

THE SAND MOTOR: A NATURE-BASED RESPONSE TO CLIMATE CHANGE

FINDINGS AND REFLECTIONS OF THE INTERDISCIPLINARY
RESEARCH PROGRAM NATURECOAST

EDITED BY
Arjen Luijendijk
Alexander van Oudenhoven



Arjen Luijendijk (right) was active in the NatureCoast program as a postdoctoral researcher at Delft University of Technology from the start in 2013 until the end in 2018. He focused on setting up the interaction between the PhD researchers and end-users, as well as integrating the research findings. He worked on developing integrated model forecasts and developed the world's first global beach erosion map. He is currently working as a Specialist at Deltares and as a researcher at the Delft University of Technology on predicting the future behavior of the world's beaches.

Alexander van Oudenhoven (left) was active in the NatureCoast program as postdoctoral researcher at Leiden University between 2015 and 2018. He focused on integrating the program's scientific findings, thereby looking at the potential benefits that nature-inclusive coastal management can generate and how these are perceived. He is currently working as an assistant professor at the Institute of Environmental Sciences at Leiden University, working on the interface between biodiversity, ecosystem services and societies' quality of life. In the spring of 2018, he became Co-Editor in Chief of Ecosystems and People, an interdisciplinary open access scientific journal.

THE SAND MOTOR: A NATURE-BASED RESPONSE TO CLIMATE CHANGE

FINDINGS AND REFLECTIONS OF THE INTERDISCIPLINARY
RESEARCH PROGRAM NATURECOAST

Edited by

Arjen Luijendijk
Alexander van Oudenhoven



Figure 1.
Locations of Sand Motor and Hondsbossche and Pettemer Sea Defense



Ewert Aukes

UNDERSTANDING PROJECT SUCCESS THROUGH FRAMING CONTENT AND CAPABILITY

Ewert Aukes obtained his PhD at the department of Governance and Technology for Sustainability at University of Twente in 2017. He currently works at the department of Science, Technology and Policy Studies at University of Twente, as a postdoctoral researcher.

*Dissertation title:
"Framing coastal squeeze: Understanding the integration of Mega-nourishment schemes into the Dutch coastal management solutions repertoire: An interpretive analysis of coastal management processes."*

*PhD supervisors:
Hans Bressers (University of Twente)
Kris Lulofs (University of Twente)*

The overall consensus is that the Sand Motor has been a success. Although it is still too early to indicate the long-term consequences of this kind of large-scale beach nourishment, the success stories told about the Sand Motor tend to muffle the critical ones (Page 34). So, how did the Sand Motor come to be perceived as "successful"? And does the Sand Motor's proclaimed success serve as a promise for future large-scale projects using sand? As we shall see, "framing" can provide a valuable lens to understand how this general consensus developed, and why critical stories have had a hard time surviving in the political debate as well as in society.

Generally speaking, the Sand Motor can be characterized as a "smooth" project. Few disagreements among actors were so persistent as to significantly delay the project or even threaten its realization. This meant that the Sand Motor was quickly implemented (from the first ideas in 2006 to its construction in 2011) and helped to define it as a success. The province of South Holland led the Sand Motor project, which is unusual, since provincial governments are not formally responsible for coastal management in the Netherlands. However, a growing population and its demand for space presented a pressing spatial planning issue for the province. Consequently, the Sand Motor concept of a large, multi-purpose sand body went down well with the province.

Unfortunately, the Sand Motor is by no means a blueprint for future large-scale coastal engineering projects. A case in point is the coastal reinforcement project carried out at the *Hondsbossche en Pettemer Zeewering* (HPZ) (Hondsbossche and Pettemer Sea Defense, Figure 1), which took more than ten years to be implemented with

disagreements and personnel changes (first idea was raised in 2004, but construction only occurred in 2015). In this project on the North Sea coast of North Holland, a proposed seawall reinforcement eventually turned into a large beach nourishment scheme. The evolution of the proposed solution coincided with changes in which organization was in charge of leading the project. To understand the role of framing, the transition period from one proposed solution to the next is especially telling. Comparing the smooth Sand Motor project and the rocky HPZ project helps us to understand how framing affects successful realization of large-scale projects using sand.

Let us first introduce the concept of framing. This concept assumes that interpretations of what happens differ from person to person and may depend on education, experience, or even the organizations people belong to. Applied to policymaking, framing theory states that actors interpret how desirable a policy and propose solutions based on their "frame." For example, one policy maker might recommend lowering taxes to encourage consumer spending, while another might argue for increase wages because they are viewing the problem from different perspectives. We will consider two aspects of framing here: the content of the frames and the actors' framing capabilities.

Content of the frames

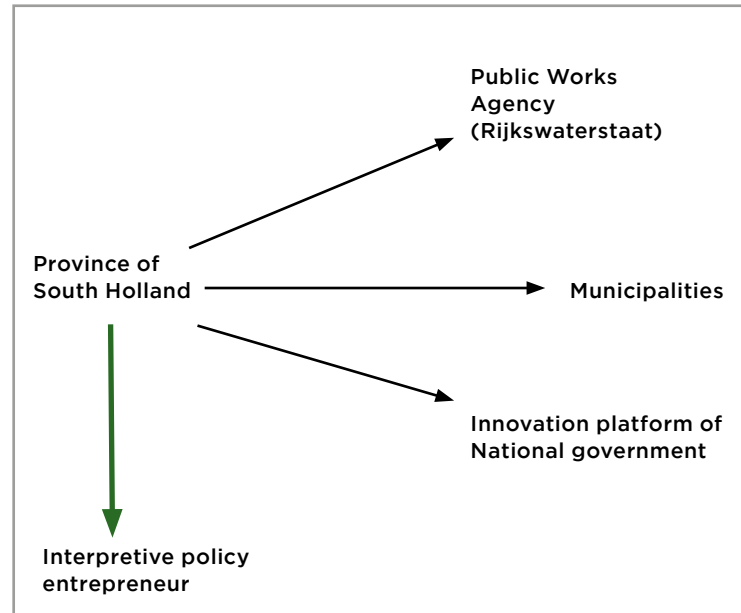
Framing content refers to the ideas actors have about a policy situation. In coastal management, this could mean whether they advocate a traditional "hard" engineering solution or an innovative "soft" one (Figure 2, next page). If the goal of policy making is that an actor is able to successfully implement their proposal, being able to vary framing content is an advantage. Doing

Figure 2a and 2b. (below)
Illustration of "hard" versus "soft" engineering. The photo on the left shows the original "Hondsbossche en Pettemer Zeewering", a large dike in North Holland, whereas the photo on the right shows the same construction fortified by sand nourishment rather than additional hard structures. (Photo credit: Boskalis.)



Figure 3. (far below left)
The four functions of the Multifunctionality frame.

Figure 4. (far below right)
Framing capabilities and the result of a versatile framing content.



this allows an actor to tailor their message to resonate with other actors' framing content. This ability played a role in both the HPZ project and the Sand Motor, albeit in different ways.

In 2006, the province of North Holland proposed reinforcing the existing HPZ with an expensive traditional seawall, which would, however, have meant "sacrificing" half a village. This proposal ignored regional economic and demographic developments - both pressing matters in the region - and it did not create new recreational space. With its strong focus on coastal safety, the provincial government disregarded other framing contents. For actors with other frames, the proposal would make the situation even worse. In other words, framing the solution in terms of a traditional, monofunctional seawall reinforcement was too limited, and was unable to adapt to other framing contents. Omitting these other framing contents created a rift between the provincial government and other actors. The resulting political impasse was only overcome as another organization gradually took over as project lead, and as a more versatile, large-scale sandy nourishment scheme was chosen to reinforce the coast of North Holland.

How different was the Sand Motor project! From the start, the province of South Holland, which led the project, advocated for a project which would protect the coast, enable leisure activities and encourage economic development at the beach, while simultaneously sparking national and global interest for an unprecedented Dutch coastal innovation (Multifunctionality frame, Figure 3). Such an integrated vision had the potential to get many actors on board, even if their framing content represented only one of those elements. While some aspects, such as the precise location and shape of the Sand Motor, were thoroughly debated, its integrated design eventually facilitated a broad coalition in its favor. In the end, the Sand Motor was not only realized because of the versatility of its framing content (Figure 3), but also due to the framing capabilities applied in the project.

The actors' framing capabilities

Framing capabilities include the interactive components of framing: whom an actor chooses to communicate with and what they choose to communicate. This strategic use of framing depends on a sensitivity, permitting actors to adjust their framing content to the frames of other actors. So, framing is not something one does or does not do. Rather, we are all able to frame effectively to a certain degree, if we are able to develop this sensitivity. In the two projects, different framing capabilities resulted in different outcomes.

In the HPZ project, the rigid framing content present in the North Holland government's proposal reflected a low sensitivity towards other actors' framing content. The proposal showed insufficient understanding of other actors' perceptions and did not include measures to consider these. Additionally, the rationale for the monofunctional seawall reinforcement was not enough to convince the Ministry of Infrastructure and Environment to authorize the project. However, this was not only due to the provincial government's lack of sensitivity to other actors' framing content, but also due to the limitations of the proposed solution. The example of the HPZ project indicates the difficulty of convincing other actors to adopt a policy solution when they have different interpretations of the problem.

The versatility of the Sand Motor provided many more potential framing options - and the provincial government of South Holland seized these. It began by involving many actors in the process and trying to understand their interests. A broad advisory board was established for the project, including a high profile chairman and municipal delegates; this board provided information and permitted consultation. With a thorough understanding of the framing content of other actors, the provincial government began a kind of "promotion tour" to advocate for its proposal, much like a travelling salesman promoting a product at various doorsteps (Figure 4). It visited multiple political organizations - such as a national innovation

platform and *Rijkswaterstaat* - and presented the project to the parliamentary forum for spatial planning projects. The province was able to gain the support of these organizations as a result of the versatility of the framing content, which allowed them to broaden or narrow the range of functions depending on whom they were trying to convince. Once the province found a way of framing the Sand Motor's functions that resonated with another organization's framing content, the added value would appear, and the other actors would become convinced of the project's usefulness. The ability to find the right tone and arguments resulted in a growing coalition of organizations supporting the Sand Motor through its construction in 2011.

It takes a creative, daring leader

The Sand Motor project not only shows that a versatile framing content helps an actor to convince others, but that these options have to be deployed skillfully to achieve an effect. This may be more difficult, especially in less experimental projects like the HPZ project, where pre-existing coastal safety criteria determine the response. In such cases, it requires a creative and daring project lead to move beyond pre-defined framing content and find innovative coastal management solutions that might be more suitable.

The Sand Motor and HPZ projects developed at a time, when mega-nourishment and multifunctional schemes had received enough attention to become dominant frames in Dutch coastal management. Arguably, the positive framing resulting from the Sand Motor project led to the revised, and successful, HPZ project, resulting in the *Hondsbossche Duinen*. The fact that large-scale projects using sand such as the Sand Motor can be framed as multifunctional makes them adaptable to a variety of frames. However, they do not frame themselves. Individuals or organizations need to have the sensitivity to know where and how such large-scale nourishments can be successfully promoted.