit that created the feeling of discomfort with farmers. In short, those in favour of Waterdunen, focussed in their 'sayings' and 'thinkings' on (economic) benefits and the importance for coastal defence. Opponents, instead, focussed on the cultural identity and their relation to the land. This has mainly affected the speed and process of unbundling farming practices.

5.2. Material-economic

Different kinds of material-economic arrangements prefigured the ways in which Waterdunen developed. First, the funding and the deadline for their allocation determined which lands were bought and when. Once lands were obtained, the construction of coastal defence works could start, and so could the landscaping for nature and recreation development. As a first step, all lands had to be transferred from private owners to the public authorities. The Dutch government allocated the funds for the coastal defence works. The money available allowed other parties such as Molecaten – a private tourism company – and Het Zeeuwse Landschap – a private nature conservation organization – to invest in the project as envisioned. People questioning Waterdunen accused authorities of using public funds (for coastal defence) to support the development of commercial activities (recreation and tourism, but also nature development), while this money could be spent elsewhere as well. Hullu (2010:10), in her personal essay on how she as part of a farming family owning a piece of land in the designated area felt about the project, argued:

For the Waterdunen project, many millions of euros of public money are used. As a large part of the population does not support the project and austerity measures are needed in many areas, the government should reconsider funding this project.

Another local resident also expressed his or her doubts concerning funding in the local newspaper:

An 'economic' impulse for the area, according to the Provincial Government, but a large part of the population does not support it. Long live democracy! The West Zeeland-Flemish population and many tourists love the polders as they are now! Molecaten contributes to only part of the costs, totalling hundreds of millions of euros,

but how much will they receive for moving the campsite? After all, Molecaten does not have to move for the sake of coastal enforcement. The budget is filled with subsidies, so your and my money. This 'new nature' must stop, we are fed up with it in the region. But we are clearly a rich country and we can afford to spoil. (D'Hont, 2009)

Bundling coastal defence, nature and tourism development appeared to be costly. Although funding was under pressure from time to time, the availability of money never had a directly negative effect on the process. Having unexpected costs was part of the calculated budget and finding ways to receive additional funding also seemed to be an accepted element for those in favour. In a response to the negative publicity about the funding, a reaction that listed the facts about the financial situation of Waterdunen was shared on their site:

The deficit is substantial and yet relatively limited, namely around 3.5% of the total realization costs. The solution to this deficiency is therefore expected to have a minimal effect on the ambition and quality of Waterdunen. The financial setback will not undermine the added value that Waterdunen has for Zeeland (Waterdunen, 2015).

Reports discussing financial resources affected the public debate; as a result some opponents adopted a 'look, I told you so, it is an awful project' attitude.

After nine years of discussions and preparations, coastal defence works and major landscaping of the Waterdunen finally started, therewith profoundly changing the area. Roads were closed and dunes were created. A canal surrounding Waterdunen was created to act as a buffer and prevent salinization of surrounding areas. As it took a long time to prepare the land before parts of it could be transferred to the private tourism entrepreneur Molecaten to build their holiday resort, some residents and politicians wondered whether Molecaten would still be in the picture at all. In this period, Molecaten explained they were still interested, and started to think about the park's outline. For a long time, there were uncertainties and doubts about the actual holiday park and its facilities (Rozendaal, 2018).

5.3. Social-political

Our analysis showed that three socio-political mechanisms have played an important role in the processes of bundling and unbundling. The first mechanism is mediation, which was used to try to convince farmers to sell their land to the government. The second mechanism was the formation of a local protest group against Waterdunen. The third mechanism was the transfer of responsibilities from the local to the regional government.

During the course of the project development, different rounds of mediation took place. The main reason for this was that from the start farmers were not well informed about the main ideas, objectives and most importantly the envisioned area of where Waterdunen was to be realized. To be able to farm farmers needed to know, at least to some extent, what the future would entail. This (lack of clear) information provided by the government was also noticed by residents. Van Doorn (2009), for example, wrote the following in the local newspaper:

If the government parties involved only possessed half of the clarity, firmness and frankness of the farmers, Waterdunen would already have been settled. But no, the planners want to comply with earlier agreements, are going to say goodbye to voluntariness and inform citizens and politicians incompletely. And people are tired of that behaviour.

The local council was also not completely open about Waterdunen, as they feared that this could lead to land speculation, which would make it more difficult to obtain lands. Mediation therefore primarily focused on explaining the project and clarifying the scope of the project in order to convince farmers to voluntarily sell their land. Different governmental actors and Molecaten tried, but all without success.

Consultants related to the Dienst Landelijk Gebied (DLG, or Government Service for Sustainable Rural Development) tried to mediate but their 'sayings and doings' did not match those of the farmers. The director of Molecaten played a role in the early years by trying to mediate and convince the farmers. Following, those opposed to the project also addressed him personally, sometimes in a not so respectful manner. The Waterschap (Water Authority) also played a role in mediation; a less contested one yet still with the same aim. It was seen as the state's executor of the land work developments, therewith also practicing spatial development but with less decision-making power.

Secondly, a number of inhabitants organized themselves in a local action group: 'Waterdunen Nee!' ('nee' means 'no'). When some bits of the Waterdunen project ideas became public, residents gradually formed an opinion about the many aspects this project entailed. One obvious one was whether Waterdunen would be a form of depoldering or not. People shared their opinions publicly and widely, for example by means of the 'readers write' section in the local newspaper, thus stimulating public debate. Throughout the years, people were pressured to take a stand in whether Waterdunen was in fact depoldering, but also whether this type of coastal defence was worth all the hassle. Those opposed to Waterdunen expressed their dissatisfaction with local political doings. This led to reactions by those in favour of Waterdunen; those who agreed with the economic impulse of Waterdunen, its promises for recreation or its aesthetics. This also meant they were quickly labelled as not only being in favour of Waterdunen, but also as being 'against farming'.

Residents who supported Waterdunen also tried to have some influence on the development process and the design of the area. In order to do so, they organized information meetings and acquainted themselves with potential experts. Those against, however, were more concerned with mobilizing other residents in an action group called 'Waterdunen Nee'. For them, it was all about influencing politicians, hoping to change, slow down or entirely stop the development of Waterdunen. The interviewed chairman of this action group (#4) reflects:

The farmers really did put up a fight, and we and members of the Waterdunen NEE!!! protest group tried to help them. Every now and then we organized certain protest campaigns.

The opponents first focused on local politics, but were forced to address the provincial council and its politicians, when the project was scaled up and responsibilities were transferred from the local to the provincial government.

Thirdly, the up scaling from local governmental bodies to provincial ones was based on the idea that locally politicians and residents were too divided to proceed efficiently, if at all and farmers were not willing to sell their land voluntary. Therefore, the regional government took over the coordination of spatial planning activities related to bundling and unbundling. The director of Molecaten argued that the municipality's alderman was probably happy with the transition as he could now point to the province when people disagreed with their decisions. In the same line of thought, mediating project consultant (#8) explains:

Coastal strengthening was not the discussion, but buying 300 square kilometres of land and allowing salt water in was. It would create much resistance, which could not be solved by the local council. They did not want to 'burn their fingers on this project' and dropped out.

A more shared idea is, however, that it was necessary to scale up, because the project of Waterdunen turned out to be more important in terms of societal and economic impact than previously expected or anticipated by the local governmental actors. In addition, local and provincial interviewees stated that the provincial government was more experienced in managing projects of this particular scale and therefore better in completing it in time for the deadline relating to the coastal defence funds.

It is important to highlight that the provincial council is seated in Middelburg, the provincial capital and located on one of Zeeland's former isles, which one can only reach by driving through a 7-km tunnel under the Westerschelde river. In this sense, this transfer did therefore not only increase the geographical distance but also the emotional distance. An often-shared public opinion in the Waterdunen region was that the provincial government did not really care for this part of Zeeland because it was too far away, divided by the Westerschelde and only reachable via either Antwerp (Belgium), a long tunnel, or a ferry.

Because of this up scaling to the provincial level and the introduction of a new legal instrument, namely a so-called integration plan, relationships between authorities and those involved with farming became even more strained. An integration plan indicates what activities are allowed where, and could replace (parts) of local destination plans. Basically, these plans allow to bypass local plans and interests to serve a higher interest. This integration plan became part of the Waterdunen project and was first mentioned in 2008 as for years, the process of obtaining grounds voluntarily dragged on. In 2010 the province decided to actually use this plan as instrument that could speed up the process of land ownership transfer.

A national budget was allocated to strengthen the coastline in such a way that it would fit with the Waterdunen project vision. For example, it could be used for the prospect of salt-water inundation, which was welcomed, as it would result in 'unique nature'. However, in order to obtain those funds, all required lands had to be obtained by a certain date. This land possession deadline meant that if the lands for Waterdunen were not obtained, alternative defence works had to be carried out in order not to lose the available budget. In order for such a plan to be approved by the national government, and to allow eventually expropriation, it had to demonstrate societal urgency. The province's argument was the need for coastal defence in combination with the expected economic impulse of Waterdunen. A local resident (Rosendaal, 2009) shared thoughts on this situation in the local newspaper, in between the moments of mentioning and actually using the integration plan:

Now that the province has established the pre-emptive right to the land in the Waterdunen plan, the position of the farmers has deteriorated further. The province leaves no stone unturned to force the landowners to cooperate in this idiotic depoldering. Directors also do not consider agreements made. ()

Clearly, the 'agreements made' as mentioned by this reader referred to the voluntarily land transfer. It was publicly shared that the provincial government would write the integration plan, if not only to pressure the voluntarily transferring of the grounds.

After the integration plan was submitted, relationships between the provincial governmental actors, the farmers and the residents protesting against Waterdunen became even tenser as now it became clear that land would no longer be transferred voluntary but could also be expropriated. Again, differences in the way people valued the agricultural lands, as well as their understanding of this project and whether or not it was necessary resulted in various protests. The implementation of the plan was delayed because not all required documents were included. In the meantime, questions were raised about the price at which land was sold and whether this could be seen as government aid. Those against Waterdunen voiced their opinion, but they did not have the power to really influence decision-making. In general, the farmers' representative and the chair of the local protest group felt they were not or not seriously being heard. Eventually in December 2010, the Dutch government approved the integration plan, therewith giving the provincial authorities the power to expropriate grounds when and where necessary. With expropriation now being an option, farmers increasingly sold their land voluntarily. The interviewed project leader (#1) of that time remembers:

With eleven out of the twelve landowners we came to an agreement, using the leverage of possible expropriation. Despite the possibility of actual expropriation, it was not necessary, as the offer they received was higher than if they would let it get to the final point.

One piece of land was expropriated because it entailed legal and tax benefits for the owners and one other part was expropriated just as an experiment to find out what the price would be. Once lands were transferred, no other particular and important socio-political mechanisms were identified in the processes of bundling and unbundling, since from then onwards it was (only) a matter of preparing the land works and building the holiday park.

6. Discussion

This article aimed to contribute theoretically as well as empirically to our understanding of coastal destination development processes by examining the Waterdunen project in Zeeland, the Netherlands. In order to uncover interconnections between practices, we made an analysis of the cultural-discursive, material-economic and social-political arrangements involved. By showing how these arrangements affected change within the ecology of related practices, we not only gained a better understanding of how coastal developments may take place, but also made the following contributions to the existing literature.

First, as the case of Waterdunen shows, practices depend and are conditioned and shaped by one another. In the Waterdunen project, practices of salt-water nature development, coastal defence, and recreation and tourism 'fed' or enabled each other. As Kemmis et al. (2013) explain, to make a project possible, the sayings, doings and relating of one practice are shaped by and influencing the sayings, doings and relating of another practice. Therefore, it is essential to make the 'relatings' and the 'hanging together' of practices explicit (Kemmis et al., 2013). Based on our analysis we argue that using an ecology of practices approach seems promising to also understand other coastal zone transformations. It gives a more profound insight than just focusing on co-ordination, co-operation, and concertation as part of Integrated Coastal Zone Management (ICZM) (Ernoul and Wardell-Johnson, 2013) as coastal zones are home to a variety of practices, both materially and symbolically. Whereas ICZM emphasizes implementation and management, and does not focus on understanding processes of change and transformation, we suggest to engage with practice theory as an alternative, yet promising and functional method of enquiry.

Second, this article also illustrated how practice-based perspectives can generate in-depth insights for policymaking and evaluation, based on the understanding that policy interventions only "have effect (some intended, some not) within and as part of the ongoing dynamics of practice" (Shove et al., 2012, p. 145). In our analysis of the Waterdunen project, we showed that socio-political arrangements interfere with, and sometimes dominate cultural-discursive and economic-material arrangements. At the start of a project like Waterdunen, alignment of a variety of practices necessitates a shared vision, a shared idea of how a destination should be changed and, most importantly, for which reason (cf. Bagiran Ozseker, 2019).

In the case of Waterdunen, clearly not all practitioners agreed on the reasoning behind the project. Aligning these conflicting perceptions required mediation, competent management, and financial or other forms of compensation. But as this was unsuccessful, the only way forward seemed to be to change the rules through the development of an integration plan. This was made possible when the government scaled up the project from local governmental bodies to regional ones, showing the dominance of the socio-political arrangement at this stage. Without the required lands or any sign of being able to acquire these any time soon, the process of Waterdunen was running into a dead end. However, due to a change of law at the regional level it eventually became possible to produce an integration plan that even allowed expropriation, which rarely happens in the Netherlands. Once the plan got government

approval, the threat of expropriation alone was enough to make farmers sell most of the required lands. However, change of ownership of land for the public interest (Bergsten et al., 2018) not only involves rules, regulations and money but also involves personal and emotional connections to – in this case – farms, land and the history of the region emphasizing the importance of cultural-discursive arrangements.

Waterdunen showed that personal connections and emotions of farmers that needed to give up their land, homes and farming organizations played an important role in realizing this coastal development. Furthermore, emotional connections of residents in relation to depolderisation and allowing salt water flooding in certainly did not help in creating local support. The farm lands to be transferred and developed into new nature were – similar to Bergsten's et al. (2018) study in the context of a forest - not only seen as commercial or legal entities. The farmers and controversies concerning expropriation and depoldering show, just like Oian and Skogen's (2015) study on local hunters, that property is as much about relationships between people as it is about relationships between the owner and what is owned. Details about the procedures and (lack of) clear communication between those who own (ed) land and those that sought to own land in Waterdunen gave insight in the state and progress of these relationships are therefore relevant to understand in future policy-making and process management.

Third, our study also showed that the use of practice theory in general and an ecology of practices approach in particular - when studying in this case coastal development processes - also has its limitations. These type of development processes can take many years to unfold. Although shadowing or even participating in the bundling and unbundling while it happens would provide better and more accurate insights, it is doubtful whether scholars might find themselves lucky enough to be in this position. Time and funding normally lack. For this reason, reconstructing a journey like the Waterdunen project depends on the memories of key actors and published accounts over time. Nevertheless, further research could still, however, use a similar ecology of practices approach and see how processes of tourism and recreation development elsewhere unfold. It would be especially interesting to compare the extent to which socio-political arrangements also elsewhere dominate over cultural-discursive and economic-material arrangements. Comparisons of various cases might be able to illustrate similarities and differences in development processes and how these may be patterned in a particular arrangement, variety and type of practices or elements of practices.

7. Conclusion

In this article we discussed the development of a coastal development project called Waterdunen in terms of an ecology of practices. In this ecology coastal defence, nature conservation, tourism and recreation, living and farming were entangled in complex processes of bundling and unbundling. Only when the provincial government agreed on taking over coordination of the Waterdunen project from the local municipality, the development of the project really could take off. In terms of practice arrangements (Kemmis & Grootenboer, 2008) socio-political arrangements not only interfered with, but also dominated cultural-discursive and economic-material arrangements.

After a lengthy and challenging process of almost 20 years, Waterdunen is now materializing. The tidal culvert and channels are in place, allowing salt water to flood in the area. The tidal dynamics allow nature to develop, behind a coastline that is strong enough to survive future storms. Hiking trails are created and the area is open to visitors. Molecaten owns a part of the land and prepares the construction of their holiday park.

Studying coastal zone land use planning and development in terms of ecologies of practices – as we did in this article - not only makes scientifically sense but also has managerial implications. Our study suggests that policymakers and managers are better off when they move beyond a mere description of stakeholders, their interests and powers at play and

instead approach policy in a more modest and subtle way by trying to understand the more fundamental nature of the processes they seek to influence. Analysing how practices co-exist, overlap or interfere with one another invites more deliberate interventions also taking care of the cultural-discursive arrangements that underlie most social practices. By doing so, practice theories can be used as an alternative, yet interesting and promising mode of enquiry in for example also destination and participatory land use planning.

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