



From frustration to integration:

Action strategies for a better fit
between knowledge and policy
on the Wadden Sea

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This document presents action strategies to ensure a better fit between knowledge and policy on the Wadden Sea. The strategies are the result of collaboration between researchers from the University of Groningen, Erasmus University Rotterdam, Utrecht University, Wageningen University, the University of Twente and Deltares. Since 2010 we have explored the relationship between knowledge and policy in the Wadden region through five research projects, funded by NWO-ZKO (National Sea and Coastal Research programme, the Netherlands Organisation for Scientific Research) and the Wadden Academy. In 2013 we had the idea of taking what we had learned through our research and engaging in discussion with people who worked in the region in a professional capacity. To this end we organized a meeting on the island of Texel in autumn of that year. We then worked on this text in several writing and feedback rounds. In autumn 2014 we presented our action strategies in Leeuwarden, discussing them with a broad group of participants whose work involves the link between knowledge and policy. The text before you is the result of many interactions between the writers themselves and discussions with the researchers and policymakers who came to Texel and Leeuwarden. We hope that it will serve as a springboard for discussion and reflection. We would like to thank the participants at the meetings for their input and Sjaak Swart and Arwin van Buuren for their contributions to our research projects.

As most of our research projects have mainly focused on the Dutch Wadden Sea area, this document mainly uses examples from The Netherlands. However, we think that the action strategies presented in this document may be of interest in other places and settings; hence we have issued this version in English.

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Contents





Introduction	4
1 Integration to bridge knowledge boundaries	8
2 Expand learning capacity	18
3 Prevent frustration: use of reflection and review	26
Conclusion	34

Introduction





How can knowledge help to produce better policy for the Wadden Sea? This is the question that our research projects have sought to answer. Although the Wadden region offers many fine examples of knowledge development that is effectively aligned with policy issues, we can see that the relationship between knowledge and policy is often far from optimal. By way of this document we hope to help bring about a better fit between knowledge and policy.

The Wadden Sea is a complex, dynamic natural environment that is home to many kinds of human activity. These activities generate strong, and at times conflicting, claims to the natural wealth of the Wadden Sea and its surroundings. Just think of the debates about salt mining, the expansion of harbours and industry, or the impact of fisheries and recreation on the region's natural environment.

Knowledge can make a positive contribution to these discussions by adding to our understanding of the complex, dynamic Wadden region. It can help to substantiate and legitimize the sometimes tough choices that have to be made about the various claims, as well as to identify new possibilities for combining claims. However, the contribution that knowledge makes can also be negative. People can use it to avoid thorny political decisions; they can argue that more research first needs to be done.

There are simplistic yet stubborn notions about the relationship between knowledge and policy. The idea that 'more knowledge will produce better policy' or that 'knowledge will solve our policy problems' fails to do justice to the realities of the Wadden region. They can lead to a belief that more knowledge is always the solution. The contribution we wish to make is to break out of this way of thinking. Our starting point is the need for greater nuance so that we can forge a better relationship between knowledge and policy.



Here we present different strategies for action. By ‘action strategy’ we mean a way of thinking and doing that leads to a better fit between knowledge and policy. Our aim is to ensure that choices about managing the Wadden region are made on the basis of sound information. We do so through three themes: integration, learning capacity and avoiding frustration. In the section on ‘integration’, we analyse how the boundaries within and between knowledge and policy act as impediments to effective, sustainable governance of the Wadden Sea. We show how these boundaries can be bridged using integrated concepts, processes and systems. In ‘learning capacity’, we explain how the fragmentation of knowledge and management has resulted in valuable knowledge about the Wadden Sea going unutilized. We explore the possibilities of promoting knowledge exchange through learning processes and incentives. We look not only at scientific knowledge, but also knowledge about policy processes and experiential knowledge (knowledge acquired through practical observations and experience). In the section on ‘avoiding frustration’, we examine a common frustration felt by researchers and policymakers – ‘why don’t they do what we tell them to?’ – and discuss its causes. We show how this frustration can be avoided by paying greater attention to reflection and by organizing critical review.

We believe that the relationship between knowledge and policy can be improved. At the same time, we would like to emphasize that knowledge will not solve everything. Sometimes policymakers have to make fundamental choices about which activities are desirable in the Wadden region. Are salt mining and powerboat races appropriate? Furthermore, a diverse group of people are involved in the relationship between knowledge and policy: researchers, policymakers, administrators, the staff of conservation and environmental organizations, consultants and users. Their interrelationships are also subject to change, which is why a tailor-made approach and ongoing reflection are needed; there is no such thing as the ultimate relationship between knowledge and policy in the Wadden region.



1 Integration to bridge knowledge boundaries





“... because I'm right!”

Problem

The Wadden Sea is a complex and dynamic natural environment which – together with its surrounding area – is the setting for many human activities. These activities involve strong claims to the area, for harbour construction, energy generation, fishery, tourism, conservation, and the like. These claims are to some extent mutually exclusive. Views differ about how to balance economic exploitation of the Wadden Sea against the region's ecology and 'natural value'. Scientific and other knowledge is indispensable here. For example, we need knowledge to predict the impact of certain activities in order to support decision-making about these activities (e.g. licensing) or for monitoring purposes. The question is how and when these different kinds of knowledge can be integrated. What one individual views as valuable knowledge may be under-appreciated by someone else. Thus the integration of different opinions and insights often involves bridging knowledge boundaries.

By 'knowledge boundaries' we mean the divisions between the different interpretations of knowledge about a topic or between the knowledge about different topics. Knowledge boundaries commonly occur in knowledge about the Wadden Sea and they can take different forms. They may be caused by differences between disciplines, institutional roles and personal preferences, or by the varying interests of stakeholders in the Wadden region. We have identified three main types of knowledge boundary: within science, within policy and between (scientific and other) knowledge and policy. When people from different backgrounds come together, there is a big chance that knowledge boundaries already exist or will arise. These boundaries can sometimes have an enriching effect – the collision of different perspectives can lead to new insights. That was the case with the Danish Houting project, where knowledge from another discipline produced a



new definition of the fish species. But boundaries can trigger problems too, as happened in discussions about the impact of cockle fishing (see Text box 1). Knowledge boundaries can become solid divisions that bring the process of knowledge development and application to a standstill. This then creates a mismatch between the knowledge that is required and the knowledge that is actually available. The challenge here is to develop strategies for bridging knowledge boundaries generated by divisions between disciplines, between policy areas and between knowledge and policy. We suggest that integrated approaches be used to bridge these boundaries (see Figure 1).

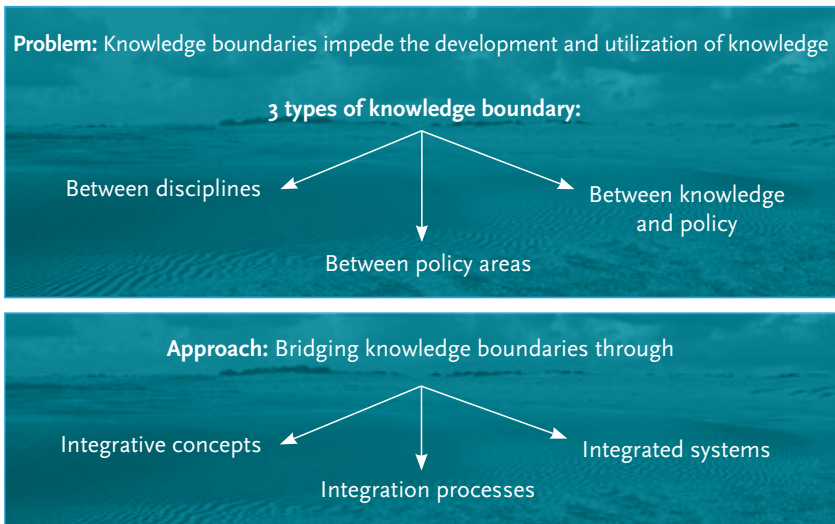


Figure 1 Integration is needed to tackle the problem of knowledge boundaries



Knowledge boundaries between disciplines

Boundaries of knowledge about the Wadden region manifest themselves in different ways. A common boundary is the one between different scientific disciplines and schools of thought. There are many disciplines engaged in Wadden research: natural scientific disciplines, such as ecology, geology and climate science, as well as social and cultural sciences. These disciplines often employ different conceptual frameworks: they focus on different phenomena, formulate different research questions and often fail to speak the same language, all of which makes collaboration between researchers from different disciplines difficult. In other words, interdisciplinary and integrated research doesn't simply happen. Nevertheless, sound governance of the Wadden region requires coherent, integrated knowledge based on a range of disciplines.

Knowledge boundaries can also arise when research institutions employ different measuring methods. This generates different datasets that can lead to different conclusions, as in the debate about the effects of cockle fishing (see Text box 1). Different datasets also make it difficult to design comparative studies because you cannot be sure that you are actually talking about the same thing, or whether you are comparing apples and oranges. The same applies to longitudinal data series in which measuring methods have changed over time.

Lastly, a turf war is being fought on various fronts in the Wadden region, highlighting the boundaries between disciplines. We see this, for example, in the various disputes about shellfish fisheries in the past decades. Some of these conflicts arose between conservationists and fishers, who have conflicting ideas about how to exploit and protect the Wadden Sea. Because of their conflicting opinions and interests, the parties had different questions and were often interested in different information. This knowledge boundary was also apparent between the marine ecologists and fishery biologists involved in the conflicts (see Text box 1). They too had divergent views on the issues, were interested in different aspects of the shellfish stock and employed (and continue to employ) different approaches in their research. The result is that different conclusions are drawn from the same data and conflicts arise about what knowledge is relevant.



Knowledge boundaries between policy areas

The policy world is just as fragmented as the world of science. The Wadden region is managed by a multifarious complex of policymaking bodies operating at different levels (international, national, provincial, municipal) and with different tasks, powers and responsibilities. In the policy world too, their different roles mean that these organizations are not always motivated to work together. Boundaries can also occur within a single policy organization. The former Dutch Ministry of Agriculture, Nature and Fisheries (now Economic Affairs), for example, was strongly criticized by conservation organizations for a lack of alignment between fisheries and conservation policy (both of which come under the Ministry). Policy tends to be formulated for a single type of activity, such as fisheries or raw materials extraction, which can lead to a lack of overview for the Wadden region as a whole (see Text box 1).

Added to that, it is not the government alone that has a policymaking role; so too do conservation organizations and economic actors. This may be implicit, through lobbying to influence policy choices, or explicit, by entering into covenants (see Text box 2). Thus when we refer to policymakers, although this often means officials or politicians, there are others who may be part of that process. The various people involved have their own views about what knowledge is relevant. Knowledge also differs from one individual to the next, depending on their scientific background or their experience in the field. As with officials, lobbyists specialize in a specific subject, such as fisheries policy.

Boundaries between knowledge and policy

Knowledge boundaries often occur between knowledge and policy. The upshot can be situations in which the action undertaken does not accord with the scientific information at hand. For example, research has shown that the very turbid waters in the river Ems in Germany pose a serious environmental threat. Although there have long been plans to tackle this problem, for the time being economic interests continue to have the upper hand. This boundary exists because researchers and policymakers have different items on their agendas and interpret the available knowledge in different ways.

In addition, not everyone's knowledge is valued in the same way. This may happen when non-scientists insist on a place in a policy process dominated by scientific knowledge. As an illustration, scientific knowledge has played a key role in the designation of areas with restricted access under Article 20 of the Nature Conservation Act, whereas the experiential knowledge of partners in civil society used to play a relatively minor role. If the knowledge of interested parties is ignored in the decision-making process, the result is policy that has only limited public support.





Action strategy

The knowledge boundaries outlined above can be bridged in various ways. In all instances the knowledge, insights, views and approaches of all parties need to be integrated. We advocate an action strategy that involves establishing integrated knowledge concepts, processes and systems.

Integrative knowledge concepts

One way to bridge knowledge boundaries is to develop an integrative knowledge concept, one that pools the knowledge that researchers and policymakers possess in a particular field and makes it comprehensible to both groups. An example is the AMOEBE initiative to quantify the dynamics of marine ecosystems, showing at a glance how an area's ecological status relates to policy targets. Integrative concepts of this kind are only possible if researchers and policymakers jointly formulate a knowledge framework, policy options and standards. In so doing, they also create a common agenda. By working together to draw up an AMOEBE, they have succeeded in bridging the knowledge boundaries within science and between management/policy and knowledge. This entails people from different backgrounds engaging in debate, seeking to understand one another and arriving at results that are mutually acceptable. It calls for long-term effort and commitment. The development of the Cascade model is another such example (see Text box 1). Over time there will always be criticism of the assumptions underpinning an integrative concept, hence the need to continue to develop these concepts.

Knowledge integration processes

A second way to bridge knowledge boundaries is to employ participatory processes focusing on relevant knowledge that is widely shared. Such processes are also termed co-creation. Joint fact-finding is one such example. It involves bringing together parties with conflicting interests, insights or views in order to identify the knowledge that all stakeholders regard as relevant and reliable. This maximizes the chance that knowledge will be divorced from personal interests. Heated debates about 'the truth' are turned into constructive collaboration. The key ingredients for success are that participants should adhere to clear agreements and rules to which they have all made a commitment, that there must be an open and transparent consultation process, and that all parties should have confidence in the researchers' expertise.

The co-creation of knowledge can refer to the joint development of knowledge by different partners in civil society who are working together within an agreement, such as conservation groups and users of the Wadden region (see Text box 2), as well as to joint development by different scientific disciplines, as in the MosselWad research project that combines ecological and morphological research. A third kind involves co-creation by researchers and policymakers, in which the parties interact constantly to ensure that knowledge development and policymaking are optimally aligned. This fosters the development of knowledge that is relevant for policy. Integration processes often cost more time and money. They also require people to step outside their comfort zones. Knowledge integration can lead to broader support for knowledge claims that would otherwise continue to be contested; however, it does require sustained effort and a constructive attitude on the part of all those involved.

Integrated knowledge systems

It is also possible to integrate knowledge through knowledge systems. A good example in the Wadden region is the large-scale initiative to bridge knowledge boundaries by developing an integrated system for data management and monitoring. In the WaLTER monitoring project, people are working on a joint knowledge base for the entire Wadden Sea ecosystem. WaLTER systematically collates a large quantity of data, making it comprehensible, transparent and therefore able to be compared. This then makes it more relevant for policy processes. Work is also being done within WaLTER on a new form of data presentation that will facilitate the debate between knowledge and policy. ‘Barometers’ make the immense volumes of monitoring data easily comprehensible. This form of communication can promote a joint process of policy evaluation and review, although it does require agreement as to what kind of knowledge and data is relevant.





Conclusion

We have identified three kinds of knowledge boundary that can inhibit the development and utilization of knowledge for the sustainable management of the Wadden region: boundaries between disciplines, between policy areas and between knowledge and policy. Knowledge integration is essential if these boundaries are to be bridged. We advocate the following action strategies: developing knowledge concepts that bring together several disciplines and/or policy areas, organizing participatory processes in which people from different backgrounds and interests work together to develop knowledge (co-creation), and setting up knowledge systems, such as an integrated monitoring programme, which systematically meet the requirements of different disciplines and/or policy areas. Knowledge integration is a difficult step that requires extra time and effort, but it is essential for an overview of the Wadden region as a whole.



Text box 1: The Cascade model for integrating knowledge about the Wadden region

In 2004 knowledge was integrated from two policy areas: cockle fishing and gas extraction. This ultimately led to the termination of mechanical cockle fishing and the authorization of gas extraction beneath the Wadden Sea in accordance with the 'adaptive licensing' approach (involving continuous monitoring), which is also called 'hand on the tap'. Although many people saw these as controversial decisions, it is nevertheless a successful example of integration, in which parties looked beyond the boundaries of specific policy areas.

The effects of cockle fishing and gas extraction on the ecosystem of the Wadden Sea have long been the subject of debate. Research institutes had conflicting interpretations that matched the conflicting values and interests of one side or the other. The result was a significant knowledge boundary between marine ecologists and fishery biologists, with researchers heavily criticizing one another's findings.

A meeting of experts (called the Fryske Akademy Beraad) was held in 2004 with a view to prioritizing the impact of different activities in the Wadden region. It was an initiative of IMSA (the Dutch Institute of Environmental and Systems Analysis), which played the role of mediator in the gas extraction dispute. IMSA introduced the 'Cascade model', a risk model that compared the harmful effects of twenty human interventions in the Wadden region. On the basis of the model, the participating experts collectively estimated that cockle fishing had the biggest adverse impact on the Wadden Sea ecosystem; they assessed gas extraction as being much less harmful. The experts reached consensus on this. The Cascade model can be seen as an integrative concept that bridges the knowledge boundaries between policy areas. The findings produced by the model were incorporated into the recommendations of the Meijer committee, appointed by the Dutch cabinet to advise on shell fisheries, gas extraction and conservation in the Wadden Sea area.

2
Expand
learning
capacity





”This should be more widely known...”

Problem

Although so much is known about the Wadden Sea, some aspects of the knowledge infrastructure leave much to be desired. Such were the findings of the Meijer committee, which in 2004 gave its opinion on key policy decisions for the Wadden region. By ‘knowledge infrastructure’ we mean putting knowledge on the agenda, inventorying it, making it available and exchanging it. There is a wealth of knowledge available at all knowledge and research institutions, policy organizations, NGOs and among individuals active in the Wadden region. In the past, various bodies have launched initiatives to improve the knowledge infrastructure, such as the National Conservation Institute (Rijksinstituut voor Natuurbeheer), the National Institute for Coast and Sea (RIKZ) and the Common Wadden Sea Secretariat and, more recently, the Wadden Academy. Nevertheless, the infrastructure has retained some of its fragmented nature, which is unsurprising given the diversity of policy fields, organizations and themes that play a role in the Wadden region.

Fragmentation means that individual problems tend to be tackled in separate arenas. By ‘arenas’ we mean groupings of stakeholders on particular themes, such as mussel fishing (see Text box 2), recreation and salt mining. Knowledge continues to be fragmented because there is insufficient broad inventorying and exchange of knowledge between arenas. This fragmentation places constraints on learning capacity in the Wadden region. This is the capacity, based on the ongoing development and exchange of knowledge, to devise the best forms of sustainable management of the Wadden Sea and to respond effectively to uncertain and changing circumstances. We will discuss three causes of this limited learning capacity: limited learning processes within arenas, limited exchange between arenas and a narrow view of knowledge (see Figure 2).

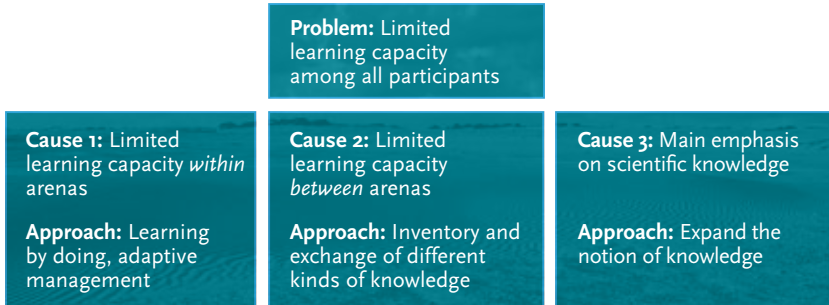


Figure 2 Three causes of limited learning capacity

Limited learning capacity within arenas

An arena surrounding specific themes (e.g. salt mining) involves different people and organizations, such as conservation organizations, researchers, government bodies and industry, each with their own vision and knowledge. Procedures within that arena operate in accordance with rules that can be partly enshrined in law and are partly of a provisional and negotiated nature (such as rules laid down in covenants). Learning capacity within an arena may be limited for various reasons. Firstly, there may be insufficient interaction between knowledge development and policymaking. Secondly, conflicting interests, convictions or visions on environmental and other issues may pose a barrier to the joint development and exchange of knowledge. For example, the Wadden environment could be seen as either a useful resource or as a wilderness to be left alone as much as possible. Thirdly, rules, legislative frameworks and legal procedures can work as a straitjacket hampering knowledge exchange and 'learning by doing'. Over the years, a combination of conflicting visions of nature and the dominance of legal procedures has occurred in many Wadden arenas. Examples include mining operations and mussel fishing (see Text box 2). This combination has long been an impediment to ensuring the sustainability of mussel fishing in a widely supported, adaptive way.



Limited learning capacity between different arenas

Knowledge development and policy in the Wadden region frequently target specific, well-defined themes and sectors. This leads to fragmentation, as some have pointed out. The Meijer committee, for example, commented in 2004 that knowledge about the Wadden Sea is 'more fragmented and compartmentalized than is desirable'. More recently, in 2013, the Netherlands Court of Audit observed that 'lack of coordination when it comes to implementing Wadden policy in various sectors has led to fragmentation of management'. Collaboration, knowledge development and decision-making occur in all kinds of arenas, such as fisheries, recreation and nature restoration, a piecemeal landscape that makes it hard for arenas to learn from one another. We are not suggesting that there is no exchange at all of knowledge, experience and best practices between arenas – exchange does occur when people and organizations working in several arenas publish their progress reports (see also Text box 2) and through supra-sectoral initiatives such as the Programme Towards a Rich Wadden Sea and the Wadden Academy. However, we would like to point out that some arenas still operate too much like closed bastions and that there is a need for greater exchange of knowledge and experiences. The mussel fishing consultations, for example, are only partially open to participation and input from parties from other fishery sectors or those involved in recreational boating. This gives rise to frustration and limits opportunities for learning from one another's knowledge and experience. It also limits opportunities for approaching the Wadden Sea in a truly integrated fashion (see also the previous section).

Limited learning capacity because of a narrow view of knowledge

Limited learning capacity is also the result of priority being given to certain kinds of knowledge, with the emphasis usually placed on scientific knowledge about the Wadden region. This is because many view the Wadden Sea primarily as a natural environment and they see natural science as providing the main framework for interpreting it. With this emphasis on science, there is a risk of overlooking other knowledge themes that are also important for sustainable management, such as knowledge about social and economic aspects. In addition, experiential knowledge and process knowledge continue to be undervalued, under-exchanged and underutilized. By 'experiential knowledge' we mean knowledge acquired through practical observations and experience. This includes the knowledge held by recreational users, fishers and volunteers who devote themselves to conservation. However, there is a growing number of instances where experiential knowledge is being put to good use. The knowledge built up by recreational boaters is becoming



increasingly important when it comes to monitoring and regulating recreational boating. Appreciating the value of this knowledge and creating the right conditions for its exchange is now enriching the knowledge at our disposal about the Wadden region. By 'process knowledge' we mean knowledge based on experiences with policy or collaboration processes. There is no systematic inventory and exchange of this kind of knowledge in the Wadden region, which means that others cannot learn from it.

Action strategy

Greater learning capacity is a precondition for a better knowledge infrastructure and hence better overall governance in the Wadden region. We advocate the following principles.

Strengthen the learning capacity within arenas

Learning capacity can be boosted through knowledge co-creation (see the action strategy for the first theme on knowledge boundaries). Another method is through adaptive management, or 'learning by doing', in which learning is an explicit goal. In a collaborative process, participants conduct a step-by-step search for solutions by continuously making connections between knowledge development, decision-making and execution, and in this way building new knowledge. An example is the principle of 'hand on the tap', in which stakeholders constantly monitor the effects of gas drilling on ground subsidence. They can then intervene if subsidence exceeds the limits set. This approach was also used in the transition towards sustainable mussel fishing (see Text boxes 1 and 2). Although it will not eliminate all the differences between parties, this approach can be useful for addressing uncertainties and helping to expand the knowledge base. The choice of people and agencies involved in the process also determines the kind of knowledge that is introduced and the opportunities for exchanging knowledge and experiences. While it is impossible – and often undesirable – to involve everyone in all stages of the process, a conscious choice about the range of stakeholders can contribute to the learning capacity.



Strengthen the learning capacity between arenas

Strengthening the learning capacity between arenas calls for improved knowledge exchange between these arenas. This means a clear role for organizations, agencies and individuals who operate within several arenas or occupy a link position between them. They can help to ensure that reports or websites also consider experiences, learning points and reflections on the process being followed. This does not happen automatically. Within delimited arenas people come together with common problems, responsibilities or aims. Because they know one another, this can create the trust needed to come up with new solutions. This means there is an obvious incentive to invest in knowledge exchange within their own arena. However, there is much less incentive to exchange knowledge between arenas, which often requires an external catalyst. In the past the Wadden Sea Council (Raad voor de Wadden) was able to play that role. Nowadays, the meetings organized by the 'Towards a rich Wadden Sea' programme and the Wadden Academy provide a setting for interaction and knowledge exchange. To fund new initiatives, as happens with the Wadden Fund, an added incentive could be achieved by imposing explicit conditions on the reporting of experience and process knowledge, such as knowledge acquired through project management or collaboration between the various parties. This will enable process facilitators to exchange and utilize experiences more intensively.



Expand the notion of 'knowledge'

Scientific knowledge is not the only knowledge that is relevant. Experiential knowledge and process knowledge are also important when it comes to improving learning capacity – and hence sustainable management of the Wadden region. This does not mean adding still further to the institutional landscape of the Wadden Sea. Existing initiatives such as the Trilateral Wadden Sea conferences can play a role here. If they extend their activities by expanding their notion of 'knowledge' and actively developing it within their own objectives, we believe this will result in broader, more in-depth knowledge. By actively utilizing and combining different kinds of knowledge, a more holistic picture will emerge of the dynamics in and around the Wadden Sea. This should not detract from scientific approaches, but rather extend and broaden them. The challenge is to better recognize the value of other kinds of knowledge and to utilize them accordingly. Stakeholders can jointly decide what scientific knowledge they need and how they should deal with the different interpretations of scientific research. To increase the learning effect, reflection on these issues needs to be part of the process.

Conclusion

We have identified three causes of the current fragmented knowledge landscape: limited learning capacity within arenas, limited exchange of knowledge between arenas and a limited conception of what constitutes knowledge. It is our belief that solutions can be found. The learning capacity within and between arenas can be enhanced through adaptive management, for example. We also believe that it is both possible and meaningful to focus not just on scientific knowledge but also on users' experiential knowledge and knowledge about the policy process. Input of this kind will broaden the scope and improve the way that knowledge is utilized. This does, however, call for institutional change, in which existing or revamped institutions have a role to play. There also needs to be a greater focus on facilitating the process, reflection on the process and identifying and exchanging learning points and experiences.

Text box 2: Transition towards sustainable mussel fishing

For years the government, fisheries sectors and conservation organizations have wrangled about whether shellfish fisheries should be permitted in the Wadden region, and if so, under what environmental conditions. Court cases have been fought for years about mussel fishing licences. This came to an end in 2008 when – under immense legal, public and political pressure – the government, mussel sector and conservationists signed a covenant in which they undertook to work together towards a shared vision of sustainable mussel fishing in 2020. While not resolving all the differences between the fishery sector and conservationists, the covenant does mark a clear switch from conflict to constructive collaboration. So far, the agreement has produced encouraging results: nature restoration and the economic prospects of the mussel sector appear to be able to work in unison.

The nature of the collaboration surrounding the transition towards sustainable mussel

fishing has been a major factor in this success. The covenant partners have undertaken to place knowledge at the forefront of their collaboration. They work via a process of co-creation (joint fact-finding) on a shared knowledge base. This does not settle all their knowledge disputes, but the parties are able to engage in dialogue as much as possible on the basis of mutually accepted knowledge. The covenant partners also work together in line with the principle of ‘learning by doing’. They are not held back by uncertainty or lack of knowledge, but rather, seize these opportunities to experiment and on that basis to learn and, if necessary, to adapt the transition process. This adaptive process allows them to respond to variations in natural conditions and to learn from successful and less successful innovations and conservation strategies. The covenant partners outline their progress in an annual report, thereby enabling other parties to keep abreast of the knowledge developed as part of the transition process.





3
**Prevent
frustration:**

use of reflection and review



“Why won’t they do what we say?!”

Problem

Many Wadden Sea professionals feel frustrated that the wrong conclusions are being drawn from research. There are researchers who have been studying the region for years, publishing their findings and calling for policy change, but who do not see any change. Researchers can also feel frustrated when different research teams are involved in similar kinds of research but fail to communicate their findings. Frustration can occur among policymakers too, on the receiving end of research reports that fail to answer policy issues. Policymakers can also experience frustration if there is not enough integration between different policy areas, as can also occur within one and the same ministry.

In our view, these kinds of frustration can be explained by two causes: 1) unrealistic expectations about the impact of knowledge on policy, and 2) different expectations about the content knowledge required (see Figure 3).

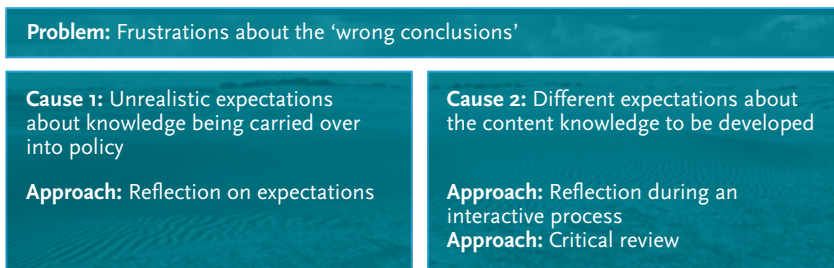


Figure 3 Two causes of frustration about the fit between knowledge and policy

Unrealistic expectations about the carry-over of knowledge

Frustration is partly caused by the extent to which knowledge carries over into policy. It is in fact unrealistic to expect that the knowledge developed will always carry through directly into the policy process. The assumption that there is a direct relationship between knowledge development and knowledge use often leads to unrealistic expectations among both researchers and policymakers.

Many frustrations stem from the assumption that researchers and policymakers have strictly distinct roles. In practice, the situation is more complex, as illustrated for example by the role played by consultants. Lack of clarity about the role someone plays in the process is another common source of frustration. We will explain these roles below.

The primary role of researchers is to develop knowledge within universities and research institutes. They expect their data and knowledge to be used in policy





processes and they become frustrated if this fails to happen. In reality, their subject may not have priority in the political context, as was long the case concerning the turbidity of the river Ems. What's more, knowledge does not always carry over into a final decision, or there are different aims involved than what researchers had in mind when conducting their research. For example, multifunctional designs were developed for the Afsluitdijk, but the emphasis ultimately came to lie on a simple strengthening of the dyke. In other policy phases too, knowledge does not always result directly in a decision, for example when it comes to identifying problems, providing a second opinion, or evaluating and monitoring the policy that has been implemented.

Policymakers issue commissions for knowledge development and often expect researchers to come up with the answer to their questions. If this does not happen, or if the problem appears more complex, immense frustration may result. The reality is that more knowledge about the complex and dynamic Wadden region can sometimes reveal unforeseen knowledge gaps, such as the relationship between the behaviour of outer deltas and dynamic coastal management.

Expectations about content knowledge

Frustration can also occur if there are differing expectations about content. There are various reasons for this. Firstly, the parties involved have different positions and interests, and there can be different ways of defining a single problem (see also Text box 3). One researcher may view the Wadden Sea as a wonderful area for birdlife, while another is fascinated by the dynamic morphology of the mudflats. A council officer may assess a harbour extension from a different angle than a government official. And whereas a conservation organization sees the Wadden Sea as a wilderness, local mussel growers see only a field where they grow their mussel seeds for later harvesting. In short, different perspectives generate different expectations about knowledge, which regularly leads to frustrations among the parties involved.

Knowledge is also frequently interwoven with value judgements. It is a fallacy to think that there is completely neutral knowledge that will solve policy issues. The view that there could be no dyke strengthening on the Texel mudflats determined the kind of knowledge that was developed. Although such a demarcation of problems and potential solution paths can yield valid knowledge, that knowledge will not meet everyone's knowledge needs. Those who believe that dyke strengthening is possible on the mudflats will require a different kind of knowledge development.



Lastly, researchers and policymakers often operate on different scales. Policymakers may be under political pressure to make a decision quickly, whereas researchers think in terms of research programmes. While policymakers tend to focus on a specific problem, researchers are more interested in broader problems, of which the policymaker's concern is just a part. And whereas policy officers require a great deal of detail so that they can present a strong case in a legal dispute, researchers or consultants may sometimes be content with an expert judgement because of limited financial resources. In short, policymakers and researchers have different goals and starting points when it comes to knowledge development.

Knowledge is often produced from a single perspective – in other words, a problem is examined from a just one scientific angle. This can lead to a very narrow picture of problems and solutions, which can in turn create frustration for those who operate in a different field. Both researchers and policymakers can feel frustration about the wrong conclusions being drawn because of an inappropriate research design. This may then require new or follow-up research from a different perspective (see also Text box 3).

Action strategy

We see two possible solutions to counter this frustration: reflection on unrealistic expectations and critical review.

Reflection on unrealistic expectations

We advocate two ways of using reflection to achieve a better tie-in between knowledge and policy. Firstly, we argue for reflection on the expectation that knowledge will carry over directly into policy. In reality, these processes do not follow on directly from each other. Knowledge development can be important for policy in many ways: by placing problems on the agenda, by legitimizing policy and by facilitating learning processes. Knowledge can support possible solutions, as well as prompt a shift in focus to other problems. Reflecting on the reality that there is no direct cross-over from knowledge into policy can reduce personal frustration and create more realistic expectations. This reflection has already begun in the Wadden region: it is being discussed by the Wadden Academy and is part of our NWO-ZKO research. The aim of this reflection is to avoid oversimplistic solutions and to counter unrealistic optimism of the kind that says 'we'll just do some



research' or 'this report must lead to policy changes'.

We also recommend that there be regular reflection on expectations about the knowledge that needs to be developed. We should ask whether research questions need to be fine-tuned, whether we still want to know the same things or whether circumstances have changed, and what we expect of the data and the knowledge produced. By making explicit at an early stage the variety of problems and solutions and the reason why knowledge is being developed, there can be greater understanding of others' expectations. This provisional awareness makes it possible to avoid conflicts at an early stage. We see a clear role here for a process manager who can ensure that all parties do in fact dare to reflect. After all, reflection can also trigger further discussion, entailing the risk that latent conflicts will erupt.

We recommend that moments of reflection be anchored in the process, preferably at the start and halfway through, and that this be taken into account in the planning. When evaluation and reflection occur at the end of a project, as happened with the EVAII study, it can be too late to make adjustments in the light of the findings. To avoid (or in any event reduce) frustration within the process and to encourage learning opportunities, reflection on different expectations needs to happen at an early stage.

Critical review

Finally, we advise the use of *critical review* in order to allow room for the diversity of possible interpretations. This review should focus on the conclusion to be drawn from the research. The precise nature of this review (by and for whom) depends on the situation. Nevertheless, we will discuss below some of the elements involved, such as aim, form, timing and role.

The *aim* of critical review is to systematically allow room for the perspectives of different scientific disciplines, value judgements and visions of the Wadden region, as well as the different evaluations of uncertainties. We believe that critical review produces better conclusions for policy purposes and that decisions have greater credibility if they are underpinned by review.

Critical review can take *different forms*, such as i) assessing knowledge quality (as done in environmental impact assessments, or scientific reviews by the Wadden Academy), ii) identifying different conclusions on the basis of a single study (as



currently occurs on an ad hoc basis when a second opinion is given in conflict situations), and iii) supplementary studies from different perspectives (as in the Marconi project; see Text box 3). At present, critical review already occurs if parties can submit their views on a government plan. Additional funds and systematic initiatives are needed in order to broaden the scope of critical review in the form of new research and quality assessment. However, a review can save time and money at a later stage as it means there will be greater understanding of and support for solutions and decisions.

A *good time* for critical review is once conclusions have been formulated and a definitive decision has not yet been made. This means that review can also be built into a research project, even if consensus via a participatory process is not the aim (see theme 1, action strategy for integrated knowledge processes). In such a case, the different perspectives can be reflected in a parallel process, so that the review can assist a constructive conflict involving respect for the different interpretations.

Lastly, the *role* of review should be clear so that it does not unnecessarily fuel conflicts, cost a good deal of time and money or be omitted in the decision-making. There has to be clarity about whether review is part of a project or decision-making procedure and about how it is handled. The Marconi project (see Text box 3) shows that organizing a critical review can lead to broader support for any knowledge that is developed. If review is not given a place in studies of socially sensitive themes (such as the relationship between gas extraction and earthquakes), this can lead to public dissatisfaction with the resulting knowledge and policy plans.

Conclusion

Frustrations about how knowledge is used in policy are commonplace, among both policymakers and researchers, and have a range of causes. One main cause is the high expectations about the carry-over and usefulness of knowledge in policy. We see two possibilities for coming up with more realistic expectations: incorporating moments of reflection and organizing a form of review. Critical review, such as in the Marconi project and in environmental impact assessment procedures, can prevent conflicts or transform them into constructive collaboration that leads to agreement.



Tekst box 3. Marconi project in Delfzijl

The aim of the Marconi project is to make Delfzijl a true harbour city once more, by creating a closer link between the city centre, the harbour and the Wadden Sea coast. To this end the Ecoshape consortium carried out a major study project in the period 2012-2013. The consortium funded half of the project, with project partners funding the other half.

Researchers and project partners struggled with the research proposal because of their differing expectations about the knowledge required. Since researchers and partners contributed their own funding, they were keen to secure a place for their own interests in the research proposal. The Ecoshape researchers were interested in solutions with worldwide applicability as befits the 'building with nature' concept, whereas the Marconi partners were looking for solutions for Delfzijl. The

researchers also wished to include De Griesberg (a former dump in the river Ems) in the study, while the project's administrative partners wished to exclude this location because of high remediation costs. Eventually the various interests were combined in the research proposal, by including both generic research questions and local needs. In addition, the parties organized a review and responded to that review. A preliminary version of the report was heavily criticized by conservationists, who predicted that the proposed solution would have an adverse impact on the system of channels in the river. This review led to a follow-up study, which showed that disposing of De Griesberg would produce a small positive effect on the channel system. In the light of this follow-up study, conservation organizations also supported the plans for the Marconi Buitendijks project.

An aerial photograph of a vast agricultural landscape. The foreground shows a road and a green field. The middle ground is dominated by a large, rectangular field with a grid pattern of furrows, some of which are filled with water, suggesting a polder or a flooded agricultural area. The background features a wide, flat expanse that could be a salt flat or a large body of water under an overcast sky.

Conclusion



Sound policy and sustainable management in the Wadden region are not possible without an effective knowledge system. While there is nothing new about this message, we believe it is one that needs our constant attention. There have already been investments to better align knowledge and policy on the region. They have produced many initiatives from which we have derived inspiration for action strategies to make further improvements. We hope to contribute to the discussion by presenting ideas and actions that call for a nuanced approach. This nuance is needed in order to reconcile the sometimes polarized relationships regarding the Wadden Sea, to enrich the notion of what constitutes relevant knowledge and to break through unproductive expectation patterns about the meaning of knowledge for policy. At the same time we hope that our action strategies will provide an incentive to look afresh at the relationships between knowledge and policy, or from a slightly different angle.

Knowledge boundaries are almost inevitable in an area involving so many specialized policy bodies, researchers and partners in civil society. We observe these boundaries in various spheres: within science, within the policy world and between knowledge and policy. In order to bridge these boundaries, it is essential to integrate the knowledge of the different parties. Integration can firstly be achieved by applying integrative concepts that bring together different scientific disciplines or policy areas. Secondly, knowledge boundaries can be bridged with the aid of integrating knowledge processes, such as the co-creation of knowledge. Thirdly, integrated knowledge systems have a contribution to make, such as integrated monitoring programmes that systematically meet the requirements of the various groups involved. Knowledge integration can be tricky and require a good deal of effort. At the same time, it is essential for understanding the interrelationships between different aspects of the Wadden region and to manage the area in a sustainable way.



As well as knowledge boundaries, we also note another kind of fragmentation: the different policy sectors and themes that exist semi-independently. Themes and problems in the Wadden region are tackled in separate arenas. We observe that the learning capacity both within and between arenas is underutilized. By learning capacity we mean the ability, based on research and knowledge exchange, to arrive at the best ways of dealing with the Wadden Sea and to respond effectively to uncertain and changing circumstances. We argue for a strengthening of the learning capacity within arenas by adopting an adaptive approach ('learning by doing'). This has already been applied successfully in some areas. The learning capacity between arenas can be enhanced by paying greater attention to the exchange of experience and process knowledge (knowledge about policy and collaboration processes) and by organizing the knowledge infrastructure for this. This may require institutional adjustments and added incentives, such as supplementary conditions for the funding of initiatives. It is also important to inventory and exchange the knowledge and experiences of process facilitators.

There is much that is working well when it comes to the fit between knowledge and policy. However, for a range of reasons there are also many frustrations between policymakers, researchers and partners in civil society. To start with, there are unrealistic expectations about the carry-over and usefulness of knowledge in policy. In addition, there are regular collisions between the different expectation patterns and interpretations of knowledge. In order to break through these expectations, we advocate reflection and critical review. By 'reflection' we mean both personal reflection on what knowledge can mean for policy, and institutionalized reflection as a recurring part of the process. Not all conflicts will be resolved by organizing effective critical review, but they can be used constructively to arrive at workable solutions, in which there is respect for opposing viewpoints.

We hope that these action strategies will encourage reflection and that researchers, policymakers and other stakeholders in the Wadden region can use them in their work. Our contribution to the ongoing discussion about knowledge and policy is by no means set in concrete. We hope that it can serve as a prompt not only for reflection, but also for experimentation and action.





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