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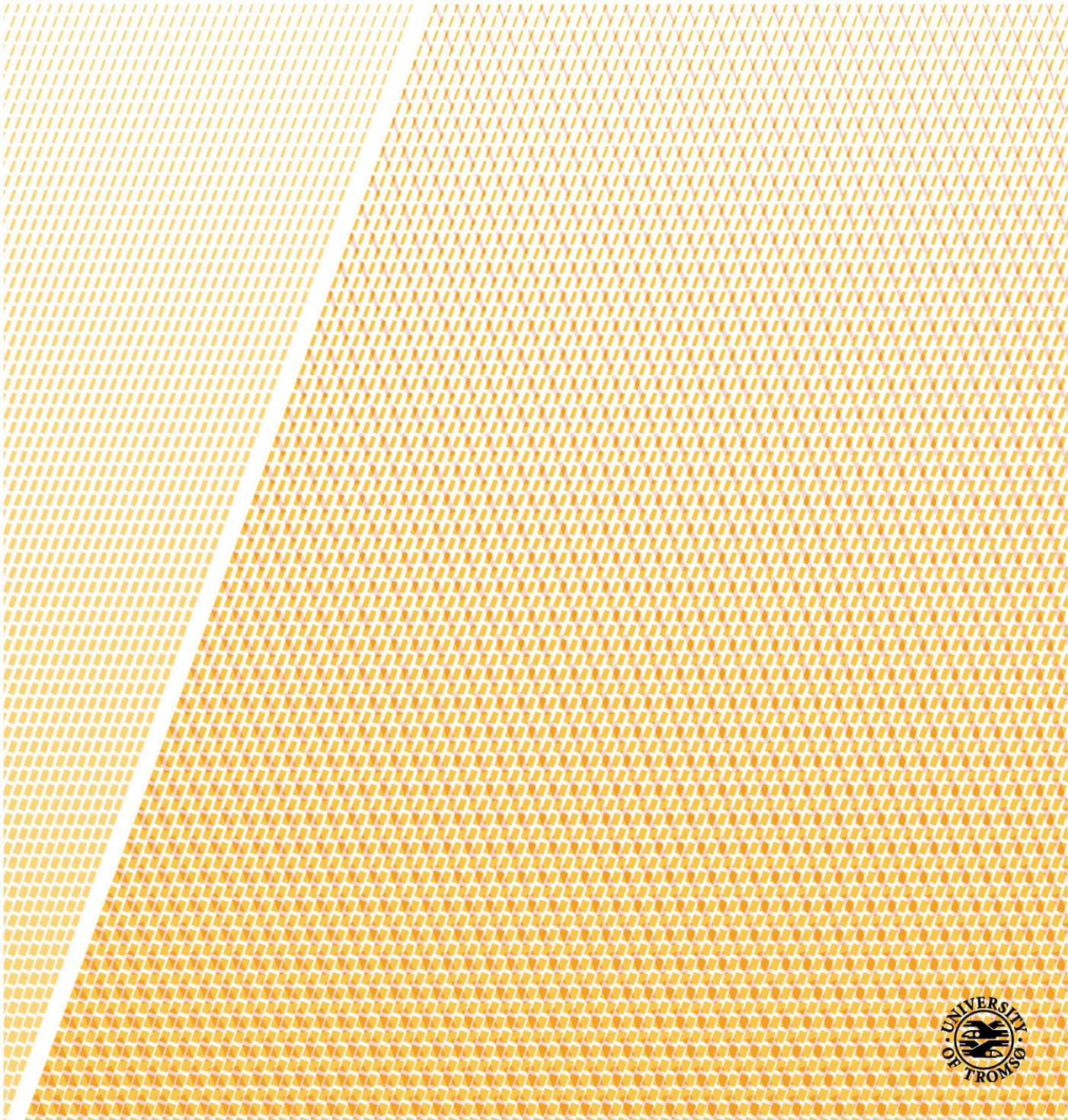
**THE ARCTIC
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Implementation of ecosystem-based ocean management

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Foreword

Certain ideas persist for a long time. I was 18, deeply engaged in environmental issues, and convinced that biology was the only subject worth studying. My aunt Aud and uncle Ketil planted an idea in my head: maybe it is better to learn skills that can be useful for solving environmental problems, not only understanding them? Full of doubts and opposition, I entered a technical university – and left with a diploma in planning. The same idea has motivated my choice of topic for this PhD thesis, ecosystem-based management. It was introduced as an approach for solving persistent environmental problems. The extent to which it has is disputable. I was therefore interested in studying what are the conditions under which it actually can work as intended. My suspicion was that the major problems are political and organisational, not the lack of knowledge about the ecosystems. This suspicion is strengthened after doing the research.

As a planner, my major interest was strategic planning. I liked looking into uncertain futures, analysing options and trying to plot a course in a long-term perspective. I could also witness the problems of trying to realise good intentions from higher-order plans. As long as external winds blew our way and we managed to mobilise internally, my organisation could perform fairly well. At the worst, a plan could become completely undermined by external forces and series of small decisions pointing in different directions than the strategic course. Practical experience taught me that what happens after planning is what finally determines the results; that was not a part of my studies. Such experiences also motivated my angle on ecosystem-based management: if the oceans are in peril, then ecosystem-based management must lead to the implementation of measures that actually can halt the deterioration.

I feel privileged who have been granted four years from Norwegian College of Fishery Science to dive deeper into issues that have been a part of my prior practice. First, I will extend my thanks to my supervisors Peter Arbo and Bjørn Hersoug. Speaking from long experience in research, they have been inspiring guides into different theory traditions and the crafts of conducting research and writing up a scientific paper. I am also grateful to Alf Håkon Hoel, who was the first one who put me on the trace of implementation theory. Harald Sætren at the University of Bergen really got me on the track by enthusiastically receiving me with a pile of implementation books, and imperiously pointing at Winter's model for implementation studies. I could do nothing than comply with the advice from a scholar like him, and I have had no regrets. Moreover, I will thank the members of the MARA research group, especially Maaik Knol, for comments to my manuscripts, and to Svein Jentoft and Knut H. Mikalsen for encouraging comments during my midterm-evaluation.

My Faculty generously gave me a grant that made it possible to be a guest researcher at Dalhousie University for one semester. I had a very pleasant stay at the Marine and Environmental Law Institute due to the hospitality and support of Aldo Chircop, Meinhard Doelle, Lauri MacDougall, Phillip Saunders and David VanderZwaag. My wife Eline managed to stay with me for some weeks, making the PhD work a pleasant experience of a new country for both of us. She has given me full support for the thesis work during its ups and downs, for which I am very grateful.

Tromsø, December 2018

Gunnar Sander

Abstract

Ecosystem-based management (EBM) is a holistic approach for nature management that aims at achieving the good health and sustainable use of ecosystems. A key undertaking is to assess the cumulative impacts of all human activities affecting an ecosystem. This should be the basis for prioritising and allocating responsibilities for taking action on influences that threatens good ecosystem health. At this, EBM needs to integrate across ecosystem components, industries and their administrations, and different sciences and knowledge holders. It is a complex and challenging concept: understanding ecosystems and human impacts upon them is complicated, there are demanding needs for collaboration and harmonisation of approaches and policies, and there are many conflicting interests that need to be balanced. It should therefore be no surprise that implementation of the concept has been slow.

EBM originated on land in the US in the beginning of the 1990s and was introduced into the oceans some 10 years later. There seems to be agreement on its basic definitions, despite the many forms EBM takes when interpreted by different actors and adapted into different contexts. Several international organisations have made recommendations. These are clear on the need to assess ecosystem conditions. However, several of them are unclear when it comes to the formulation and implementation of policy measures that can address the negative influences on the ecosystems. The selection of policy is a political process, not a technical issue or an automatic result of knowledge about the state of the ecosystems. It is inevitable that disagreements will arise, possibly leading to conflicts, deadlock and unresolved ocean problems. While participation in planning is widely recommended, a critical issue seems to be how to avoid conflicts, and how to make decisions when conflicts arise.

EBM is strongly dependent on assessments. Strategic environmental assessment (SEA) is a family of tools for assessing the impacts of strategic initiatives, often referred to as policies, plans and programmes. SEA is well suited for appraising cumulative impacts in regional assessments, which is a key undertaking in EBM. It also has the proactive role of incorporating environmental knowledge into the preparation of strategic initiatives. This can contribute to making the results from EBM planning and decision-making mainstreamed into strategic initiatives of different sectors. Environmental impact assessment (EIA) assesses concrete project proposals. Its role in EBM is to follow up prior SEAs and strategic, ecosystem-based plans in assessments prior to the potential approval of projects.

International maritime and environmental law define obligations for states to undertake assessments. The Biodiversity Convention is the most relevant instrument in the Arctic Ocean because it is specific about SEA and EIA and applies to all maritime zones. Apart from this, there are very few legal obligations to undertake SEA. EIA, on the other hand, is a legally binding obligation, though it is unclear what this implies in practice. Thus, there is a mismatch in the assessment needs of EBM and the status of SEA in international law. It would be an advantage for EBM to strengthen the role of strategic assessments. The most interesting legal option for doing so is the negotiations in the UN on marine biological diversity in areas beyond national jurisdiction.

Implementing EBM will usually require some sort of national framework before planning for concrete ocean areas can begin. Norway introduced a policy for EBM in 2001 and has later made planning a routine in three management areas, one of which is the Barents Sea. The government prepared the Barents Sea management plan in a top-down manner. Most of the 157 measures in the plan have been

put into practice. This indicates that the plan may have reduced the pressures on the ecosystem. Important reasons for the implementation results are the insights and political legitimacy achieved by a strong reliance on knowledge, the collaborative style of involving the relevant ministries and the handling of conflicts with authoritative decisions from a government in a majority position.

Canada enacted EBM obligations in 1996 and started trial projects in five ocean areas. The federal government delegated planning to the regional branches of one ministry alone. They worked with other government bodies and stakeholders in consensus-based collaborative planning. The plans for the Eastern Scotian Shelf and for the Placenta Bay/Grand Banks did not result in the implementation of any new policy measures. A major reason is that the federal Canadian government did not attempt to overcome administrative and political fragmentation by a whole-of-government approach. Moreover, the participants in the planning concealed disagreements and conflicts in high-level and non-committal statements, resulting in plans that were unclear and not implementable. Conflict with one minister and changes in the ocean policy of the Canadian government contributed to the closure of the two initiatives. Since 2013, integrated ocean management is no longer a priority in Canada. Instead, the top priority is to designate marine protected areas according to international obligations.

The Canadian and Norwegian plans have been studied with a combination of implementation theory and case study methodology. This is a promising combination that can contribute to more systematic learning from such processes and better, empirically based recommendations on how to proceed in practice.

A major conclusion from the comparison of the cases is that the national governments should take an active leadership role in ecosystem-based management for large ocean areas. There is a need to set up collaborative structures across all relevant sectors and levels of government, to find mechanisms for sharing responsibilities for assessments and formulating policy, and to establish mechanisms for solving disagreements. Collaborative planning by consensus according to a *governance* approach does not seem feasible for solving disagreements and conflicts, according to the Canadian experiences. Listening to stakeholders and subsequently negotiating compromises over conflicts within the *government* do, according to the Norwegian case. This is in contrast to many recommendations of governance based approaches in EBM.

The case comparison also rejects general conclusions contending that national ocean policies formally embedded in law tend to be more successful in the longer term than those solely based on executive action. Even though a legal base may be needed in many jurisdictions, the cases rather demonstrate that the political will to address ocean conflicts is a critical factor for achieving results.

List of papers

Paper 1:

Sander, Gunnar 2016: International legal obligations for environmental impact assessment and strategic environmental assessment in the Arctic Ocean.

The International Journal of Marine and Coastal Law, 31, 1 – 32.

<http://dx.doi.org/10.1163/15718085-12341385>

Paper 2:

Sander, Gunnar 2018a: Against all odds? Implementing a policy for ecosystem-based management of the Barents Sea.

Ocean and Coastal Management, 157, 111 – 123.

<https://doi.org/10.1016/j.ocecoaman.2018.01.020>

Paper 3:

Sander, Gunnar 2018b: Ecosystem-based management in Canada and Norway: The importance of political leadership and effective decision-making for implementation.

Ocean and Coastal Management, 163, 485 – 497.

<https://doi.org/10.1016/j.ocecoaman.2018.08.005>

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Abbreviations

BSMP = Barents Sea Management Plan

CBD = Convention on Biodiversity

CCAMLR = Convention on the Conservation of Antarctic Marine Living Resources

COP = Conference of the parties (to a convention or a treaty)

DFO = (Department of) Fisheries and Oceans Canada (a federal Canadian ministry)

EIA = Environmental impact assessment

EAF = Ecosystem approach to fisheries

EBM = Ecosystem-based management

ESSIM = Eastern Scotian Shelf Integrated Management Plan

FAO = the Food and Agriculture Organization of the United Nations

GEF = Global Environment Facility

ICES = International Council for the Exploration of the Seas

IUCN = International Union for Conservation of Nature

LME = Large marine ecosystem

LOSC = the UN Law of the Sea Convention

NEAFC = North-East Atlantic Fisheries Commission

NOAA = (the US) National Oceanic and Atmospheric Administration

OSPAR = Convention for the Protection of the Marine Environment of the North-East Atlantic
(The abbreviation refers to its precursors, the Oslo and the Paris Conventions)

PAME = Protection of the Arctic Marine Environment (a working group under the Arctic Council)

PB/GB = Placenta Bay/Grand Banks Integrated Management Plan

SEA = Strategic environmental assessment

UNEP = United Nations Environmental Programme

WWF = World Wildlife Fund for Nature

1 Introduction

The main topic of this thesis is the implementation of ecosystem-based ocean management (EBM). This is an integrated approach to nature management that is highly reliant on assessments. In this chapter, I will briefly introduce how EBM emerged from a call for integration, and present an overview of the complex set of environmental problems it is supposed to contribute solving. This is followed by the research questions and an overview of the rest of the thesis.

1.1 The call for integration

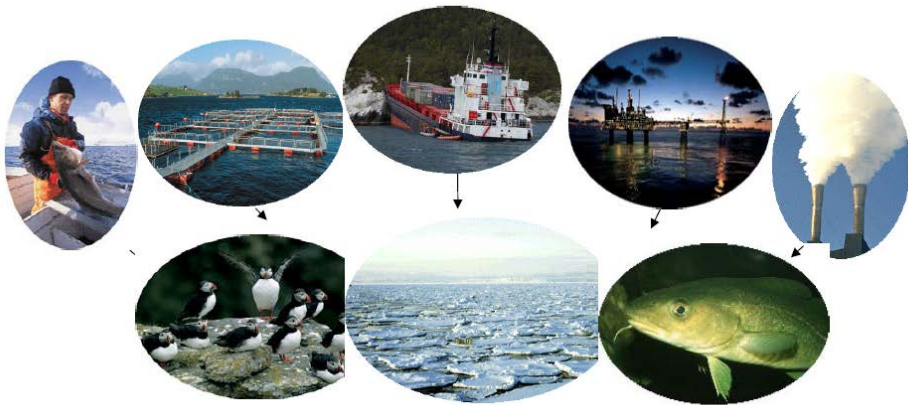
“Hundreds of scientists from many countries (...) examined the state of knowledge of the world’s oceans and the ways in which humans benefit from and affect them. Their findings indicate that the oceans’ carrying capacity is near or at its limit. It is clear that urgent action on a global scale is needed to protect the world’s oceans from the many pressures they face.”

Former UN General Secretary Ban Ki-Moon in the preface to the first World Ocean Assessment (UN, 2016).

Unfortunately, this message from Ban Ki-Moon is not unique. Over the years, numerous studies have appeared about environmental and resource problems in the oceans, followed by appeals to take action (MEA, 2005; Halpern et al., 2008; Rogers & Laffoley, 2013). The perceived nature, scale and severity of the problems have changed over time. Today, many problems are no longer confined to local areas, but affect larger regions or even the whole ocean system. There may be more in the pipeline if the prospects for a ‘blue economy’ succeed in intensifying uses of the oceans, as signalled globally (OECD, 2016), in Europe (European Commission, 2017) and in Norway (NFD, 2017). The challenge will be to accommodate new uses with the existing ones, without continuing the degradation of the ocean environment.

The traditional approach to environmental problems has been to confront them one at a time. Legal regimes and political initiatives at all levels have evolved for the management of living marine resources, for combating pollution and climate change, and for the regulation of industries and activities causing the problems (Birniet et al., 2009). Such initiatives have enabled progress on a number of issues when counter-measures have been implemented effectively. Industrial discharges have been reduced, sewage in fiords and bays cleaned up, levels of banned substances in marine organisms have declined, and stocks of fish and marine mammals have recovered when managed properly (UN, 2016). Thus, the state of the oceans would have been much worse without the measures already introduced to address old problems such as pollution. However, old problems grow in states to which industrial production has moved, where affluence increases and environmental policies are weak. Some well-known problems such as climate change and overexploitation of fish stocks remain unresolved. In addition, new problems such as plastic and noise pollution emerge because of new knowledge about their extent and impacts.

The Brundtland Commission in 1987 raised serious concerns about the inadequacy of traditional ways of addressing issues in isolation. Instead, it introduced sustainable development as an overarching, integrative concept. The Rio Conference in 1992 defined the term as the integration of three independent and mutually reinforcing pillars: economic development, social development and environmental protection (Birnie et al., 2009, p. 116). The message about the need for more integrative approaches to the management of nature and human activities permeates the documents from the conference. In the following years, EBM emerged on the international scene as one approach to integrated management. It has also been referred to as the ecosystem approach. For consistency, I will use EBM unless when referring to sources that use different terminology.¹



*Figure 1: EBM is an integrated approach that takes all components of the ecosystem into account (lower panel) as well as all sectors of society causing impacts on the ecosystem (upper panel)
Source: The Norwegian Ministry of Environment*

EBM has an important scientific foundation in ecology, which introduced the ecosystem as a concept for understanding how species are interlinked in food webs, and how the living and non-living environment interact. The defining characteristic of EBM is that it makes the whole ecosystem the object of management, not its individual components. Figure 1 illustrates this as integration across the lower panel. Managing an ecosystem requires a holistic assessment of the cumulative impacts of all the pressures acting upon it. In order to keep the impacts at acceptable levels, the relevant sectors of society must be addressed and take the requisite measures. In Figure 1, this means integrating across the upper panel. These holistic ambitions require coordination and collaboration between many knowledge-holders, industries and regulators, who operate in different sectors and at different levels, from the local to the global.

¹ EBM and the ecosystem approach now «are often used interchangeably, and they mean generally the same thing» (UNEP 2011, see also Arkema et al (2006), Arctic Council (2013), Carlisle (2014) and Link & Bowman (2017)). Ecosystem approach is the dominating terminology in the Convention on Biological Diversity (CBD) and the UN General Assembly.

Assessments have become a key mechanism for informing decision-makers and for strengthening the relationship between science and policy. A generic definition states that assessments are formal efforts to assemble selected knowledge with a view towards making it publicly available in a form intended to be useful for decision-making (Mitchell et al., 2006). If the environment is the topic, environmental assessment is the common term. EBM depends on environmental assessments. With its ambition of integration, there is a corresponding need for integrated assessments (UNEP & IOC-UNESCO, 2009). These should cover integration across sectors and ecosystem components, as indicated above, and to a certain extent also the three pillars of sustainability. Moreover, there is a need to appraise policy responses. An analogy can illustrate this. If we compare the oceans with patients suffering from a number of diseases, as the World Ocean Assessment tells (UN, 2016), assessments can establish the diagnosis. They must clarify causes and effects of the diseases and their severity so the doctors can prioritise which to treat first. The doctors will usually need to consider several alternative treatments. They must make their choice based on an assessment of which treatment will work best for the patient. There may also be other considerations, such as cost limitations and side effects of the treatment on others. This analogy can serve as a first introduction to the breadth of assessment tasks needed in EBM.

1.2 A complex set of environmental ocean problems

An integrated approach for managing the cumulative effects on the ecosystem of all human activities must deal with very complex issues. Based on the World Ocean Assessment (UN, 2016), the environmental problems in the oceans can be summarised under four headings:

Harvesting and other forms of direct mortality. Fisheries, hunting and whaling increase the mortality of the targeted species. The fraction of fish stocks within biologically sustainable levels decreased from 90% in 1974 to 67% in 2015 (FAO, 2018). Many stocks of marine mammals that are no longer harvested have still not recovered to their former abundance. In addition to targeted species, non-target fish, marine mammals, turtles and seabirds are caught as by-catch. Incidental mortality can also follow from, for instance, ships striking marine mammals and underwater blasts.

Pollution. On land, agriculture, industrial activities, urban developments and systems for the disposal of sewage and waste are major sources of harmful substances. Their emissions are transported towards the oceans by winds, precipitation, groundwater and rivers, and mixed in the oceans by the currents. At sea, major sources of pollution include all kinds of vessels, oil and gas production, aquaculture, dumping of waste, and activities interacting with the seabed, such as drilling, dredging and mining. The impacts of the harmful substances produced are complex. Excess input of nutrients causes eutrophication with algae blooms that, in serious stages, deplete the oxygen in the water. Eutrophication was traditionally a problem only in freshwater and coastal areas. Today, hypoxic dead zones also occur seasonally in the open ocean. Marine organisms are exposed to a cocktail of hazardous substances such as heavy metals, persistent organic pollutants, radionuclides, and oil and oil products. High concentrations may be lethal. However, major concerns are related to a number of sub-lethal effects that may lead to diseases and effects on reproduction and survival. Sewage and aquaculture introduce waterborne pathogens and medicines, including antibiotics. Plumes of silt from activities affecting the seabed may physically cover bottom-living organisms and redistribute harmful substances. Huge quantities of plastics and other forms of marine debris have more recently caught wide attention. Un-

derwater noise is another large-scale problem that has become a high-profile issue quite recently.² Finally, the introduction of non-native species by for instance vessels, aquaculture and restaurants can be seen as a form of biological pollution.

Habitat loss. Approximately 40% of the world's population lives within 100 km of the shores. Their settlements lead to fragmentation and loss of habitats such as wetlands, seagrass and mangrove, and long coastlines with artificial structures. This affects marine species depending on such habitats, such as fish. Invasive species, disturbance from humans and urbanization threaten seabirds in their breeding and nursery areas. In the oceans, bottom trawling has affected large portions of the fishing grounds. Permanent marine installations and extractive industries also contribute to the disturbance of benthic habitats.

Climate change. Heat from global warming is absorbed and stored in the oceans. This has led to profound changes in physical conditions. Marine ecosystems change accordingly in terms of species composition and distribution. Temperature stress and mass mortality of corals, which create a particularly species-rich habitat, are serious concerns. In addition to climate change, the emission of CO₂ into the atmosphere also causes *ocean acidification*. This may lead to the breakdown of calcareous skeletons and shells of certain marine organisms, with mostly unknown effects on species composition.

Most of what is known about the impacts on ecosystems concern the *direct impacts*, which in many instances are well documented, as indicated above. However, impacts propagate to other species in the food web. For instance, the large-scale removal of biomass by fisheries and prior culling of marine mammals have indirect effects on other species through predator-prey relationships. Such higher order *indirect impacts* are hard to understand due to limited knowledge about the structure and functions of food webs. Trying also to assess indirect impacts on human society adds new layers of complexity and uncertainty. Examples include the positive and negative health effects of consuming seafood, reduced food security for small-scale fishers due to overfishing, and flooding of coastal settlements due to sea-level rise and storms. The simultaneous occurrence of many activities, leading to *cumulative impacts*, is a related problem for understanding and assessment. "Those multiple pressures interact in ways that are poorly understood but can amplify the effects expected from each pressure separately" (UN, 2016).

1.3 Aim and scope of the thesis

This PhD thesis is about ecosystem-based management and environmental assessments. More specifically, this introduction and the three articles submitted will contribute to answering the following research questions:

1. How has the concept of ecosystem-based management emerged, and what characterises the approach?
2. What is the role of environmental assessments in ecosystem-based management and what is the legal status of assessments?

² Underwater noise was the topic of the 19th meeting of the United Nations Open-Ended Informal Consultative Process on Oceans and the Law of the Sea in June 2018. See <http://enb.iisd.org/oceans/icp19/>

3. What are the conditions for implementing the policies formulated in ecosystem-based plans for large marine areas?

The first research question is addressed only in this introduction. The second is addressed in the introduction and in Paper 1. As will be seen, EBM as such only has a soft law status in international law. A reason for discussing the legal status of environmental assessments, is to see the extent to which the assessment part of EBM has a stronger legal status than the concept itself. The third research question is addressed by the two last papers.

The first paper presents and discusses the international regime for environmental assessments in the Arctic Ocean. This is the legal framework for environmental assessments in this region, also applied to EBM. I wrote the article as a contribution to the global process of negotiating a new treaty for the protection of biodiversity in areas beyond national jurisdiction, and to the work of the Arctic Council on improving regional marine governance in the Arctic Ocean. Originally, the intention was to follow up with studies at the international level on the role of the Arctic Council in promoting EBM. However, the Arctic Council stated that the 17 large marine ecosystems in the Arctic (Figure 2) “represent the appropriate and primary units for applying the ecosystem approach to management” (PAME, 2014).

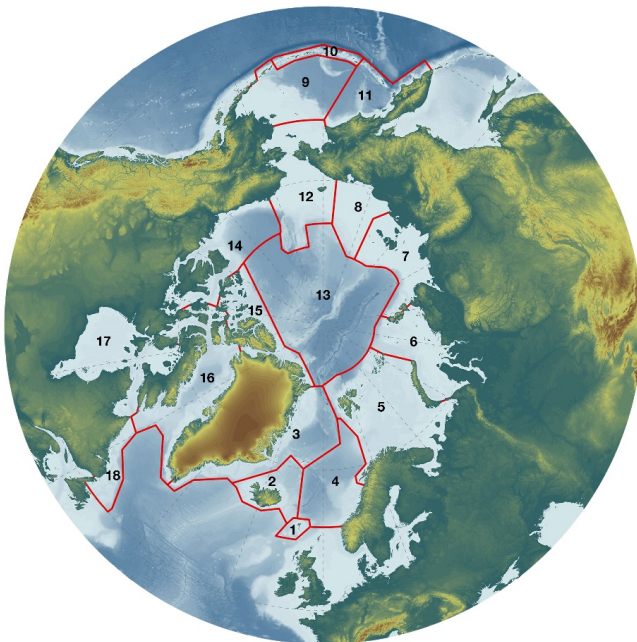


Figure 2: Large marine ecosystems in the Arctic as defined by the Arctic Council. (Skjoldal & Mundy, 2013)

This inspired a shift in focus from studying the international regime for EBM, to studies of how EBM is put into practice in such large marine ecosystems. As Chapter 2 will demonstrate, there is a rich normative literature about EBM, exploring what the concept could mean and recommending how it could

be operationalized. I was interested in complementing this with empirical research about what has been done in practice, and what has been achieved. Paper 2 therefore examines the extent to which policy formulated in the Norwegian Barents Sea Management Plan (BSMP) has been implemented, and explains the results based on implementation theory. This was a single case study that allowed for certain analytical generalisations. I was interested in building a broader empirical basis for generalisations about which approaches to EBM may work under what conditions. Paper 3 therefore focuses on the Canadian Eastern Scotian Shelf Integrated Management Plan (ESSIM), supplemented by another case from Canada, the Placenta Bay/Grand Banks Integrated Management Plan (PB/GB). Finally, the Norwegian and the Canadian cases are compared.

The major part of the research for this thesis has already been published in international journals. In accordance with the requirements for a PhD at the University of Tromsø – The Arctic University of Norway, the purposes of this introduction are to supplement the papers by situating the articles in the wider research field, demonstrating the connections between the papers, and to present and discuss the methods applied. The structure of the thesis is as follows:

Chapter 2 is about EBM. It explains the evolution of the concept, the normative definitions and recommended approaches. This addresses research question 1.

Chapter 3 discusses the role of environmental assessments in EBM. This addresses research question 2 and builds a bridge between Paper 1 and the rest of the thesis.

Chapter 4 starts with some reflections on the problem of implementing EBM before turning to a review of prior attempts to study implementation. This is background to research question 3 and Papers 2 and 3. There is also an overview of the theoretical framework applied.

Chapter 5 contains a reflection on the methodology in the research papers

Chapter 6 summarises the results, situates the results in the context of prior research, and points to further research directions.

2 Ecosystem-based ocean management

There are many deep roots of EBM involving scholars from a number of countries and disciplines, such as ecology, natural resource management and urban and regional planning (Slocombe, 1993; Kidd et al., 2011). Still it is probably right to trace the direct origins of the concept to developments in the US, where it evolved on land. Starting the history in this particular social and political context may shed light on why the concept originated and why it was coined in the way it was. From these origins, it has spread internationally, and been received and translated into multiple contexts (Simmons et al., 2006; Kingdon, 2010). This diffusion process is far too complicated to map here. Instead, I will go back to the international developments briefly introduced in Chapter 1 and explain how marine EBM emerged on the international scene. From there, I will introduce and discuss definitions, principles and recommended approaches.

2.1 The origin on land in the US

During the 1980s, “ecosystem management” emerged in opposition to traditional nature management in the US (Grumbine, 1994; Cortner & Moote, 1999; Layzer, 2008, pp. 9 - 41). The traditional nature management was based on a view in ecology that considered nature as consisting of confined, self-regulating ecosystems. These were “the basic units of nature” (Tansley 1935, cited in Likens, 1992). According to the theory, ecosystems were undergoing successional development towards a climax stage that represented a stable equilibrium. The ideal state of ecosystems was usually defined with reference to prehistoric times, when humans did not disturb natural processes. Already in the 1960s and 1970s, biologists challenged this “balance of nature” paradigm (Ladle & Gillson, 2009). The alternative view that emerged contended that ecosystems can be defined on all geographical scales, from a single drop of water to the whole biosphere, and therefore have a nested or hierarchical organisation. They are not confined, but open to exchange with neighbouring systems. Instead of being in balance around a prehistoric equilibrium, they are dynamic and in a continuous flux of variability and evolution. These changes in basic ecological understandings challenged attempts to protect parts of nature enclosed in parks and reserves, without linkages to the wider landscape. When aiming for a constant state of ecosystems was unattainable, and future states seemed unpredictable, the goals of management became more open and subject to societal values. These were in a flux following the rise of the environmental movement after the 1960s. The public along with the new discipline of conservation biology criticized existing management practices for not curbing biodiversity losses. They contended that traditional resource management that aimed at maximizing the output of commodities, such as timber or meat, delivered brittle, vulnerable ecosystems. These could flip into persistent, degraded states when triggered by disturbances that they could previously absorb (Holling, cited in Layzer 2008).

A parallel critique emerged from planners and regulators. They saw local government control over land use policies as leading to urban sprawl that fragmented the landscape. Similarly, they criticized the impacts of wide-reaching water management projects driven by agricultural and urban expansions. Federal regulations and administrations, on the other hand, were criticized for being unable to address complex, interlinked problems. Critics contended that the federal level centralized decisions without taking local conditions and views into account. Moreover, top-down, expert-driven regulations created local resistance and adversarial mechanisms for resolving disputes by frequent appeals and litigation.

According to Layzer (2008), an anti-environmental reaction emerged in the early 1990s, deeply polarizing issues of land use and natural resource management. The incorporation of stakeholder participation and collaborative planning therefore seemed like a natural reaction to avoid future backlashes.

During the 1990s, there was growing support in the US for “ecosystem-based management”. This was the new term introduced to emphasize that it was human behaviour that should be managed, not whole ecosystems directly (McLeod et al., 2005). The ecological basis for the concept was clarified, and several partly overlapping definitions were compiled (Christensen et al., 1996). However, there was also reluctance to lock such a complex concept to a single definition, so several authors rather promoted principles and characteristics (Kidd et al., 2011, p. 4). Layzer (2008, pp. 22 - 23) in her review of these early steps, emphasized three common features that separated EBM from other new approaches at that time:

- Ecological planning and management on a landscape scale, typically involving coordination across political boundaries
- Collaborative planning in which public officials, private stakeholders and scientists assemble voluntarily to reach a consensus on promising solutions
- Adaptive management that can accommodate learning from implementation, and flexible approaches based more on incentives than deterrence

Around 2000, marine scientists, managers and policy makers in the US also started to support EBM (Layzer, 2008; Wondolleck & Yaffee, 2017). American authors have produced a large literature that has influenced global understandings, including one of the first text books, “Ecosystem-based management for the oceans” (McLeod & Leslie, 2009). The influence from the US has also been substantial through the large marine ecosystem (LME) programme, which originated from the US National Oceanic and Atmospheric Administration. Since its earliest inception in 1984, it has evolved into a global movement with the participation of 110 developing countries in 22 LMEs around the globe, provided with \$3.1 billion in financial support from the Global Environmental Facility (Sherman & Hamukuaya, 2016).

2.2 International origins of ecosystem-based ocean management

On the international scene, there are two major strands of marine governance that have produced a cross-sectoral and a sectoral approach to EBM, respectively (Garcia et al., 2014).

The first of these is the international sustainability agenda. The Brundtland report from 1987 not only introduced the term sustainable development into high-level international politics, but also applied the term “ecosystem approach” (Engler, 2015). At the 1992 UN conference on the environment and development in Rio, the states adopted several foundation stones for EBM, without explicitly using the term. Agenda 21, which was the action programme from the conference, highlighted the deterioration of ecosystems as a major challenge for humanity. In marine and coastal area management, it called for new approaches “that are integrated in content and are precautionary and anticipatory in ambit”.³ Moreover, the Rio declaration on environment and development formulated several legal principles of

³ Section 17.1 in Agenda 21, adopted at UNCED Rio de Janeiro 3 to 14 June 1992. Available online at <https://sustainabledevelopment.un.org/content/documents/Agenda21.pdf> Accessed 13 Nov 2018.

relevance for EBM, most clearly, that “states shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth’s ecosystems”.⁴

At the Rio conference, states could also sign the Convention on Biodiversity (CBD). The treaty text does not explicitly mention EBM. The concept was introduced into the Convention in 1995, when the conference of the parties stated, “the ecosystem approach should be the primary framework for action to be taken under the convention”.⁵ Following a series of expert meetings, the parties in 2000 adopted a definition of the ecosystem approach, a set of 12 principles (the Malawi principles), and operational guidance in five points.⁶ The definition mandates a general area of application by its reference to integrated management of land, water and living resources. It is also meant to encompass all relevant sectors. In parallel, the parties launched an initiative for work on marine and coastal biodiversity in 1995, the so-called Jakarta Mandate. The content of this has evolved over time. Today it is one of the seven thematic programmes of the Convention. Furthermore, there are 24 cross-cutting programmes, one of which is the Ecosystem Approach.⁷

In the fisheries sector, there is a strong tradition of single species management. In the 1960s, scientific interest in multispecies relations emerged (Link, 2010). Interest in how to manage multiple fish stocks in connection grew, though this still is a challenge for the sector. The scope in fisheries management was considerably broadened when the krill fisheries in Antarctica prompted the adoption of the Convention on the Conservation of Atlantic Marine Living Resources (CCAMLR) in 1980. This was the first international convention to formulate important elements of EBM through its requirement to consider the ecosystem when harvesting (Wang, 2004a; Maes, 2008; Birnie et al., 2009, p. 592).⁸ The Convention thus became a precursor to what would become the ecosystem approach to fisheries (EAF) (Garcia et al., 2003). The international sustainability agenda and CBD were important drivers for the evolution of EAF. An important milestone was reached with the adoption of the UN Fish Stock Agreement in 1995. It introduced new obligations for sustainable use in the global fisheries regime, a precautionary approach, and obligations towards the whole ecosystems in which fisheries operate.

⁴ Principle 7. Several other principles are also relevant for EBM, especially the coupling of environmental protection to development (principle 4), the role of science (principle 9), the participation of citizens (principle 10), the precautionary principle (principle 15) and environmental impact assessment (principle 17). The Rio Declaration is the most significant universally endorsed statement of general rights and obligations of states regarding the environment (Birnie et al., 2009, p. 112). The declaration is legally non-binding. However, several of the principles have since attained the status of customary law and have thus become legally binding.

⁵ COP 2, decision II/8, Jakarta 1995. Available at <https://www.cbd.int/decision/cop/default.shtml?id=7081>

⁶ COP 5, decision V/6, Nairobi 2000. Available at <https://www.cbd.int/decision/cop/default.shtml?id=7148>. See also the background recommendation V/10 from the Subsidiary Body of Science Technology and Technical Advice, available at <https://www.cbd.int/recommendation/sbstta/default.shtml?id=7027>. The Convention’s account of how it developed its ecosystem approach can be found at <https://www.cbd.int/ecosystem/background.shtml>

⁷ See overview of the structure of CBD’s work at <https://www.cbd.int/programmes/>

⁸ Article II requires that harvesting shall be conducted in a manner that maintains the ecological relationships between harvested and other species, and which prevents irreversible changes to the marine ecosystem, including when the effects of other human activities and environmental changes are taken into account. Note also the thematic scope in Article I, which is all species of marine living organisms, not only fish. The Convention text is available at <https://www.ccamlr.org/en/organisation/camlr-convention-text#II>. Both Garcia et al. (2003) and Birnie et al. (2009, p. 660) comment that CCMLR has not managed to live up to its EBM principles in practice.

However, it did not explicitly refer to the term EAF.⁹ Another important development in the global fisheries regime was the adoption of the Code of Conduct for Responsible Fisheries by the Food and Agriculture Organization of the UN (FAO). The Code collated legally binding and non-binding elements in one document. This was taken further when a conference in Reykjavik in 2001 adopted a declaration that recognized the EAF as a form of fisheries governance framework (FAO, 2001). The FAO later produced guidelines for the practical implementation of these high-level policy goals (FAO, 2005).

With these two developments in place, the World Summit on Sustainable Development in Johannesburg in 2002 could “encourage the applicability by 2010 of the ecosystem approach, noting the Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem and decision V/6 of the Conference of Parties to the Convention on Biological Diversity”.¹⁰ The plan also promoted “integrated, multidisciplinary and multisectoral coastal and ocean management at the national level”. This was an important milestone in the evolution of marine EBM and signalled that the time for implementation had come.

Since 2002, high-level declarations from UN conferences on sustainable development¹¹ and annual resolutions on oceans and fisheries¹² have continued to refer to integrated, ecosystem-based approaches. A number of international organisations and states have included EBM and EAF in their norms and work programmes. Thus, there has been growing support for EBM in international law, policy and practice (Wang, 2004a; Maes, 2008). However, what we find is soft-law, indicating policy directions and aspirational goals (Engler, 2015). EBM has still not achieved the status of customary international law and is not a standard feature of modern environmental treaties, even though elements can be found (Trouwborst, 2009). One reason is that most of the relevant treaties were adopted prior to

⁹ See particularly the preamble, arts 5, 6 and 7(2)f. The obligations include assessing the impacts of fishing on the ecosystem. Measures that could avoid species to be threatened or other harmful impacts should be adopted where necessary. The treaty text is available at http://www.un.org/depts/los/convention_agreements/convention_overview_fish_stocks.htm

¹⁰ See 30(d) in the Plan of Implementation of the World Summit on Sustainable Development, UN A/CONF.199/20, available at <http://www.un-documents.net/jburgpln.htm>

¹¹ In «The future we want» from 2012, the section on oceans and seas (para 158 – 177) refer to the commitment to “effectively apply an ecosystem approach and the precautionary approach in the management (...), of activities having an impact on the marine environment”. See <https://sustainabledevelopment.un.org/futurewewant.html>. In 2015, the UN adopted Agenda 2030, containing sustainable development goals. Goal 14.2 about sustainable management and protection of marine and coastal ecosystems has an indicator that measures the proportion of EEZs managed according to “ecosystem-based approaches”. See <https://oceanconference.un.org/sdg14>. The UN Ocean Conference in 2017 was dedicated to Goal 14. It intended to mobilize voluntary commitments, i.a. on «ecosystem approaches». See <https://oceanconference.un.org/coa/MarineCoastal> (All web sites accessed 27 June 2018)

¹² The annual resolutions from the UN General Assembly on “Oceans and the law of the sea” and “Sustainable fisheries” routinely encourage states and international organisations to apply ecosystem approaches. The Oceans resolution from 2006 (61/222) is of particular interest since it contained the results of discussions at a special session about the definitions and principles of ecosystem approaches. In the resolutions from 2017, the following articles illustrate the UN engagement more recently: the preamble and art. 232 - 235 of the Ocean resolution (72/73), as well as art. 13, 14, 17, 170, 175 and 178 of the Fisheries resolution (72/72). All resolutions are available at http://www.un.org/depts/los/general_assembly/general_assembly_resolutions.htm (accessed 27 June 2018)

the evolution of EBM. Another reason may be the problems of defining the concept and its implications, as the next sections will discuss.

2.3 Definitions and principles

The diffusion of EBM means that many actors have taken up the concept, each needing to fill it with content. At the international level, definitions and approaches have been discussed by, for instance, parties to conventions (CBD, CCAMLR and OSPAR), in the UN system (the General Assembly, United Nations Environmental Programme [UNEP] and FAO), by intergovernmental organisations (the International Council for the Exploration of the Seas [ICES], regional seas organisations, regional fisheries bodies), by the EU and by international non-governmental organisations (International Union for Conservation of Nature [IUCN], SeaWeb, WWF). There are even more definitions at the national level and in the scientific literature (McLeod et al., 2005; Arkema et al., 2006; Long et al., 2015). It is therefore necessary to conduct analyses across sources. This was undertaken by an Expert Group on EBM in the Arctic Council in order to formulate guidance for the organisation's work (Arctic Council, 2013).¹³ Like many others, the group distinguished between a definition and a number of principles. Their selected definition stated that:

“Ecosystem-based management is the comprehensive, integrated management of human activities based on best available scientific and traditional knowledge about the ecosystem and its dynamics, in order to identify and take action on influences that are critical to the health of ecosystems, thereby achieving sustainable use of ecosystem goods and services and maintenance of ecosystem integrity.”

Another influential definition, which was not considered by the Arctic Council expert group, is a consensus-statement among US scientists (McLeod et al., 2005):

“Ecosystem-based management is an integrated approach to management that considers the entire ecosystem, including humans. The goal of ecosystem-based management is to maintain an ecosystem in a healthy, productive and resilient condition so that it can provide the services humans want and need. Ecosystem-based management differs from current approaches that usually focus on a single species, sector, activity or concern; it considers the cumulative impacts of different sectors.”

One could add more definitions, but these suffice to highlight the key characteristics of EBM. Firstly, a unique feature is that the whole ecosystem is considered as the object for management, not merely single species, habitats or concerns. The goal is to maintain the health of the ecosystem,¹⁴ while allowing sustainable use. The reason for doing so is not unique to EBM. International environmental law is predominantly anthropocentric (Birnie et al., 2009, pp. 596 - 600); so is the rationale for caring for the

¹³ The sources were CBD, OSPAR, UNEP, Seaweb, the US Commission on Ocean Policy, and internal uses in the Arctic Council, see pp 21-23 in the report.

¹⁴ Integrity, structure, function, productivity and resilience are other normative characteristics of goals for the ecosystem that can be found for instance in Grumbine (1994), Arctic Council (2013) and Engler (2015).

ecosystems when referring to them as providers of the services humans want and need.¹⁵ Secondly, in order to ensure the health of the ecosystem, the cumulative impact of all kinds of human activities must be assessed. This is the basis for identifying the activities that cause the most severe negative impacts, and thus for pointing out who should have the responsibility to take the appropriate actions needed. These characteristics can be seen as two requirements for integration, as illustrated in Figure 1: integration across all components of the ecosystem (lower panel) and across all relevant sectors or human activities that affect the ecosystem (upper panel). A third integrative feature related to governance largely follows from these two: in order to assess the state of the ecosystem and human impacts upon it, there is a need to mobilize knowledge from a broad range of sciences, but also from other forms of knowledge. In order to take action, industries and regulating authorities must be engaged. These may operate at different levels, from the local to the global. Thus, EBM has been characterised as a multi-knowledge, multi-sector and multi-level approach (Arbo & Thøyl, 2016).

It is my understanding that these three requirements for integration are key characteristics of EBM that seem to be generally accepted, even though the wordings and nuances of the definition vary. What else to include in a definition is a matter of taste - whether one prefers a lean definition, focusing on these essentials, or a more comprehensive one that adds other principles and approaches. The origin of such add-ons can often be attributed to sources other than EBM, for instance, the need to find facts before making decisions (Faludi & Waterhout, 2006), or ideals about participation reflecting a general governance turn (Kidd et al 2011). However, one can argue that it is the combination of all these elements that describes EBM comprehensively, thereby giving a clearer direction for implementation than a lean definition.¹⁶

The Expert group also compared long lists of principles,¹⁷ finally synthesizing them into nine as common elements of a potential approach by the Arctic Council:

1. EBM supports ecosystem resilience in order to maintain ecological functions and services.
2. EBM recognizes that humans and their activities are an integral part of the ecosystem as a whole (...).
3. EBM is place-based: it applies to geographic areas defined by ecological criteria, and may require efforts at a range of spatial and temporal scales.
4. EBM balances and integrates the conservation and sustainable use of ecosystems and their components.

¹⁵ The terminology of ecosystem services gained public recognition with the Millennium Ecosystem Assessment (MEA, 2005). The term ecosystem services goes beyond direct utility, which is covered by MEA's category provisioning services (can also be referred to as ecosystem goods), and cultural services that provide non-material benefits, such as aesthetical and spiritual appreciation and knowledge. Humans also have indirect utility of basic ecological functions (regulating services that maintain environmental quality and supporting services such as primary production and nutrient cycling). Across these categories, there are non-use values related to the existence of ecosystem components and utility for future generations.

¹⁶ Examples of scientific literature addressing EBM principles are Rosenberg and Sandifer (2009), Engler (2015), Long et al. (2015) and Rudd et al. (2018).

¹⁷ The Group elicited principles from the Ecological Society of America (Christensen et al., 1996), CBD's Malawi-principles, the 2006 UN Open-ended informal consultative process on oceans and the law of the sea (see footnote 12), WWF and an Arctic Council report (Hoel, 2008). See Arctic Council (2013), pp 23 – 27 with original principles and pp 13 – 19 for the joint analysis. Principle 6 and 8 are modified based on underlying principles, while some of the others are slightly edited.

5. EBM aims to understand and address the combined, incremental effects (known as “cumulative impacts”) that multiple human activities impose upon ecosystems, resources and communities.
6. EBM is knowledge-based: decisions should be based on information that seeks to incorporate and reflect scientific knowledge as well as expert, traditional and local knowledge.
7. EBM is inclusive and encourages participation at all stages by various levels of governments, indigenous peoples, stakeholders (including the private sector) and other Arctic residents.
8. EBM is transboundary: there is a need to consider connections among ecosystems, including exchanges between the oceans, land and the atmosphere. Partnerships across such boundaries can contribute significantly to the success of EBM efforts.
9. Successful EBM efforts are flexible and adaptive because human activities and ecosystems are dynamic, the Arctic is undergoing rapid changes, and our understanding of these systems is constantly evolving.

At this level of principles, interpretations and opinions are more divided. For instance, it is surprising that the Group did not include the precautionary principle, which is considered essential to EBM (Trouwborst, 2009). It is also noteworthy that even though it emphasized inclusiveness, it did not refer to collaborative planning and decision-making, as this approach is controversial (Layzer, 2008). Regarding humans as a part of the ecosystem, this is uncontroversial as long as it refers to humans as receivers of amenities from ecosystems and sources of influence upon them (Grumbine, 1994; Cortner & Moote, 1999). However, subsuming human activities and regulatory institutions into the ecosystem (Garcia et al., 2003) may be viewed as integrative by some, reductionist by others. When the integration is furthered to attempt the interdisciplinary concept of socioecological systems and resilience theory, reactions from the social sciences can be harsh (Olsson et al., 2015). There are also tensions within principles that can easily lead to disagreements. For instance, the role of traditional knowledge versus science may not be easy to negotiate, including which methods should be accepted or who should have a final say in case of conflicting views (Sejersen, 2003). Another example is the allocation of roles to the different participants mentioned in principle 7, as illustrated in Paper 3.

Whereas the definition above concerns fully cross-sectoral EBM, any individual sector could also apply it. Referring to Figure 1, it would mean that one sector in the upper panel takes responsibility for its impacts on the whole ecosystem in the lower panel. The EAF, supplemented by an ecosystem approach to aquaculture (FAO, 2010), seem to be the only sectoral approach that exists internationally.¹⁸ It has been suggested that it is not fruitful to create a sharp divide between single-sector and multi-sectoral EBM; rather there is a continuum from single-species management to gradually increasing complexity with more fish species, more ecosystem components and more sectors and sea users involved (Dolan et al., 2016). This understanding opens up an incremental development of EBM, gradually expanding from the existing management structures and approaches to something more cross-sectoral and challenging (Yaffee, 1999; Hilborn, 2011; Agardy et al., 2016). Sectoral approaches can contribute to the broader mandate of sustainable use. However, for the full consideration of all impacts and

¹⁸ There is no comprehensive international regulatory regime for the oil and gas sector into which such an approach could be incorporated (Hoel et al., 2009). However, the International Petroleum Industry Environmental Conservation Association has paid some attention to EBM (IPIECA, 2007). The shipping industry has a global regulatory regime, but it seems that it has not tried to define an ecosystem approach to shipping. Nevertheless, the International Maritime Organization has been the forum for developing a comprehensive set of treaties and other instruments addressing environmental impacts from shipping. Dolan et al. (2016) still refer to all sectors. This may imply that more sectoral approaches exist at the national level.

user conflicts, some form of integrated planning and decision-making becomes necessary. This moves the management into the domain of cross-sectoral EBM (Cowan et al., 2012).

2.4 Ecosystem-based management in practice

There are many faces of EBM, depending on how it is adapted to different contexts. “Although there are common elements that should guide the core of EBM in all cases (...), EBM will look different in different places, tailored to the unique mix of ecological, social and political conditions in a specific geographical area” (Agardy et al., 2003). This is a stated reason for a reluctance in the EBM literature to be prescriptive about how to proceed in practice. As an alternative, some authors have argued that identified principles and criteria should guide managers (Arkema et al., 2006). Others have identified key elements and actions that are consistent with EBM (McLeod et al., 2005). Still there are further recommendations from several international organisations, private foundations and academics. In this section, I will review some of those put forward by international conventions and organisations.

At the global level, the CBD is most important to consider due to its early adoption of EBM and its wide-reaching influence. The parties to the Convention consider “the implementation of the ecosystem approach and all principles (...) as voluntary instruments.”¹⁹ In their last decision on EBM from 2008,²⁰ they recognized the needs to translate the normative framework into guidelines adapted for specific biogeographical regions and circumstances, instead of “one-size-fits all” solutions. The basis for this should be learning-by-doing and case studies submitted by the parties. In the meantime, capacity building should remain the priority, with the preparation of easy-to-understand communication materials and manuals through an Ecosystem Approach Sourcebook and other mechanisms. Ten years later, the guidance in the Sourcebook on the CBD website is a long list of possible tasks under the headings “Problem definition” and “Creating a management plan”.²¹ The “Tools and approaches” section reel off long lists of short bullet points with names of methods that may be applied, while only a handful of marine case studies can be found.²² The thematic programme for marine and coastal biodiversity brings no more clarification: it contains references to the ecosystem approach as a kind of high-level inspiration, but no guidance on its marine applications.²³

The regional level is an important arena for promoting EBM. There are primarily three mechanisms for regional collaboration globally (Rochette et al., 2015):

- The Regional Seas Programmes, most of which are supported by the United Nations Environmental Programme (UNEP)
- The Large Marine Ecosystems programme, supported by the US National Oceanic and Atmospheric Administration (NOAA) and the Global Environment Facility (GEF)²⁴

¹⁹ COP 7 in Kuala Lumpur 2004, decision VII/11, art. 3.

²⁰ COP 9 in Bonn 2008, decision IX/7. This is the last COP decision on the ecosystem approach, according to this web site <https://www.cbd.int/ecosystem/decisions.shtml> (accessed 14 Nov 2018).

²¹ See <https://www.cbd.int/ecosystem/sourcebook/default.shtml>.

²² Case studies can be accessed here: <https://www.cbd.int/ecosystem/sourcebook/search/default.shtml>. As of 14 Nov 2018, there were 54 case studies registered, four of which related only to marine and coastal biomes.

²³ See <https://www.cbd.int/marine/resources.shtml>

²⁴ GEF is a global mechanism for assisting developing countries in addressing global environmental concerns, such as the degradation of international waters. It adopted the concept of LMEs in 1995. GEF only finances the

- Regional fisheries bodies, several of which are supported by the UN Food and Agriculture Organization (FAO)

All of the supporting organisations promote EBM; the first two cross-sectoral EBM, the third EAF. I will here compare the two recommendations for cross-sectoral EBM. In addition, I will include the framework of the Arctic Council since this is a peculiar organisation with a high-level engagement for EBM in a region where the abovementioned regional organisations are scarce (Boxes 1 - 3).²⁵

Box 1: Arctic Council’s framework for EBM (PAME 2014)

1. **Identify the ecosystem** as a geographical entity based on ecological criteria.

2. **Describe the ecosystem:**

- Biological and physical characteristics.
- Relevant management systems and participants.

3. **Set ecological objectives**

- Include species and habitats and the overall desirable status of the ecosystem/level of pressures.
- Translate ecological objectives into management objectives.

4. **Assess the ecosystem** in an integrated ecosystem assessment

- Gather status and trend observations of all relevant ecosystem components.
- Measure or estimate the impacts of various human activities and their cumulative impacts.
- Include socioeconomic factors as driving forces for uses and impacts, and as consequences for society arising from the altered provision of ecosystem goods and services.

5. **Value the ecosystem**

- Identify and value its goods and services so that economic, social and cultural values may be more fully incorporated into mainstream socioeconomics.

6. **Manage human activities** to achieve and maintain the agreed ecological objectives.

- Managers apply adaptive methods for shaping human behaviour tailored to shifting ecological and social conditions.
- Make the best use of available scientific and other knowledge; the outcomes of integrated assessments need to be translated through a scientific advisory process into clear and transparent advice to inform adaptive management.

portion of LME initiatives that produce global or transboundary benefits, not purely national benefits (Carlisle 2014). See <https://www.thegef.org/>

²⁵ The Expert Group referred above has not developed the Arctic Council framework described here. It is the product of a sub-group under the Protection of the Arctic Marine Environment (PAME) working group of the Arctic Council. See <https://www.pame.is/index.php/projects/ecosystem-approach>

Box 2. The Large Marine Ecosystems and the Global Environment Facility approach

The LME approach consists of five interdependent modules (Wang, 2004b; Carlisle, 2014; Sherman, 2014):

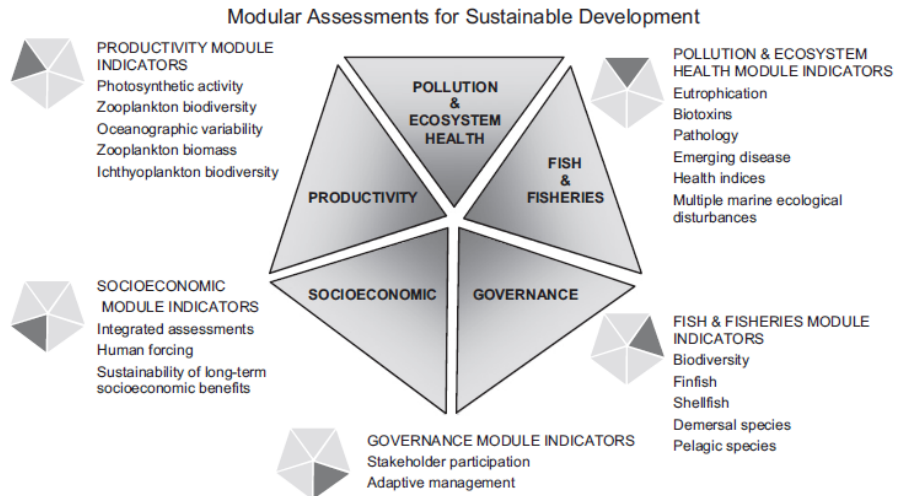


Fig 3: The LME modules and the indicators associated with each (Mahon et al 2009).

The productivity module focuses on oceanographic variability and plankton, which can be related to the carrying capacity of the ecosystem.

The fish and fisheries module focuses on the abundance and health of fish and shellfish. Consideration of their competitors, prey and predators opens up wider biodiversity issues.

The pollution and ecosystem health module focuses on marine pollution and contaminants. It may extend to any other issue related to marine ecosystem health, such as habitat integrity, invasive species or eutrophication.

The socioeconomics module concerns the value of ecosystem goods and services provided by an LME. It also concerns other measures of human well-being related to the use of resources, such as distribution and equity.

The governance module concerns the formal and informal arrangements that influence human behaviour with an impact on the LME. It includes laws, politics, market forces and cultural norms.

The Global Environmental Facility has supported several projects that have applied the five modules, though this is not required. To get support, however, the projects must prepare certain strategic documents, into which information from the modules may be incorporated (Carlisle, 2014):

- **Transboundary Diagnostic Analysis**, which is an environment assessment of an international water area. The participating countries identify and prioritize major concerns, and determine their impacts and root causes.
- **Strategic Action Plan**, which is a joint program of action agreed among the collaborating countries. The countries very often also develop national action plans.
- **Monitoring and Evaluation Plan** for measuring progress, consisting of process indicators, stress reduction indicators and environmental status indicators.

Box 3: UNEP's framework for EBM (Agardy et al., 2011)

1. A visioning phase establishing the foundation for EBM:

- Identify the geographical area and key concerns.
- Build interest among sectors and stakeholders, and create organisational mechanisms for the work.
- Take stock of the ecosystem and existing management practices.
- Establish overarching goals.

2. A planning phase charting what to do:

- Assess the ecosystem in an integrated manner.
- Evaluate governance options, and create a framework for multi-sector management involving governments and their agencies, the private sector and civil society.
- Identify precise and measurable objectives
- Prioritize the most severe threats; evaluate management options and trade-offs.
- Choose management strategies for implementation.

3. An implementation phase in which EBM is applied and adapted:

- Apply management, then monitor, evaluate and adapt management as needed.

In the next sections, I will discuss the approaches in the light of themes that are of theoretical interest. I will look at underlying assumptions, where the approaches agree and differ and how they relate to common debates from the wider literature. I will first look at two of the issues in what I have called the core characteristics of EBM, the thematic scope and governance. I continue with the operationalization of processes and steps prescribed, make some observations in light of planning and decision theory, and finally position EBM towards other marine policies and frameworks. The description is primarily based on the reading of the normative documents, not on studies of how they may be put into practice.

2.5 Thematic scope

All the frameworks include assessing the state of the marine biophysical environment, the cumulative impacts, and identification of the sources of impacts from different human activities. These issues are key in the recommendations and recommended as the basis for formulating objectives. To a certain extent, the frameworks also consider social and economic issues. The Arctic Council approach elaborates extensively on the biological aspects and recommends setting ecological objectives. It mentions «socioeconomics in the broadest sense» under valuation of the ecosystems, without any more specification or methodological guidance. Socioeconomics are also mentioned as driving forces and among the possible impacts to consider in assessments. The UNEP guidelines recommend the integration of assessments so they include social and economic dimensions, but does not go into more detail on how. Under objectives, there is reference only to biological issues. The LME framework seemingly has the clearest focus on socioeconomics by devoting one of its modules to this topic. However, «the socioeconomics module is perhaps less well developed than the three natural science modules» (Carlisle 2014).

These thematic scopes support the general characteristic that the ecosystem occupies the centre stage in EBM, while the social and economic aspects are relegated to the background (Kittinger et al., 2014;

Arbo & Thüy, 2016). The assessments may incorporate socioeconomic issues as an analytical element, but they are not considered objectives on equal terms with the need to maintain or restore ecosystems in a healthy state. This should be no surprise. One could rather argue that this is a distinctive feature that makes EBM an *ecosystem* approach, different from integrated management with an equal focus on the three pillars of sustainability. In the sustainability discourse, EBM can thus be seen as an approach that can contribute to «environment first», as advocated by for instance Grumbine (1994). The distinction is clear at a conceptual level, though it may be hard to draw sharp lines in practice, as I will come back to in Section 2.9.

2.6 Governance

The Arctic Council framework recommends identifying relevant management systems including responsible agencies and jurisdictional aspects, as well as the indigenous people and the stakeholders residing in the defined area. There is no more guidance on how to do this or for what purpose.

The UNEP guidelines recommends undertaking a governance assessment at an early stage and identifying gaps. They maintain having the right governance arrangements as “critical”. The stated reason is the need to implement a diverse mix of regulations that can address threats to the ecosystems. There is only very general guidance as to what this could mean in practice.

The purpose of the LME governance module is to formulate effective strategic interventions addressing the drivers of human activities degrading the ecosystem (Carlisle, 2014). Juda and Hennessey (2001) suggested that the characteristics of the governance system should be mapped and monitored in as it evolves, in parallel to the modules addressing the natural system. Despite these intentions, the socioeconomic and governance modules are “clearly the ones having received the least attention” (Rochette et al., 2015).

UNEP and the LME framework are clear on the purpose of having effective governance arrangements. They also describe the challenges involved in coordinating different levels and sectors in implementing a set of agreed measures. However, the guidance provided is not very specific. The UNEP guidelines identify a diverse menu of strategies consisting of watershed management across drainage basins and integrated coastal zone management, mostly at the landside, and marine spatial planning, marine protected areas and fisheries management in the oceans. The tasks and parties involved in the strategies raise different needs for governance arrangements. The guidelines give hardly any guidance on which approaches and methods may lead to successful outcomes under what conditions.

Participation and conflict resolution are other topics that would merit better treatment in such guiding frameworks. “There appears to be a firm belief in the simple idea that by bringing actors together and ensuring adequate information about the vulnerability of the ecosystems and the many benefits that healthy ecosystems provide, everybody will understand the urgency of conservation measures” (Arbo & Thüy, 2016). What happens when different interests appear and conflicts arise, merit investigation as a basis for further guidance. From other policy arenas, there is a large literature about stakeholders analysis and mapping (Pomeroy & Douvere, 2008; Reed et al., 2009), the problems of recognizing differences and reaching a consensus (Lewins, 2001; Ansell & Gash, 2008; den Broeder et al., 2016) and dilemmas arising between democratic ideals and practical constraints (Linke & Jentoft, 2016; Gregory, 2017). This illustrates that there is knowledge that could have been utilized to give more precise guidance.

2.7 The policy cycle and the planning process

The definitions of EBM are clear in statements about what is the key activity of the approach: the management of human activities that affect the ecosystem. This requires a basic understanding of the need to formulate and implement management measures. The assessment of ecosystems is a necessary step in the process since it establishes a diagnosis. However, the goals are not achieved until a treatment is prescribed and the patient is in good health, to use the analogy from Chapter 1. In order to make this operational, the frameworks should somehow relate to a standard policy cycle (Figure 4).

The first five elements of the Arctic Council framework relate to planning. The emphasis is on finding facts and making assessments. It is unclear if, and how, the framework intends to proceed also to formulate and adopt policy. The closest to formulating policy is the setting of objectives. Objectives and assessments are apparently meant to be sufficient to proceed to element six, in which “managers apply methods for shaping human behaviour that are adaptive” while being advised by scientists.

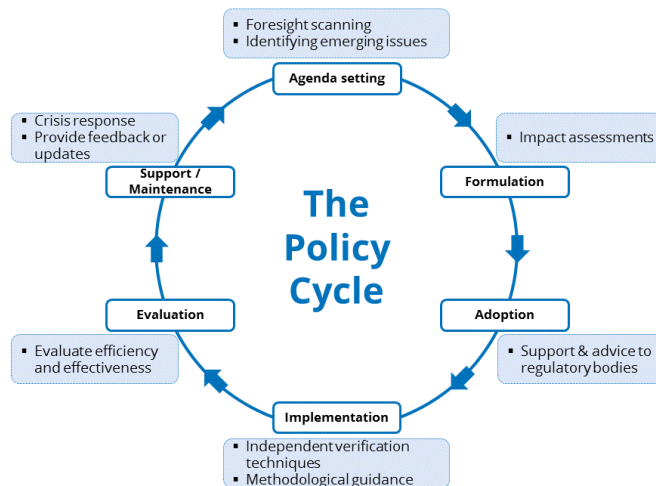


Figure 4: It is common to present the policy process as a sequence of steps, linked in a cycle that implies adaptive management through feedback processes. The blue boxes show different types of scientific advice. Source: Connors 2014.²⁶

The UNEP guidelines separate a planning phase from implementation. During planning, assessments and the setting of objectives are meant to be followed by the identification and evaluation of management options. These are called broad management strategies, and include marine spatial planning, marine protected areas and fisheries management. However, each of these strategies need new cycles of planning in order to designate concrete actions. Trade-offs should be analysed and decisions made, but

²⁶ Available at <https://blogs.egu.eu/geolog/2016/09/14/geopolicy-science-and-the-policy-cycle/>

it is unclear by whom. The guidelines consider the implementation phase as essential to avoid a situation wherein “EBM will remain a theory and not an actual practice”. However, the description of what to do during implementation is very brief.

The modular LME approach alone is hard to grasp as a tool for planning and implementation. The focus is on developing indicators for monitoring and assessment. First when the information from the modules is coupled with approaches from planning and policy-analysis, there is a chance of producing tangible results. GEF’s requirements for support do this by creating a logic sequence of actions for adaptive management (Sutinen & Hennessey, 2005). Standing alone, however, the five modules form a compartmentalized structure that does not facilitate the types of integrated assessment and actions that are required to bring about change (Mahon et al., 2009; Fanning et al., 2013).

The Arctic Council framework in practice promotes EBM primarily as a natural science initiative that creates facts combined with normative judgement.²⁷ There has been similar criticism of the LME approach (Mahon et al., 2009; Rochette et al., 2015). An evaluation of the GEF supported LME projects concluded that while they had generated a wealth of useful scientific information, relatively little had been achieved in terms of improved practices, new management actions and protection of priority sites (Bensted-Smith et al 2010). The UNEP guidelines, on the other hand, advocate the formulation and implementation of measures.

It is tempting to compare these frameworks with EU’s Marine Strategy Framework Directive, even though it is a piece of legislation created in a peculiar constitutional context (Box 4).²⁸ The point to make in this context is the structuring of the tasks in order to formulate a programme of measures that can achieve Good Ecological Status. The approach works in the sense that all European coastal states are obliged to follow the Directive under the control of the European Commission, which shall approve their implementation of critical steps. The cyclical nature of the Directive allows for adaptive management with learning and improvements in later cycles.

2.8 Ecosystem-based management and planning theory

EBM relies heavily on planning and decision-making. Underlying the practical side of how to proceed, addressed in the previous section, there are theoretical insights from planning and decision theory. Discussing how the academic literature on EBM relates to discussions in these traditions could have been the subject for a thesis in itself. Here I will make some straightforward observations. A first one is that there seem to be very few references to these traditions in the EBM literature. Kidd et al. (2011) is one exception.²⁹ Inspired by their description, I will look at issues of comprehensiveness, the role of experts versus stakeholders, and issues of power.

²⁷ Note also the fact sheets of the Arctic Large Marine Areas at <https://pame.is/index.php/projects/ecosystem-approach/arctic-large-marine-ecosystems-lme-s>. As of November 2018, they contained only biological information, nothing about assessments and management activities.

²⁸ See http://ec.europa.eu/environment/marine/eu-coast-and-marine-policy/marine-strategy-framework-directive/index_en.htm (source of the figure in Box 4) and http://ec.europa.eu/environment/marine/eu-coast-and-marine-policy/implementation/reports_en.htm (accessed November 2018)

²⁹ I deliberately restrict my observations to the EBM literature since I have the impression that planning theory do inform some of the discussions about marine spatial planning. As such, Kidd et al is in a borderline. The book

Box 4: EU's Marine Strategy Framework Directive



Fig 5: The content and timelines of the first cycle of marine strategy development. Source: EC²⁸

The Directive establishes European marine regions and requires cooperation between neighbouring states, preferably through regional seas conventions. Each coastal state is to develop a marine strategy that:

- Assesses the current environmental status of its marine waters, the impacts of human activities upon that quality, and the socio-economics of the uses of the waters.
- Determines what “good environmental status” means in relation to 11 criteria (“descriptors”).
- Sets appropriate environmental targets and associated indicators to achieve good environmental status (GES) by 2020.
- Establishes a monitoring programme for the ongoing assessment and regular update of targets.
- Develops a programme of measures in order to achieve good environmental status by 2020.

The EU Commission shall assess the programmes of measures, which are to be implemented by the member states. The strategies must be kept up-to-date and reviewed every six years. The second cycle started in 2018.

In the modernist tradition of the 20th century, a rationalistic model that drew upon science dominated the planning. One of its characteristics was the ideal of achieving a complete overview as a basis for rational decisions (Banfield, 1959). The planners should compile and analyse as much information as possible and develop all feasible alternative solutions to the planning problem, each to be assessed against a wide set of criteria. Based on clearly articulated goals, they could then calculate the optimal solution. Decisions were often associated with a top-down approach and a belief in command-and-control. The antithetic alternative to this was incrementalism, or the noble art of “muddling through”

is about the ecosystem approach, whereas Chapter 2, which contains this discussion at pp 43 – 54, mostly is about marine spatial planning.

in small steps in a flexible manner (Lindblom, 1959). This has the advantage that it requires neither a comprehensive overview, clear goals, holistic decisions nor control. However, the result would be floating with the currents, critics argued, unable to follow a long-term, desired course. Etzioni (1967) launched an early compromise with his mixed scanning, distinguishing between long-term strategic planning and short-term operational decisions.

Looking at EBM, it is not easy to position the whole tradition in this landscape. On the one hand, there is an ambition to achieve a comprehensive understanding of the ecosystem, often promoted by scientists. There are frequent references to knowledge gaps as obstacles to implementation (Knol, 2010a). Several authors have a strong belief in setting clear goals, and seem to believe in their ability to guide later developments (Leslie & McLeod, 2007; Cormier et al., 2017; Domínguez-Tejo & Metternicht, 2018). On the other hand, system thinking and theories of complexity in biology fostered views that it was not possible to understand and predict dynamic ecosystems. This led to ideas on the adaptive management of ecosystems (Holling, 1978), which is frequently referenced in the EBM literature.³⁰ Thus, many authors underscore that the lack of full information is not an excuse for lack of implementation (Murawski, 2007; Patrick & Link, 2015; Skern-Mauritzen et al., 2018). It is probably right to say that the EBM literature contains a tension between the willingness to decide and act, and the need to compile comprehensive data (see Paper 2).

The rationalistic tradition also had a strong imprint of science and expert knowledge as value-free. However, criticism from for instance environmental groups arose against the great modernist narratives about progress, which planning should assist in realizing. Planners were met by demands for open and inclusive processes that would recognize different values, ways of reasoning and positions to contested issues. Communicative planning was a reply to such demands and builds on deliberation and dialogue (Sager, 2013). One of its branches is collaborative planning, which is often strongly consensus-seeking. Negotiated consensus solutions between stakeholders, this tradition argues, will be more robust and implementable than top-down decisions made by governments (Innes & Booher, 1999). In such models for planning, the role of the planner changes from that of authoritative, neutral expert to facilitator of the processes.

Looking at the EBM literature, there is an inherent tension between these two roles (Kidd et al., 2011). There is a strong underlining of science as the basis for EBM, most notably, ecological science (Christie, 2011). However, science can also be put on the same footing as traditional and local knowledge, all viewed as different types of expert knowledge (Arctic Council, 2013). There seems to be almost universal recommendation of participatory approaches in the normative guidance for EBM, indicating that the traditional role of experts is not acceptable anymore. Exploring the balance in real situations should be one of the tasks for empirical investigations. A related issue is the relationship between experts and decision-makers. In a clear-cut rationalistic view, there is hardly a need for politicians; if the planners get enough information, they can objectively decide what is best. Even though this is seemingly not acceptable any more, it is remarkable to see how little attention some of the approaches above pay to political deliberation and decision-making. This is also the case in “integrated ecosystem assessment”, which has become a popular framework for scientific work related to EBM (Levin et al., 2009; Harvey et al., 2017). Its relation to political processes and public deliberation is

³⁰ It is a parallel to argumentation for adaptive approaches in planning theory due to uncertainty in understanding and predicting human society.

unclear. After an initial scoping workshop that sets the objectives, the rest of the work described is science alone.

Conflicts and power relations have been important issues in many planning debates. Participants in planning processes do not meet on an equal footing. Regulatory arrangements aimed at solving one problem tend to produce solutions that benefit the powerful (Young et al., 2018). Collaborative processes that should empower the weakest (Arnstein, 1969), may instead increase the influence of powerful groups (McKenna & Cooper, 2006). There was early criticism of EBM for neglecting politics and power (Slocombe, 1993). From my reading, this still seems to be a valid criticism of the later literature from the oceans. Regardless of the planning model preferred, studies of power relations offer an important dimension for understanding the outcomes of political processes. There is a rich tradition in planning theory as well as political sciences for theorizing about, and studying power relations in, planning and decision-making. Such insights should also influence the behaviour of planners (Sager, 2013).

2.9 Positioning EBM in the ocean management landscape

The UNEP guidelines refer to EBM in relation to other approaches to ocean management. This merits more discussion. In Figure 6, I have placed EBM, including any sectoral approach, in the context of some other approaches mentioned above.

Integration may mean many different things in different policy contexts. Underdal (1980) proposed three general requirements for a policy to qualify for the term: it should be comprehensive by integrating issues and actors over wider geographical areas with a long-term perspective; it should base decisions on an overall evaluation of policy alternatives, not on individual perspectives; and it should aim for consistency across different policy levels and sectors. Sustainable development is an ambitious attempt to integrate along all of Underdal's requirements (Birmie et al., 2009). Its three pillars integrate development and environmental protection, from global to local levels. It aims at equity by balancing wealth differences today and by taking future generations into account. It requires integrated assessments for evaluation and integration into all policy sectors (Runhaar, 2016; Persson et al., 2018). The integration of ocean management for the purpose of sustainable development may therefore be considered an upper integrative level of ocean management ambitions (Figure 6).

As referred to above, EBM may be seen as an attempt at integration whose main focus is on the environmental pillar of sustainability. The social and economic pillars may be facilitated by other policy instruments and sectoral policies, such as Blue growth. However, EBM does not disregard social and economic dimensions, as can be seen from the definitions and recommendations above. The extent to which it incorporates them may represent a gradual transition towards integrated management. While this may be clear at a conceptual level, it may be hard to draw sharp lines in practice. For instance, Norway bases its ocean policy on EBM, while Canada's Oceans Act aims for integrated ocean management. Nevertheless, the Norwegian management plan for the Barents Sea contained at least as much socioeconomic information as the Canadian plan for the Grand Banks/Placenta Bay, and the 2020 revision aims at including more. Both plans, however, have a solid foundation in assessing and setting objectives for the marine ecosystem (see Paper 3).

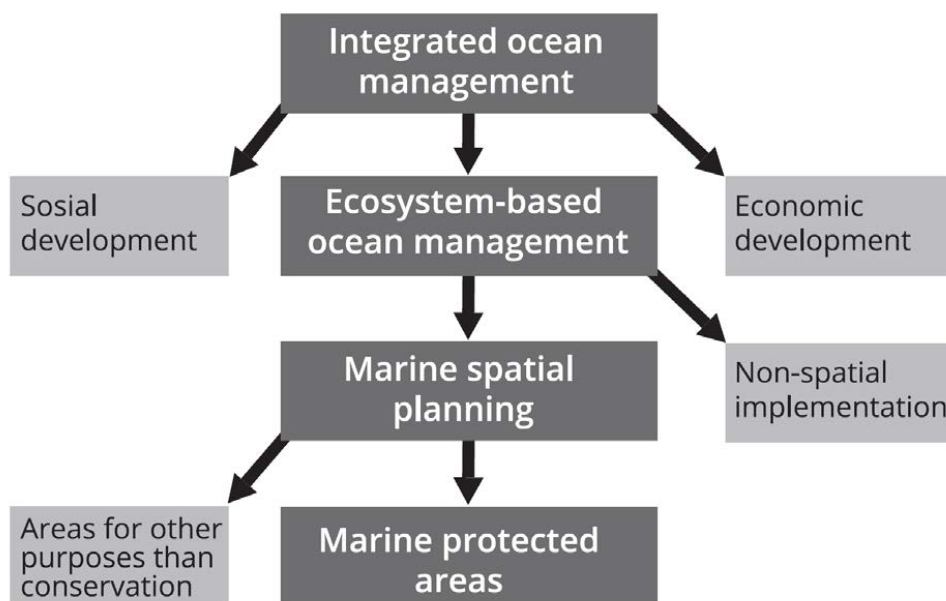


Figure 6: The relation between EBM and other marine management approaches or frameworks.

EBM can be implemented by non-spatial as well as spatial approaches. Examples of mostly non-spatial approaches are pollution abatement, setting of quotas and technical regulations in fisheries, climate change mitigation and climate adaptation policies. For spatial implementation, marine spatial planning is a prominent approach (Douvere, 2008; Ehler & Douvere, 2009). Some authors try to make the link even stronger by advocating “ecosystem-based marine spatial planning” (Gilliland & Laffoley, 2008; Katsanevakis et al., 2011; Ansong et al., 2017). However, marine spatial planning can also contribute to achieve a broader range of objectives, such as maximizing the economic opportunities presented by the sea (Jay et al., 2013). The distinction from EBM may be conceptually clear, but again, reality may be more complex. For instance, several authors have categorized the Barents Sea management plan as marine spatial planning (Ehler & Douvere, 2010; Collie et al., 2013; Jay et al., 2013; Domínguez-Tejo et al., 2016). While it surely is a case of EBM, it is a matter of definition if it is also a case of marine spatial planning, since there is no comprehensive, cross-sectoral system for such in place. The same authors neglect that in the coastal zone, Norway has a cross-sectoral system for spatial planning as an extension of comprehensive land use planning (Johnsen & Hersoug, 2014). This is not ecosystem-based; there are no requirements to proceed according to EBM and no formal connections to the management plans in the oceans. Some may therefore prefer to call it ocean zoning or allocation of ocean space as technical concepts, stripped from the normative content of marine spatial planning definitions.

Marine spatial planning may allocate marine space for many purposes, one of which is the many-faceted category of marine protected areas (Cicin-Sain & Belfiore, 2005). There may also be designation of marine protected areas because of separate planning and decision-making processes. Allocation of

such areas has received much attention in recent years. One of the drivers is CBD. Its Strategic Plan for Biodiversity, adopted in Aichi in 2010, contains a target saying that 10 per cent of coastal and marine areas shall be conserved through well-connected systems of protected areas and other effective area-based conservation measures (Target 11).³¹ The plan does not refer to EBM, under either rationale, goals or mission, despite it once being CBD's primary framework for action (see Section 2.2). Among the 20 Aichi targets, there is one single reference to "ecosystem based approaches", related to marine harvesting (Target 6). EBM seems to remain only as a high-level ambition, not anything to implement in practice. One can observe the same shift at the national level. The top priority in Canadian ocean policy is to achieve Aichi Target 11, while the legislated ambition of integrated ocean management in practice has been abandoned (Paper 3). Australia also has left an integrated and ecosystem-based ocean policy for the traditional sectoral approaches, and a narrower focus on conservation issues and designation of marine protected areas (Vince et al., 2015). These examples illustrate how some of the former frontrunners in EBM have shifted their attention from the top of the ladder to the bottom in Figure 6.

Marine spatial planning "is increasingly seen as a practical, operational approach to implement rather vague notions of marine EBM" (Ehler & Douvère, 2010). Similar reasoning may have contributed to the shift towards marine protected areas. It is hard for any jurisdiction to be equally strong on all levels of the ladder in Figure 6; there may be good reasons for focussing efforts on any level, depending on the needs, context and resources available.³² However, one should be conscious about the fact that integration and possibilities for solving several issues are lost when approaches with a narrower focus replace those with a broader view. By moving from EBM to marine spatial planning, there is a risk of losing the links to ecosystem considerations and non-spatial approaches for solving ecological problems. If marine spatial planning simply concerns the zoning of physical ocean space, it may primarily be a vehicle for introducing new industries into the oceans, such as aquaculture (Johnsen & Hersoug, 2014) or offshore wind farms (Jay, 2010b), without creating too much conflict with other interests. Similarly, marine protected areas on their own are insufficient for marine conservation unless implemented within a broader place-based management system (Jay et al., 2013). Like the argument about encircling parts of nature into reserves on land (see Chapter 1), it is even more important in a fluid ocean to ensure adequate protection of species and ecosystems outside reserves (Allison et al., 1998). Moreover, designating such areas are frequently considered as a sectoral approach for conservation (Vince et al., 2015). Thus, there is a risk that planning for marine protected areas in separate processes, particularly if in a rush to reach a quantitative target, may lead to conflicts, loss of legitimacy and solutions that undermine the conservation objectives (Agardy et al., 2016; Gray et al., 2017). Making EBM synonymous with marine protected areas has been called "the most widely held misconception regarding ecosystem-approaches" (Murawski, 2007).

³¹ The Johannesburg Plan of Implementation from Rio contained commitments to establish national networks of marine protected areas by 2012. This was not met (Jay et al., 2013). Aichi target 11 thus is a renewal and concretization of prior commitment, with 2020 as the new time horizon.

³² The EU has developed policy or legislation for all the elements in Figure 6: the Integrated Maritime Policy creates a coherent overarching framework. The Marine Strategy Framework Directive containing EBM is often termed its environmental pillar. The Maritime Spatial Planning Directive sets minimum requirements for marine spatial planning. The Habitats Directive and the Birds Directive mandate the designation of marine protected areas. Thus, the European coastal states have legal and/or policy incentives to implement at all levels.

3 The role of environmental assessments in ecosystem-based management

The review of the World Ocean Assessment in Chapter 1 illustrates how environmental problems arise from an array of societal sectors (UN, 2016). The integration of environmental objectives into the policies and practices of those that cause environmental degradation has played an increasingly important role since the publication of the Brundtland report in 1987 (Persson et. al 2018). A large number of policy tools are in use to achieve environmental policy integration, or “mainstreaming of the environment”, as it is also referred to (Runhaar 2016). Environmental assessments, containing both environmental impact assessment (EIA) and strategic environmental assessment (SEA), are process-oriented tools that work through the provision of environmental information to decision-makers. Central to their functioning is that they try to anticipate the impacts of different types of initiatives. The rationale is that it is better to prevent harm than to repair the negative consequences (Glasson et al., 2012).

3.1 Different assessments and ecosystem-based management

The origin of EIA and SEA is usually traced back to the adoption of the US National Environmental Policy Act in 1969 (Glasson et al., 2012, pp. 32 - 40). The Act required a detailed statement on the environmental impact of proposals, on any adverse effects that cannot be avoided, and on alternatives to the proposed action. The statement should be prepared in a systematic, interdisciplinary manner and made available to the public. This initiated an international diffusion of EIA. However, other states have shied away from certain traits of the US form, not least because of the extensive litigations that have followed over the interpretation and workings of the system (ibid).

Over the years, there has been a proliferation of assessment tools. For an overview, one can distinguish between:

- The subject of assessment and the related assessment tools (level of assessment).
A distinction is drawn between concrete projects and strategic initiatives that are usually referred to as policy, plans and programmes. The different natures of these require different tools for undertaking assessment. Projects are assessed using EIA and related approaches. SEA is a broad family of tools for assessing strategic initiatives (Sadler et al., 2010).
- What types of impact to include in the assessment (thematic scope of assessment).
SEA and EIA, by definition, cover environmental impacts. These can comprise effects on the biophysical surroundings alone, or include wider types of impact (Morgan, 2012). A number of specialised assessment tools have emerged according to the types of impact they cover.³³ Instead of splitting up assessments according to type of impact, one assessment may also integrate all relevant impacts.
- National (domestic) or transboundary assessments (jurisdictional scope of assessment).
Assessments may cover only impacts in the state where the initiative is located, or include

³³ Examples include social impact assessment, health impact assessment, cultural and historical impact assessment, climate change assessment, biodiversity assessment, technology assessment, trade assessment, regulatory impact assessment, human rights impact assessment, cultural impact assessment, post-disaster impact assessment and gender analysis (Morgan, 2012).

extraterritorial impacts on other states or areas beyond national jurisdiction. Specialised assessment tools are available for transboundary assessments at both project and strategic level.

All these forms of assessments are relevant to EBM. Firstly, SEA is relevant in the preparation and final assessments of strategic initiatives, such as EBM. SEA is also a tool for regional assessments, which place-based EBM requires. In a sequence of assessments, EIA comes at a later stage in the following-up of strategic EBM initiatives. Secondly, in Chapter 1, I argued that EBM requires integrated assessments. I wrote that they should *somehow* include integration across the three pillars of sustainability. The reason is the distinction between integrated management for sustainable development and EBM (see Section 2.8). This has its parallel in the distinction between (fully) integrated assessments and environmental assessments. Building up integrated assessments may occur in many stages, from narrower to broader assessments (see example in Figure 7). Thirdly, transboundary assessments are highly relevant in the fluid oceans, probably even more than on solid earth.

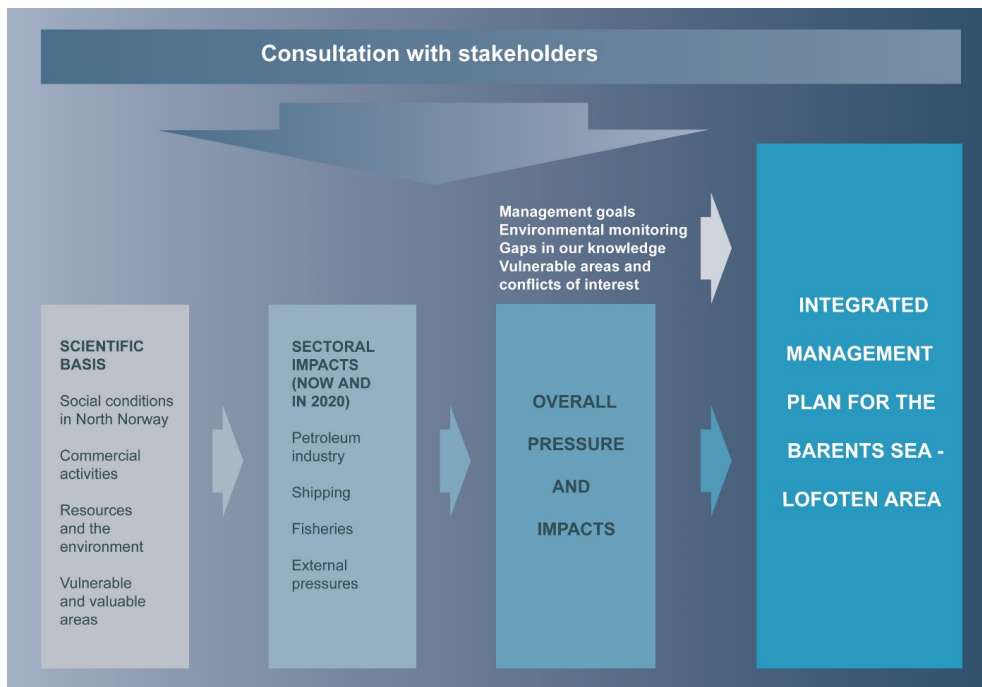


Figure 7: The preparation of the Barents Sea management plan was informed by SEAs for individual sectors, which were later combined in an assessment of cumulative impacts from all sectors. (Ministry of Environment, BSMP 2006)

A UN report that assessed marine assessments, categorized them according to a distinction between status and trend assessments, impact assessments and response assessments (UNEP & IOC-UNESCO, 2009). This cuts across the three categories above.³⁴ A common recommendation for EBM is to start

³⁴ As an example, a strategic-level assessment may contain status and trend assessment, impact assessment and response assessment. Readers of the «assessment of assessments» report should be aware of the context in which the Group of Experts wrote these definitions. The mandate from the UN General Assembly was to take stock of

with an assessment of the ecosystem (see Section 2.4). One way to do this is to assess the status and trends of ecosystem components and integrate the findings across the whole ecosystem. In its pure form, such an assessment would contain no information about what explains the observed status and trends since it would not make the links to human activities and their impacts on the ecosystem. Impact assessments, on the other hand, starts with an initiative – a policy, programme, plan or a project – and assess its impacts on the ecosystem. However, EBM requires a diagnosis to be set for the state of the ecosystem. A pure status and trend analysis of the ecosystem therefore has limited relevance: assessing impacts and their significance is required too. At this, the distinction from the classical impact assessment is blurred and of little relevance for EBM. However, the legal trigger for impact assessments is an initiative for a policy, plan, programme or a project, not anything related to the ecosystem. This creates an important distinction as regards legal assessment obligations, and may be the source of subtle nuances in what and when to assess in a planning process.³⁵

Response assessments can assess to what extent measures aiming to avoid harm, or enhance benefits, actually achieve this. An environmental response assessment requires multidisciplinary collaboration (Christie, 2011). Broadly speaking, there is a need to identify cause – effects connections in two steps. The first step involves understanding how the policy instruments of governments (or private entities) influence the behaviour of target groups (Bemelmans-Videc et al., 1998; Lascoumes & Le Gales, 2007). Instruments can be positive incentives as well as sanctions, and include information, economic means or legislation. In the context of EBM, a target group will typically be owners and employees in maritime industries, or others engaged in activities that more indirectly affect the marine environment. The second step is to assess how changes in the target group’s behaviour leads to changes in the marine environment.³⁶ These two steps must be combined in order to appraise whether a programme of measures is likely to improve the environment (ex-ante assessment), or whether it has done so after being implemented (ex-post evaluation). The first step is typically the domain of law, economics and social sciences. The second step is the domain of the natural sciences.

Despite the apparent relevance of environmental assessments to marine developments, authors promoting integrated ecosystem assessments seem to pay no attention to the wider assessment literature (Levin et al., 2009; Samhoury et al., 2014). Like a mirror image, the academic and professional community specializing in assessments seldom considers marine assessments.³⁷ Thus, the situation seems

assessments that could serve as the basis for a regular process of what would become the World Ocean Assessment (see Chapter 1). The order from the UN General Assembly was that the regular process should include socio-economic aspects. The reasoning in the report on assessment terminology therefore points in the direction of fully integrated sustainability assessments.

³⁵ Status of the (marine) environment reports often assess status and trends, identify impacts and their significance, and conclude with a suggested programme of measures. This line of assessment is highly relevant for EBM. While the status and trend analysis and impact identification may not be the subject of a mandatory assessment obligation, a suggested programme of measures typically will be. That would be an initiative for doing something and will require an SEA, or trigger EIAs if the suggested programme also contains concrete projects.

³⁶ A number of end-points for analysis can be defined. Here I refer to outcome in the model of Søren Winter, see section 4.3 and Papers 2 and 3.

³⁷ A review of SEA literature by Fischer and Onyango (2012) found that some attention had been paid to fisheries, but no other marine industries or topics. Another indication is that the International Association for Impact Assessments, which organizes this group of professionals, hardly addresses marine assessments at its annual

like another illustration of how the marine community ends up building its own traditions at sea (Jay, 2010a). There are at least two reasons for trying to close the gap between marine assessments and the wider assessment community. Firstly, there are obvious possibilities for learning and collaboration across different scientific traditions and the land – ocean divide. For instance, there have been extensive discussions about the theoretical foundations of impact assessments since the late 1990s, reflecting theories of planning and decision-making such as those referred in Section 2.7 (Fundingsland Tetlow & Hanusch, 2012; Morgan, 2012). Another example is the problems EBM has in moving from assessing the ecosystem to formulating programmes of measures, in which SEA can play an important role (see below). Secondly, there are legal norms relating to SEA and EIA that have relevance for land as well as oceans. This legal assessment regime is in evolution. It has bearings on assessment requirements in EBM today, and may have even more in the future (Sander, 2018).

3.2 The role of strategic environmental assessments

EIA evolved some 20 years before SEA and has a more solid position in international norms and practice (see Paper 1). However, it is SEA that has most relevance for EBM, most obviously because EBM is a strategic approach. SEA covers a broad family of different tools with different names, forms and areas of application (Dalay-Clayton & Sadler, 2005; Fundingsland Tetlow & Hanusch, 2012). Among its origins are policy analysis and planning, which were increasingly driven by sustainability concerns. Another driver was the problems with the narrow, project-specific focus of EIA. Prior to a project, there will be higher-level decisions that set the course for later developments. Such decisions need to be informed by environmental analysis in the same manner as project-level decisions. Instead of trying to fix problems in the final phases of a chain of actions, the idea was that “upstreaming” of the environment into earlier phases would be more proactive in addressing root causes. There also was a perception of project level assessments being inappropriate for addressing cumulative impacts from many projects and large-scale environmental change, such as climate change.

The idea that planning and decision-making occur in different tiers, or levels, has played an important role in the evolution of SEA. It was recognized early that distinct types of assessment tools are needed for different tiers. Policies and legislation are usually considered as the upper, most strategic tiers (Sadler et al., 2005). National frameworks for EBM are a prominent example. States apply a diverse set of tools, of a very different nature from EIA, in assessing policies.³⁸ As a contrast, procedures for assessing plans and programmes are mostly extended versions of EIA, including in international legislation. Another implication of tiers relates to the implementation of strategic initiatives. This can be achieved when processes are deliberately linked by transferring information and issues from one level to another, referred to as “tiering” (Morrison-Saunders & Arts, 2004; Arts et al., 2011). For example, it is expected that cross-sectoral, strategic EBM plans should have bearings on lower level plans and activities in sectors. However, attempts to link can also move upwards when detailed planning reveals the need for strategic initiatives, and horizontally at the same level. A Norwegian example of three decision-making processes at approximately the same level, are the EBM-based management plans,

conferences (see the topics at <http://www.iaia.org/annual-conference.php>). Similarly, in two specialized assessment journals, Impact Assessment and Project Appraisal and Environmental Impact Assessment Review, there are long intervals between each time an article from the marine realm appears.

³⁸ The Norwegian version is *Utredningsinstruksen* (Instruction for official studies). See English guidance on the 2016 update in DFØ (2018). Due to the Instruction, all Norwegian white papers have a final chapter that sets out the relevant impacts of the proposals.

strategy policy documents for the petroleum sector, and the political platforms of coalition governments. The interplay between these decision arenas, each involving the cabinet and the political parties, gives strategic guidance to a cascade of later decisions, ultimately determining the environmental impacts of offshore petroleum activities.

“Policy”, “plan” and “programme” are shorthand terms for very different initiatives operating in diverse contexts. The need for SEA to be fit for purpose in these complex settings has become something of a mantra (Fundingsland Tetlow & Hanusch, 2012). This has spurred a major shift away from the understanding of SEA as essentially the same as EIA, only applied to different types of initiatives (Partidário, 2015; Noble & Nwanekezie, 2017). EIA has the reactive role of appraising final project proposals for their impacts, offering no possibilities to influence the planning processes that develop the proposals. Its assumed effect is based on the rationalistic assumption that more and better information leads to better decisions, which thereafter may lead to modifications in the project. An alternative view applied to SEA is that it should work proactively in the earliest possible stages of planning, exploring and assessing options and alternatives by means of a broad set of methods and approaches. The purpose is to ensure that environmental and sustainability considerations are taken into account in the initiatives being prepared.³⁹ SEA should be strategic, not because it focuses on higher level initiatives, but because it should focus on strategic decisions and try to influence them (Noble & Nwanekezie, 2017). The integration of assessment, planning and decision-making has thus been viewed as the key to success for SEA. The question is how to achieve this in practice (Fundingsland Tetlow & Hanusch, 2012).

Assessing and managing cumulative impacts is a major rationale for EBM. The assessment part of this has received considerable attention in the assessment community at least since the mid-1980s (Connelly, 2011). However, despite the efforts, understanding remains weak and progress slow (Sinclair et al., 2017). A recurrent theme has been that cumulative impacts are best addressed on a larger scale than in EIA of individual projects. Regional (environmental) assessment has therefore been advocated as a special form of SEA, partly based on experience from the oceans (Gunn & Noble, 2009; Baker & Kirstein, 2011; Fidler & Noble, 2012; Willstedt et al., 2017). Such assessments may cover the impacts of one sector with all its projects and activities upon the defined geographical area, or include all relevant sectors. In the ocean communities, on the other hand, EBM and marine spatial planning have spurred a proliferation of efforts to characterise and map cumulative impacts since the mid-2000s (Halpern et al., 2008; Halpern & Fujita, 2013). Meta-studies indicate that ecosystem responses to multiple stressors tend to be non-additive and non-linear, meaning that surprises and possible regime shifts may occur (Crain et al., 2008; Darling & Côté, 2008; Kraberg et al., 2011). Scientists have made progress in methods and tools to quantify and map cumulative impacts on global and regional scales in a standardised, comparable manner. However, there is insufficient reflection on the

³⁹ This view of SEA has influenced international law. The SEA Protocol to the Espoo Convention states that its objectives is to *ensure* that environmental and health considerations are «thoroughly taken into account *in the development of plans and programs*», whereas it shall *contribute* to the consideration of such concerns «*in the preparation of policies and legislation*» (art 1a and b, italics added). By these means, environmental concerns including health are to be *integrated into measures and instruments* designed to further sustainable development (art 1e). The softer requirement towards policies and legislation reflects that the formal application of SEA on policies and legislation was controversial during the negotiations of the Protocol. EU’s SEA directive art 1 also aims at integration of environmental considerations into plans and programs (Sadler et al., 2005).

possible linkages to different planning and decision-making contexts, which is a topic extensively discussed in the assessment literature. The common interest in assessing cumulative impacts on a regional scale should be a good basis for collaboration across the traditions.

3.3 The role of environmental impact assessment

EIA assesses concrete projects, which may come late in a policy process. With successful tiering, EIA can function as a tool for following-up strategic EBM plans that have been informed by SEA. EIA may be required in many phases of a project's life cycle. For example, the Norwegian Petroleum Act requires strategic, regional assessments prior to decisions that may lead to the opening up of new areas for the industry (Jakobsen, I., 2013). Later, EIA is required prior to the development of oil and gas fields and for decommissioning installations (Jakobsen, M.Z., 2013). Extensive environmental management systems and monitoring are also required. However, requirements for which marine activities must undertake EIA and SEA are highly variable across sectors and geographical areas, as pointed out in Paper 1.

4 The implementation problem

Despite the support from the UN system and other international organisations, implementation of EBM has been slow. An in-depth review by CBD in 2008 concluded that “the ecosystem approach is not applied systematically to reduce the rate of biodiversity loss, but there are many examples of successful application”.⁴⁰ A similar evaluation of the implementation of EAF in 33 countries found that no countries were rated “good”, while over half received “fail” grades (Pitcher et al 2009). Despite much guidance, most countries did not meet their commitment to implement the approach for all their fisheries by 2010 (Fletcher & Bianchi, 2014).

Regarding the Marine Strategy Framework Directive, the European Commission recently assessed 16 EU member states’ programmes of measures (European Commission, 2018). The assessment demonstrates that the likelihood of actually achieving good environmental status varies considerably between descriptors (Figure 8) and states.

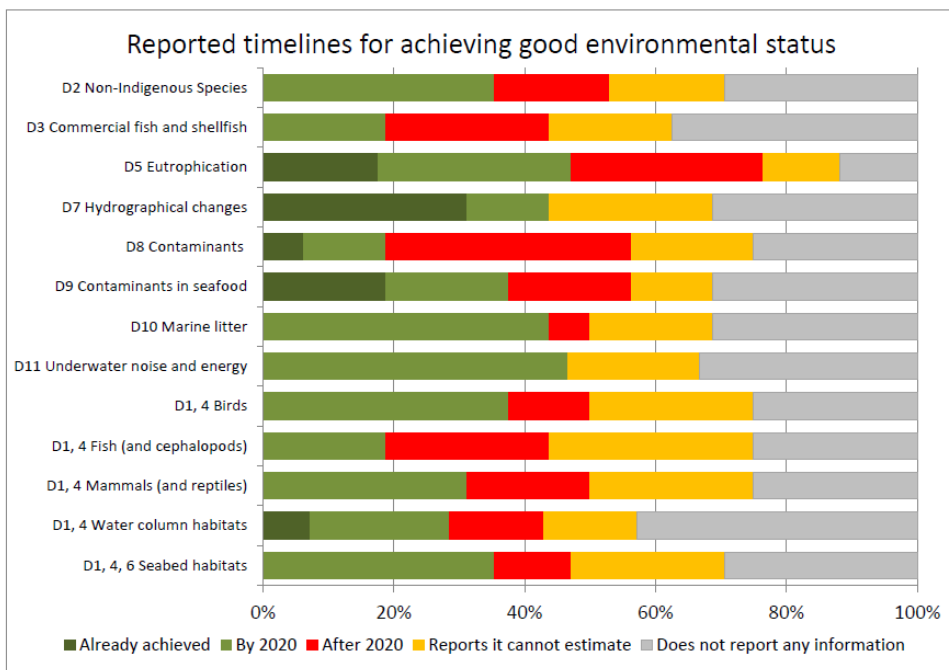


Figure 8: *Timelines for achieving good environmental status on selected descriptors, as reported by the EU member states (European Commission, 2018).*

⁴⁰ The evaluation was made by the Subsidiary Body on Scientific, Technical and Technological Advice, see report from its meeting in Bonn in May 2008, available at <https://www.cbd.int/doc/meetings/cop/cop-09/official/cop-09-02-en.pdf> (accessed November 2018).

4.1 Discussions about EBM implementation

The slow implementation of marine EBM has prompted discussion about why this is the case. One of the questions raised is whether the concept itself has become sufficiently mature. A forceful contribution in this debate was Steven Murawsky's repudiation of ten myths that in his opinion had "surfaced as arguments to delay, constrain or oppose implementation" (Murawski, 2007). Among these were the supposed lack of definitions, principles and good practices, and the allegation that the concept itself was too difficult. Murawsky argued that there should be no need for a revolutionary paradigm shift in management institutions and science support, as called for by some authors (Grumbine, 1994; Berkes, 2012). An evolution of existing practises and institutions would be the way to go, and this process had already started. At the same time, the article identified management challenges, such as the opposition from sectoral governance institutions to share power, the problem of evaluating and harmonizing conflicting agendas, and the political system's reluctance to make decisions in controversial and uncertain circumstances. Eight years later, two other NOAA scientists argued that several impediments to EAF had been resolved (Patrick & Link, 2015). Some remaining myths that they rejected, were that EAF is not applicable in data-poor conditions, that it leads to lower quotas and too restrictive regulations, that it cannot tackle multiple objectives and different interests rationally and that it would be too expensive. Their basic assertion was that implementing EBM is feasible with information, tools and approaches that are currently available (see also Tallis et al., 2010).

However mature, it is a challenge to apply an approach that is full of inherent policy paradoxes (Cortner & Moote, 1999, pp. 57 - 72), or tensions that need to be balanced. Some of the paradoxes are related to decision-making. Like the discussions in planning (see Section 2.8), they concern the role of experts and the way to combine long-term consistency needed in EBM with flexibility and adaptation to new circumstances. Other issues relate to how conflicts can be addressed, and who has the authority to make decisions when management becomes inclusive and collaborative. There are also paradoxes related to scale, such as the centralization or decentralization of management responsibilities, and the short-term political agendas versus the long time-lags needed to see the effects of human interventions. Finally, paradoxes of sustainability involve the inherent tensions between economic development and environmental protection. Similarly, Engler (2015) argues that EBM deliberately has been kept open and unclear in order to get support from groups with opposing interests, and in order to fit into different contexts (see also Yaffee, 1999). Objectives also become unclear because of unclear definitions of the terms that should define desired states of the ecosystem, such as health, integrity, resilience and ecosystem services. Following the arguments of these authors, one may still argue that EBM is ready for implementation. However, the concept is open to different interpretations, and there is a need for balancing different interests. Doing this is a political process. Studying implementation of EBM therefore inevitably must involve studying political processes.

4.2 Prior studies of implementation

There is a difference between studying the implementation of EBM per se and studying implementation of concrete plans applying EBM, though there are connections. Studying the implementation of EBM per se can be a complex undertaking because it is an example of an idea that migrates internationally, gets translated and adapted differently. Such processes have been studied in various policy sectors as policy diffusion (Simmons et al., 2006), policy transfer, or policy borrowing and lending (Sahlin-Andersson & Engwall, 2003; Steiner-Khamsi, 2012). Learning and emulation are probably the

most relevant mechanisms in the case of EBM (Simmons et al 2006). States are no longer the only actors, but operate aside a plethora of non-state actors at all levels (Abbott & Snidal, 2009). Thus, frameworks for EBM may be implemented by many actors at any level, in processes involving a standard policy circle (Figure 9).

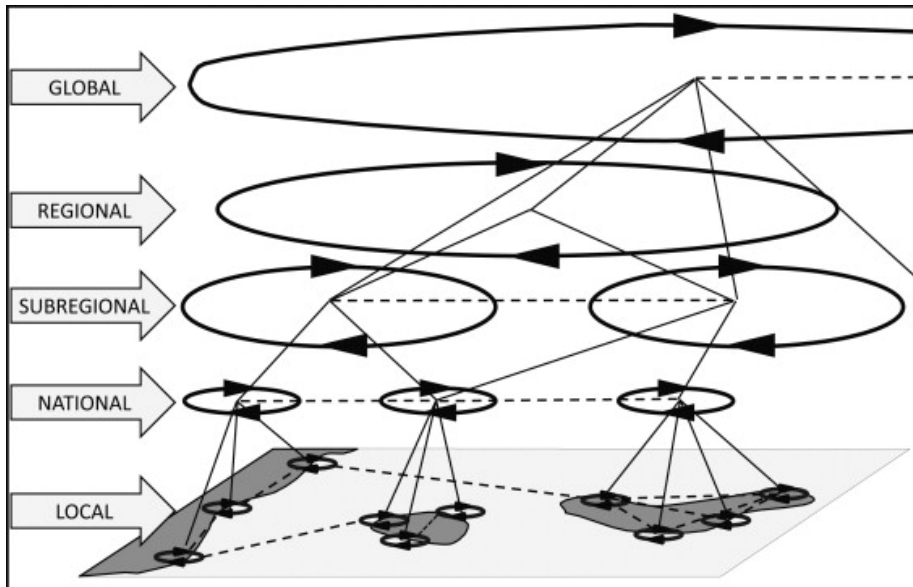


Figure 9: A governance framework developed for the Caribbean LME region illustrates how decisions are made and implemented at different levels (policy cycles). These are interlinked, with impulses potentially going in all directions (Fanning et al., 2007, 2013).

The sovereign national state, however, is the basic unit of the international system. The result of implementing EBM at this level would be the adoption of a national law and/or policy framework for EBM (see Papers 2 and 3). Mandates should be allocated, procedures devised, and national waters may be divided into management areas. The further implementation of the national policy will include new policy circles in the designated management areas, each with assessments, formulation of policy interventions, decisions and implementation. Plans for larger ocean areas, which is the focus for my research, will often be strategic. The implementation of strategic plans may include new planning and decision-making processes (cf. the concept of tiers in Section 3.2), which finally may conclude with the designation of concrete measures. All that has been described so far, however, is still “EBM on paper”. First when concrete measures are put into action in what may be termed a final implementation process, there is a possibility of actually having implemented something that may lead to improvements in the state of the ecosystems.

The normative literature on EBM, which defines the concept and discusses possible approaches, is a necessary phase in the evolution of a relatively new approach. With more attempts to implement EBM, there will also be possibilities for empirically testing such recommendations. Christie et al. (2009) contended that “the shift toward EBM has proceeded largely on theory with little analysis of field efforts”. The question is if analyses of practice has improved later so the advice may be better.

For understanding planning for large ocean areas, there is much background information in studies undertaken at the regional and national levels. Such literature may also contain experience from planning for concrete ocean areas (Christie et al., 2009; Fanning et al., 2013; O'Higgins et al., 2014). Several comparative analyses have been undertaken (Juda, 2003; Hoel, 2008; Rosenberg et al., 2009; Cicin-Sain et al., 2015), often ending up with recommendations. Rosenberg et al. (2009), for instance, suggested a framework for implementation, consisting of strong political leadership, a hierarchy of objectives, defined planning and management regions, and a monitoring and management review process.

There is also a rich literature addressing EBM applied to large ecosystems. Hartig et al. (1998) is an early example that summarised experience from ecosystem-based planning in the Great Lakes between the US and Canada. The article is interesting in the context of this thesis because it focussed on remedial action plans and provided advice in eight points on what could contribute to effective implementation. However, much of the literature from marine applications do not build on such post reflections of results. Arkema et al. (2006) studied 49 management plans with the purpose of evaluating to what extent they lived up to definitions of EBM, not what were the results. It is common to report about methods and approaches applied during the preparation of plans (see referendes in Paper 2 and 3), or the results of planning (von Quillfeldt et al., 2009; Backer et al., 2010). Unless followed up by later studies, we miss the information about the possible later implementation processes, the results thereof, and the linkage between the approaches chosen and the results. Studies that focus on processes contain a similar problem. Wondolleck and Yaffee (2017) presented case studies from the US systematically according to five types of initiatives varying in scale (transnational to local) and type of initiative (regulatory, non-regulatory, top-down, bottom-up, community-based).⁴¹ The book ends in a set of interesting, practical advice to participants in EBM processes. However, there is almost no information about how the processes described in the cases actually may have contributed to solving ocean problems. It is also questionable whether all the cases are cases of EBM. Smith et al. (2017) also provide a structured presentation of Australian cases, varying in spatial scale and levels of governance. They conclude the discussion with key learnings and necessary components for better implementation of EBM as such.

A main impression from reading literature about the implementation of EBM is that most of it is concerned about conditions for the implementation of the approach per se. There are many recommendations for what to do in order to implement EBM successfully, also based on comparisons of countries and cases. A question that most authors leave unanswered, is how general such recommendations are: what are the conditions under which they apply? Moving to planning and implementation of policy measures in concrete ocean areas, there still seem to be few studies linking approaches and methods to the evaluation of results after implementation of policy measures. It might still be too early for such studies to appear. Another reason may be that there is no joint research platform for implementation studies that can lead to cumulative results.

4.3 Theoretical framework

My interest in seeing practical results of EBM led me to implementation theory early in my research process. The implementation literature may leave an impression that implementation studies were an

⁴¹ The book presents just a selection of cases they have investigated, see <http://webservices.itsc.umich.edu/drupal/mebm/?q=node/68> The web site presents cases from different parts of the world, though there is still a pre-dominance from the US.

intellectual fad that went out of fashion after having gone through three stages of development (Winter, 2012; Hill & Hupe, 2014; Offerdal, 2014). The first phase in the 1970s was characterised by explorative, mostly descriptive studies of single cases. The most famous of these was ‘Implementation’ by Pressman and Wildavsky (1973/1984). In the second phase, attempts for theory development and guidance for research resulted in confrontations between top-down and bottom-up perspectives. The third phase aimed at synthesis in a general theory of implementation by the use of more quantitative analyses of explanatory variables (Goggin et al., 1990). This proved futile, and the tradition seemed to be out of fashion and allegedly dead by the turn of the century. Sætren (2005), however, found an exponential growth in the number of journal articles on implementation, but in journals other than what he termed the traditional core of political science, public administration and public policy. Instead, implementation studies had moved into the journals of primarily health and education, as well as law, environment and economics. Sætren also nuanced the conventional story by tracing the origins of implementation studies back long before the 1970s, though often studied under other names and from different angles.

Oceans did not appear on Sætren’s list. A more specific search in the database that he had built up resulted in just a handful of ocean studies related to implementation.⁴² My own literature searches also were mostly in vain. Thus, it seemed that I had no theoretical basis apart from the general implementation theory to build upon. However, Sætren advised me to apply a framework for implementation studies developed by Winter (Figure 10).

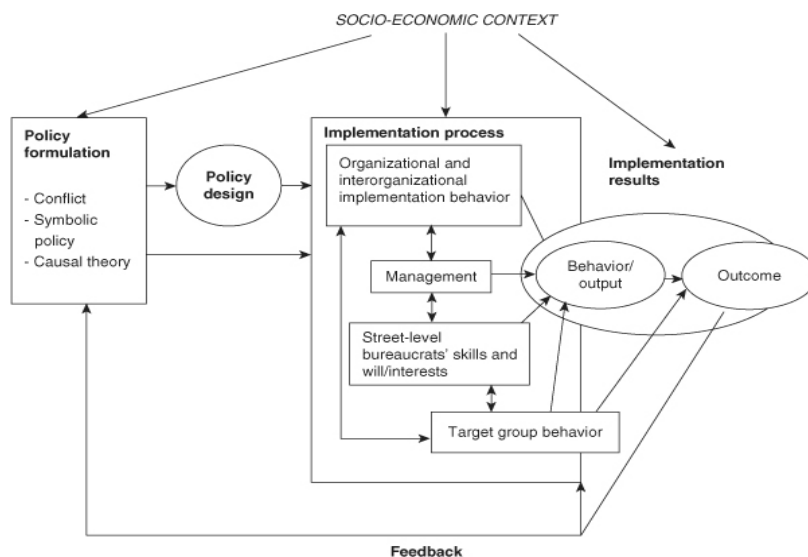


Figure 10: Winters framework for studies of implementation (Winter & Nielsen, 2008; Winter, 2012)

Papers 2 and 3 explain the framework. Briefly summarised, the purpose is to explain the results of implemented policies, which may have been formulated in plans. The results can be measured as *output*,

⁴² Harald Sætren, personal communication.

referring to the actual regulations and services put into practice. Alternatively, the impacts of the policy can be traced further towards *outcome*, which refers either to the extent to which the goals of a plan have been achieved or to the extent to which the problems motivating it have been solved. In order to explain these results, the whole policy process must be considered, not the implementation process alone. *Policy formulation* covers the agenda setting, scientific advice, formulation of policy responses, public debates and, finally, the adoption of a policy. *Policy design* focuses on the characteristics of the adopted policy, most fundamentally on whether the means makes it likely to meet the ends. The *implementation process* covers the activities of usually several organisations to put the policy into practice. All these processes occur within a certain socio-economic and political *context*.

It is noteworthy how Winter's framework tries to overcome previous stalemate positions and problems in implementation theory. Firstly, it was an attempt to build a bridge between the striding factions of top-down and bottom-up analysts by including «street-level-bureaucrats». Lipsky (1980/2010) introduced this term for studying the policy implications of how actors at the lowest level of public-sector hierarchies operate. They have to apply discretion when rendering services to their clients and thus become the ultimate implementers of public policies. A top-down view may tend to take a control perspective on how they modify policy instructions. A bottom-up perspective may more easily portray them as the real heroes who find practicable solutions for meeting the needs of their target groups, despite impossible policies and working conditions (Meyers & Nielsen, 2012). Unfortunately, there are just a few studies on street-level bureaucrats working in environmental management (Sevä & Jagers, 2013) and resource management (Sandström, 2011). Secondly, Winter has been very clear in his rejection of the earlier attempts to build grand theories of implementation, which he called “utopian”. The attempts to generalise came too early and aimed too broadly. Instead, both he and other scholars called for focussing on more restricted issues (Winter, 2012; Hill & Hupe, 2014; Sætren, 2014). This resonates well with ideas about developing middle-range theories in social sciences (Merton, 1968).

It is also worth underlining that Winter has provided a roadmap for investigations of implementation, highlighting factors that often explain the results, not an all-inclusive theory. The framework covers all the elements of a standard policy circle as possible explanations to the implementation results (Fig 4), though focussing mostly on the implementation processes. This also makes it open towards incorporating theories from other policy disciplines that have specialised in other parts of the policy process. Examples include agenda setting (Kingdon, 2010), policy change (Sabatier, 1988), planning theory (see Section 2.8), policy diffusion (Simmons et al., 2006) and policy instrumentation (Bemelmans-Videc et al., 1998; Salamon, 2002; Lascoumes & Le Gales, 2007), to mention a few that have caught my interest.

5 Materials and methods

The format of articles in international journals offers limited room for thorough descriptions and discussions. In this section, I will therefore present and reflect upon the methods that I have applied. As with the subject matter of the articles, they are different. The paper on assessments is dominated by juridical methods concerned about the status of legal sources and the rules for interpretation. However, it also contains some social science sections. The papers on EBM apply social science methods only. Here, I present and discuss them in the same outline, concluding with a joint discussion at the end of the chapter.

5.1 Luggage and lenses

First, I will provide some reflections on my own position as a researcher. The technological university where I started my higher education exposed me to a tradition with a realist view on science. The world around us can be taken for granted and described objectively if we apply standardised methods. Those of us who majored in planning had to change this perspective. We had to realise how differently people perceive situations and how their different motives and goals affect their positions. Reading philosophy of science introduced me to deeper debates about how such subjectivity also affects science. Like many other social scientists, I now believe that there is an element of social construction in our accounts and analyses. The knowledge that scientists produce is not independent of the intellectual, cultural and personal luggage that we carry with us. This provides us with certain lenses by which we observe the real world. It does not mean that I have not done everything possible to check the facts that I present. However, the questions raised, the emphasis of certain facts over others, the interpretations and the conclusions, are mine (Hersoug 2005). The reply to objections that may be raised is to be transparent about what I have done, and to explain my position.

Another part of my personal luggage is my relation to political processes. I have had the privilege of working closely with elected politicians, often in direct dialogue. This made me sensitive to some diffuse, but still important borderlines: those between politics and professional advice, between values and neutral facts and between normative and descriptive reasoning. What I could offer to my political superiors very much boiled down to reasoning around ends and means. This was just part of their reasoning. The political mindset also includes issues like values, justice, equity, legitimacy and balancing of interests. In political debates, I could hear them apply this type of argument when trying to state the reasons behind the discretion that they applied when confronted with dilemmas and trade-offs. This background probably gives me a quite different attitude compared to people who have worked solely in professional settings. It explains some of my questioning of the lack of political involvement in the Canadian plans that I studied, and gives me a general scepticism towards technocratic systems where experts take over the actual policymaking.

The research for the thesis has made me reflect upon the difference between being an insider and being an outsider. In Norway, my personal experience with EBM planning was a useful luggage when I was performing my research on the later processes. I also had cultural, organisational and political references that made it relatively easy to understand what had happened. To some extent, I was an insider in Canada too, coming from a country with many similarities and belonging to a wider marine community. This was valuable for getting access to interviewees. In most other issues, I was an outsider.

Prior to my arrival, I only had superficial knowledge about Canada and its history, culture, legislations, political organisation and planning traditions. I needed to understand such topics in order to understand what I encountered, and I kept grappling with this context throughout my stay. However, there were also advantages of coming from the outside. Issues that insiders take for granted, were not to me. This made me ask questions that many Canadians would probably not rise. Canadian scholars have harshly criticized their federal government for lack of engagement and consistency in marine and coastal affairs (Mercer Clarke, 2010; Jessen, 2011; Ricketts & Hildebrand, 2011). At the same time, the approaches taken to participation and decision-making seem to be taken for granted (Kearney et al., 2007; Rutherford et al., 2010), to the extent that I wondered whether I should call it a ruling Canadian paradigm. To the best of my ability, I have also tried to apply a critical attitude to the Norwegian case that I have studied.

The very different results of the Norwegian and Canadian plans, combined with my own national background, made the communication of my research a fine balance. One of the reviewers of Paper 3 thought that I presented the Norwegian case as “the golden standard” against which Canada should be measured. This was not my intention, and it prompted me to write more about the context that could explain the Norwegian results. Although I deliberately try to avoid using expressions like “success” and “failure”, it is hard to avoid all sorts of normative judgements. This can be sensitive since there is a tendency in both countries to present their national practices as “world leading”. However, my main concern is not to pass on judgements, but to learn from practice in order to improve it.

5.2 Research problems and choice of method

From the outset, it was clear that a quantitative method would not fit the type of problems that caught my interest; studying EBM at the current stage of knowledge invited questions of *what* and *how* instead of *how much*. The question for the social science part of the work was more of a matter of finding an appropriate theory and selecting among qualitative methods. After deciding to study implementation processes, I started reading implementation theory and found that case studies were a major tool in that tradition. Since interviews would be an important source for acquiring data, I also needed to go into methodological advice on how to conduct interviews.

My own research process illustrates a general issue when attempts are made to describe processes: they are seldom linear with the different steps occurring in a neatly ordered sequence, but iterative and with several feedback loops. This applies to the research process that I will describe in the following sections, as well as standard flow charts of EIA (see Figure 1 in Paper 1) or reconstructions of a particular planning process (see Fig 7).

The choice of juridical methodology for exploring the international legal regime for EIA and SEA was rather obvious. However, I also decided to bring in terminology and some results from the assessment literature, since much of the juridical literature tends to focus on legal provisions without considering experience with the application of the tools.

5.3 Case study methodology

Case studies are applied for many purposes, which resonates with different approaches to qualitative research in social sciences. The aim of idiographic studies is to describe unique cases, as opposed to nomothetic studies that seek universal laws or generalisations.

Flyvbjerg (2006) made a strong case for idiographic case studies. They can provide the basic, contextual experience from which humans can learn and generalise their skills, finally becoming “real experts.” He also disputed that social sciences can produce predictive theory; they have nothing else to offer than concrete, context-dependent knowledge, which case studies are especially well suited to produce. Thus, he argued for case studies described in thick narratives that reveal real-life complexities and contradictions. Rather than trying to close them by summing up and generalising, they should be kept open so that the readers are invited to decide the meaning of the cases themselves. Readers who are willing to go into this reality will develop a sensitivity to the issues at hand, which they cannot obtain from theory. However, his opposition to generalisations only applies to “hard” theories, comprising explanations and predictions. He found a “soft” understanding of theory acceptable, according to which case studies can be used to test propositions or hypotheses. This applies also to single-case studies.

George and Bennett (2005) were exponents of nomothetic ambition. Social sciences should aim to build theory that can explain, ultimately also predict, although they recognized the difficulty of this ultimate step.⁴³ They belong to a tradition that resulted from criticism of early case studies for producing incomparable results that did not lead to an accumulation of knowledge. That provided poor support for decision-making. The alternative is structured, focussed comparison, relying on a combination of within-case analysis based on, for instance, process tracing and cross-case comparison where the same questions are asked to all the cases. The research should be theory-based, and can serve a number of purposes in developing and testing theories. However, they rejected the utility of general (grand) theories. Instead, they called for middle-range theories, with contingent and specific generalisations within clearly circumscribed sub-classes of general phenomena. Cases should be studied as instances of such phenomena; they are “cases of” something that should be defined from the outset together with the research objective. In making explanations, researchers should apply variables that have theoretical interest. Scholars must clearly specify the scope or domain of their generalisations, for instance, to what range of institutional settings, cultural contexts, time-periods or geographical areas they apply. By gradually testing prior explanations and variables to new cases, they can gradually expand the scope of the generalisations.⁴⁴

My reading of previous case studies on EBM marks my own attitude to these seemingly different methodological stances to case studies. For learning from the practices of EBM, there must be some level of generalisation based on common questions and approaches. I therefore see a clear benefit in applying George and Bennett’s “structured and focussed approach”. However, I have several questions regarding their method, which primarily relate to how far it is possible to explain and predict and the possibilities of building theory. Predicting is problematic because of human reflexivity. George and Bennett themselves mentioned strategic interactions and self-fulfilling or self-defying prophecies

⁴³ See pages 67-71, 74-76, 119 and 129-131 in the book for the arguments referred in this paragraph.

⁴⁴ A careful reading reveals common ground too between Flyvbjerg, and George and Bennett (G&B). G&B’s reflections on what type of knowledge the practitioner needs (p. 269 - 273), resonate much with Flyvbjerg’s praise of the true expert knowledge. Moreover, they both call for “thoroughly executed case studies” (Flyvbjerg) that for instance include clear criteria for case selection. G&B accept the value of historical exploration of single cases, which Flyvbjerg promotes, though they aim beyond that. The main difference to Flyvbjerg seems to be their assumptions on the extent to which explanations are possible. Flyvbjerg, on his side, accepts some level of “soft” theory, but I find him vague in describing what types of inferences he, after all, thinks are possible.

as examples thereof. Making predictions in social sciences is, therefore, far more complicated than in natural sciences. Common to the two strands of science, however, is the occurrence of accidental circumstances, raising a more fundamental philosophical issue about the extent to which the world is ruled by laws or mere coincidence. Even though prediction may be an ambition, explanations of historical cases may be the only thing achievable. My question is, what are the types of explanations and theories that we may end up with in the span between the historians' idiographic explanation of one unique event and nomothetic law-like explanations? George and Bennett gave a sympathetic answer to this question by insisting on making contingent generalisations. My uncertainty on these issues is a major reason why I only introduce some of the basic principles of structured and focussed comparison in Papers 2 and 3, and just briefly refer to the possibility of further theory development. Thus, I can summarise my take on George and Bennett's approach as "yes, let us try it and see how far it can go". I have followed their basic recommendations on how to conduct case studies according to a "building block approach", albeit without some of the rigour of formal methods that they recommend.

In paper 3, I demarcated the sub-class of cases that I study to EBM of large marine areas within single national states. Thereby I restrict my conclusions to this sub-class. The reasons for being so specific are the warnings against grand theories and studies that are too ambitious. The same warning can be found in the implementation literature, which, according to later self-reflection, attempted to generalise too early and too broadly (Sætren, 2014). Moreover, adopting a narrow scope can avoid mixing up causal mechanisms from different classes of cases (Mahoney & Goertz, 2006). The advice is that it is best to start a research initiative being specific and eventually generalise to a broader population of cases later.

As mentioned above, the diverging purposes of case studies is a problem for accumulation of knowledge. A question is whether the purpose of my studies, implementation, would just be another instance of each investigator choosing topics according to their special interests, thereby continuing the tendency to non-accumulative studies. In one sense, the answer is yes. However, with the scant empirical literature on EBM, there may be a need for many questions to practice. Moreover, I have chosen to base my research on a well-established theory and an explicit research framework. The questions I ask about results and the distinction made between output and outcome are central to any attempt to evaluate results. This use of theory makes it easier to accumulate across former as well as future studies, compared to studies that either do not relate to older theory or develop their own.

5.4 Documents as data sources

For the exploration of the legal status for conducting EA in the Arctic Ocean, reading juridical literature guided me in my search for legal sources. The literature consisted of specialised analyses of EIA norms in international law (Koivurova, 2002; Holder, 2004; Bastmeijer & Koivurova, 2008; Craik, 2008), as well as more general literature on environmental law (Atapattu, 2006; Birnie et al., 2009). The purpose of the paper made me select legal sources on the basis of two criteria: (1) whether the instrument considered provisions or norms relevant for EA and (2) whether its geographical scope included the Arctic Ocean. The geographical scope meant that I excluded several instruments that are often a part of juridical literature about EA. The most prominent exclusions were the regional seas

conventions, which are not relevant in this context,⁴⁵ and EU legislation on EIA and SEA, which is not applicable to the two European coastal states of the Arctic Ocean, Norway and Greenland. I was more in doubt whether I should completely disregard the Madrid Protocol to the Antarctic Treaty, since its provisions on EIA from another pole are highly relevant for discussing assessment regimes in areas beyond national jurisdiction. I ended up excluding it because my analysis is about the current legal status (*de lege lata*), with only some principal remarks at the end about possible alternative approaches (*de lege ferenda*). Such exclusions are unavoidable when interpreting the international legal status across instruments. I will later come back to the implications that my choice of region, and thus instruments, has for generalisations to other areas.

For the studies of the implementation of management plans, I only used publicly available documents. The core documents were the plans; three white papers from the government in Norway and the major reports from the two project organisations in Canada. Moreover, I used policy documents from the two governments, which were most numerous in Canada. In Norway, I also read recommendations from committees in the Parliament (*komitéinnstillingar*), official transcriptions of interpellations and debates in the Parliament and the political platforms of all governments since 2001. Moreover, I searched in databases with all Norwegian newspapers as a supplement to these official sources, and for the preparation of some of the interviews. Finally, I searched extensively in the academic literature. Much of this was background information and was only referred to in the papers when I used it directly.

5.5 Interviews

The purpose of the research interview is to produce knowledge. The tradition that I lean on is an alternative to a positivist view on knowledge and method (Kvale & Brinkmann, 2009). It underlines the notion that knowledge is not given, accessible to the interviewer as a gold nugget, but co-produced in the interplay between the interviewer and the interviewee. This happens through their conversation, in which language is the tool to mediate meaning. The interview occurs in a particular context, raising the issue about the transferability of the knowledge produced beyond that context. Conducting an interview also raises ethical questions about consent, confidentiality and power relations between the interviewer and the interviewee. Instead of relying on prescribed methods, Kvale and Brinkmann's pragmatic approach considers interviewing as an art and a craft that the researcher has to learn and refine by experience.

Preparations

Based on my research questions, it was rather obvious that I would need to conduct in-depth interviews. Initially, I read all the literature I found about BSMP, in parallel with the literature on implementation theory. As I read, I started working on a questionnaire. This was quite open for the first interviews, but evolved until I had a standardised set of questions adapted to what type of interviewee I would meet (civil servant, politician or stakeholder). I brought tables to the interviews containing all the 157 "government will" bullet points from the white papers. Thus, I could ask systematically about the implementation of each of them. Building on the experience from Norway, I developed a question-

⁴⁵ OSPAR covers just a section of the Arctic Ocean, and has no explicit rules on EIA in order not to interfere with EU legislation. In contrast, most other regional seas conventions do have rules on EIA, cf. provisions compiled in Annex 1 in Craik (2008).

naire in Canada that was even more structured according to the research questions and Winter's framework for implementation studies. This was published as an appendix to Paper 3, and hopefully will be of help for future research.

When selecting interviewees, I was concerned about getting access to key informants who had played major roles in the processes I studied. Another concern was achieving a broad representation of different interests. I started in November 2015 with a former coordinator of the Management Forum, followed by the coordinators of the inter-ministerial Steering Group and a former *statssekretær* (secretary of state)⁴⁶ who had coordinated the work in the government. I asked all of them about candidates for other interviews, which I continued to do with later interviewees ("snowball sampling"). In Canada, the coordinators of ESSIM were my key informants who started the chain of tips for interviewees. I also had an early interview with a senior manager in DFO at federal level, who had worked in integrated ocean management for almost 20 years. Interviewing can continue for eternity. I stopped when I had a broad representation of organisations and interests, and when I experienced a saturation level; interviewees tended to repeat what I knew before and only added marginal new information. In Canada, a return ticket to Norway also defined how long I could continue.

I approached most interviewees by first sending an e-mail, sometimes after an introductory telephone conversation. In the e-mail, I described the purpose of the project, introduced issues often raised in implementation theory and explained the treatment of interview data. I promised to keep the personal identities of the interviewees concealed. If they agreed to participate, which most of them did, I also sent the questions from the interview guide so that they could be prepared for questions about events several years back in time.

Semi-structured depth interviews

The interviews typically took place at the workplace of the interviewee, either at a meeting room or at their offices. This gave me some glimpses of them in their working environment, although it by no means meant that I observed them systematically (Creswell, 2013, pp. 134 - 139). I also had a handful of telephone interviews for logistical reasons. A typical interview lasted from one to one and a half hour. I also had several follow-up interviews. In addition, I inquired a number of organisations and individuals about more limited issues.

The typical course of an interview was that I started explaining the background of the project, asked for permission to record the conversation when that was relevant, and explained how I would treat the data. The interviewees would then clarify their stance to degrees of anonymity, and willingness to future uses of the information in research. Then I asked the interviewees to explain their personal background and role towards the relevant plan. From there, I started with the questions from the interview guide. Interviewing is improvisation. It is a continuous balance between steering from the interviewer, and letting the interviewee respond freely (Flick, 2009, pp. 170-172). The responses from the interviewee meant that I had to decide, often in a split of a second, how to react. I could stick to the pre-formulated questions; dig deeper into issues they raised, asking for clarifications or more information; or confront their statements with critical questions. On a few occasions, the interviewees took off completely from the start. I had to wait until they were finished with their initial statements before I could

⁴⁶ A Norwegian *statssekretær* is not exactly the same as what may be associated with the English term state secretary. The position exists in all the Norwegian ministries. He or she in practice acts as a kind of deputy minister, though without being a formal member of the government, and without any mandate to replace the minister.

start with the pre-formulated questions, which had been partly addressed already according to the interviewees' own logic and order. Thus, during the course of the interview, I had to prioritise what was the most important to address from that particular interviewee. When we did not cover all the prioritised questions, most interviewees agreed to continue afterwards, either by answering to the e-mail or by additional interviews. In fact, most of them were concerned about me getting the information I needed.

I always took notes during the interviews. Gradually, I also started to record them in order not to lose information and to be more present and concentrated during the conversation. In Canada, I recorded all the interviews, with the additional motive that the conversations were in a foreign language.

Transcriptions

Oral language, as most people speak, is full of imprecise expressions, filler words and incomplete sentences. Speech is also associated with bodily expressions like gesticulation, mimics and postures. Transcription means transforming these messages into a written format, which can have many forms, with which I experimented.

In Norway, I promised to send my transcripts to the interviewees so that they could make corrections or provide supplementary information. My intention was that they should approve a final version. By this, it would become citable without any more contact, also for further research, unless they had reservations. About one-third of the interviewees did not respond back with adjustments and final approval. Some of these explained that it would require too much time. The final version followed a template with the interviewee's background, the circumstances behind establishing the contact, questions, place and duration, and remarks about changes in the final version, before the final transcripts.

In the early interviews in Norway, where I only took notes, I made minutes from the conversation in a journalistic manner. The transcripts thereby became shorter than the complete conversation. They did not quote the interviewees in their exact wording, and lost much of the detailed interplay between them and me. However, it was an efficient way of transcribing, which ensured a focus on what I found to be the main issues. When I started to transcribe from recordings, a few times using professional transcribers, I could get accurate word-by-word minutes of the conversation. However, I made some grammatical and other edits so that sentences became coherent and deleted parts of the interviews that had no or peripheral interest.

I experienced active information management twice during the review of the transcripts. The first was from a ministry, where I, to my surprise, had met five interviewees instead of one. The interview became difficult because of the interplay with many people, restricted time and my attempts to raise sensitive questions. It took weeks and several reminders before they returned an edited version, which was shortened, corrected and more official in style. Among the deletions were references to a couple of sensitive issues and some informal remarks like a joke, which probably was quite informative to their attitudes. The other instance was after interviewing a former minister. He talked quite openly about his relation to civil servants, other ministers and civil society organisations, including how he solved a delicate political conflict. I was very concerned about not missing what such a high-ranking interviewee said, and sent an almost verbatim transcript back to him. We had agreed to have a follow-up interview. Five minutes before that interview should start, he e-mailed me a file with short, written replies to all the questions I had sent him in advance. He then explained that this was what I could quote without asking him; everything he had said in the first interview was background information

for my personal information. Besides, he had reacted against the transcript's oral language. We then continued with the follow-up interview, where he expanded on the replies he had just sent to me. Nevertheless, when I later asked for permission to quote a couple of sentences from the first transcript, he immediately consented. These examples illustrate how the information achieved by interviewing may be sensitive to the approach applied. Informally and back-stage, I could get more information than what could be documented in writing, despite my efforts to explain that a research interview is different from an interview with a journalist, meant for publication. Similarly in Canada, a revealing moment took place in a tea kitchen, when the interviewee made a joke to characterise Canadian approaches to ocean planning ("holding hands, singing Kumbaya").

Working with the transcripts this way was very time consuming. In Canada, I therefore decided to change the approach. I did not promise to send the transcripts back to the interviewees. Instead, I promised to ask for permission if I were to quote them directly. This saved much time compared to the processes I got involved in after the Norwegian interviews. I also relied more on the interplay between the recordings and the transcripts, writing up the transcripts mostly in telegram style, with references to time on the recordings. Thereby, I could go back and listen to the parts that were most interesting, which I often did during the writing of Paper 3, which also saved time.

Discussion of methodology

The size and representativeness of the population interviewed are an issue in quantitative as well as in qualitative interviews. In Norway, I achieved a full representation of the secretaries of state coordinating the work internally in the government, a good representation of all the major sectoral administrations, and some major interest organisations (Appendix 1). In Canada, I also managed to get a fairly diverse representation from administrations and stakeholders (Appendix 1). I could have covered more representatives from industries and sectoral administrations in the provinces that actually had participated in the planning. Moreover, it would have been interesting to interview former politicians about the reasons for their distant roles. However, the experience of reaching saturation level was the major criterion to stop interviewing. I consider the representation good enough to provide an overview of the processes, as I have done in Papers 2 and 3.

Most of my interviews could be classified as elite or expert interviews (Aberbach & Rockman, 2002; Berry, 2002; Flick, 2009, pp. 165-169; Kvale & Brinkmann, 2009, p. 158), conducted with former members of governments, high-level administrators, well-educated specialists and CEOs/general secretaries of interest organisations. Even the active fisher who had been at the ESSIM table, turned out to have a master's degree in ocean management. Interviewing usually implies a power imbalance in favour of the interviewer (Kvale & Brinkmann, 2009, p. 52). Elites and experts have mechanisms to counter this, which raises several challenges for the interviewer (ibid). I experienced surprisingly few problems getting through their doors (Goldstein, 2002). The presentation of the good knowledge I possessed, inter alia through the interview guide, was probably important. This also meant that several interviewees considered our conversations interesting; this was visible through their reasoning, willingness to give me additional time and explicit acknowledgements. The general impression also was that I left most interviews with a feeling of having experienced frank information sharing, although the opposite also could be the case (cf. above). This does not mean that they told me everything that could be relevant. Civil servants in the Norwegian government were very loyal towards their political superiors, and revealed little information, for instance, about assisting their ministers in negotiations at the Prime

Minister's office. Some of the former members of governments also explicitly refrained from revealing what they referred to as internal matters from the government.

Interviewing exposed me very directly to the subjectivity of sources. Interviewees could, for instance, reason about their own and others' motives, how they explained events and how they evaluated their own influence. I also had to take into consideration how well they could remember events often 10 – 20 years back in time. The most assuring was when they had checked information before they met me, or brought documents to substantiate what they said. Rather often, I got reservations about how exactly they remembered certain events, as well as tips about how to check the information. Thus, I always had to evaluate the information achieved, including the role and possible motives of the interviewee. Cross-checking information with other interviewees and written sources was a necessity. The same critical approach regarding context and motives was needed when reading documents.

Interviews raise a number of ethical questions. Kvale & Brinkmann (2009, pp. 79 – 97) called for the researchers to apply Aristotelian *phronesis*, a practical wisdom that seeks to understand situations in their context. A starting point for my reasoning about ethics is that I did not explore the private lives or seek sensitive personal information. All the participants were interviewed in their professional roles about events that have public interest. They received information about my purpose and consented to participate. As long as I sent transcripts for approval, I offered them full control over what written information would be kept afterwards. I promised them to keep their personal information anonymous when using the information in my papers, but I indicated that I might refer to their roles and institutions. My judgement is that there are minimal personal consequences for the interviewees of consenting to make selected information public this way. However, perceptions of the institutions they represented could be affected, particularly in Canada where implementation results were meagre. The most difficult issue to me was how to store the information for potential future uses. Until better guidelines appear, I will keep the transcripts and sound files with me for eventual future uses, according to the conditions set for my research by the Norwegian Data Protection Official for Research.

5.6 Analysis of data

Juridical interpretation

In Paper 1, standard judicial techniques are applied for the interpretation of legal sources. The paper starts with a review of the relevant legal sources according to the selection criteria established (see Section 5.4). Usually, the most important thing in such reviews is to distinguish between what is often termed hard law and soft law. *Hard law* is binding and may be the basis for sanctions in case of breach. Binding rules are established through international treaties, which a sovereign state must ratify or assent to by other mechanisms in order to be bound,⁴⁷ and customary law, which is applicable to all states that have not consistently objected to it. *Soft law* provides normative guidance and is of a more voluntary character. Examples are general principles of law that have not attained customary status, resolutions of international bodies and the teachings of legal scholars.⁴⁸

It may be more unusual that I also paid attention to the specificity of the norms and provisions under review. This was inspired by Neil Craik, who has argued that “whether a norm is legally binding or

⁴⁷ Vienna Convention on the law of Treaties (1969), article 11

⁴⁸ See Statute of the International Court of Justice (1945), art. 38.

not, is of secondary importance where the norm itself lacks the necessary detail to influence behaviour” (Craik, 2008). Therefore, the status of EIA and SEA in international treaties was examined in the article according to three levels of specificity: (1) explicit provisions of EIA and SEA, (2) general assessment obligations and (3) implicit/indirect assessment obligations. This demonstrated that there is a predominance of unspecific instruments. In the subsequent analysis, I therefore tried to enunciate specific requirements to the assessment process and content by interpretation.

International law should not be interpreted in isolation, but considered as a whole (Boyle, 2007). This raises the issue of the status of different and potentially competing provisions from different legal sources. There are several juridical techniques available for settling this. The Vienna Convention on the Law of Treaties is fundamental in this respect. According to jurisprudence, evolutionary interpretations must be limited to the intentions of the parties at the time of, for instance, the negotiations of a treaty (Boyle, 2007). The preparatory work of a treaty is important for understanding such intentions.⁴⁹ This calls for caution, for instance when interpreting the obligation to “assess” in the Law of the Sea Convention (LOSC) art 206, since the parties may not have meant EIA and SEA (Craik, 2008). However, the whole array of international law at the time of enactment must be taken into account (Boyle, 2007). This led me to the conclusion that for the five Arctic Ocean coastal states, it is not unreasonable to interpret the obligation to “assess” as meaning EIA and SEA.

Another common principle of interpretation is that a specific law (*lex specialis*) takes precedence over a more general law (*lex generalis*). I applied this several times in the analysis. However, such analyses must also take into account provisions that restrict the possibility of reservations or modifications because the treaties try to create integral regimes (Boyle, 2007). The LOSC is a prominent example.⁵⁰ It has a constitutional character, meaning that other instruments can enact specific provisions as long as they are not against its object and purpose.⁵¹ Thus, specific provisions on EIA and SEA from other treaties, such as CBD, may fill in for the general provision to “assess” in LOSC.

Finally, I tried to find out whether EIA or SEA could have achieved a special meaning from a legal point of view.⁵² Despite finding scholars who argued that EIA has, it did not bring more about clarity into the interpretation in this case.

The final part of the legal analysis was a suggestion of what may be the gaps in the existing legal regime for EIA and SEA. I based it on an analysis of the geographical and thematic scopes of the conventions, partly on the needs for a more stringent regime to meet new industrial activities in the Arctic Ocean.

Analysis of interviews and documents

The interview transcripts and documents from the studies of BSMP created a large volume of information. It was a typical situation after data collection, calling for sorting and reduction of the information (Creswell, 2013; Ringdal, 2018). I tried using NVivo as a tool for organising and analysing the data. Documents and interviews were loaded into the programme as PDF files. I developed two sets of

⁴⁹ Vienna Convention, art. art 32

⁵⁰ Art. 309 restricts the right to reservations, whereas article 311 restrict the right to conclude new agreements to issues that do not cause derogations from the convention’s objects and purposes

⁵¹ LOSC art. 311

⁵² Vienna Convention, art 30(4)

codes, which I manually assigned to sections of the texts. One set consisted of a hierarchy of relevant themes, and the other identified actors and organisations. I experienced the same as Creswell (1980): Benefits such as reading the texts more systematically and finding information more easily did not offset the effort of trying to learn the programme, develop the codes and code the texts. The number of texts after all was not bigger than what I managed to keep a fairly good overview of manually. I therefore decided not to invest more time in the programme for the research in Canada. I see the utility of NVivo and similar programmes in projects with more information and more researchers and in advanced uses such as text mining. For eventual future uses, I have a coded material about BSMP.

After coding and taking notes, I started to combine information from different sources. The first task was to use this for writing an overview of the processes. For analysing the implementation of BSMP, I had descriptions of follow-up activities for each of the 157 measures, collected from interviews and documents. I put this into a table and analysed it manually. It would have been beneficial if I, at an early stage, had worked more with criteria for transforming this information into an interval scale: fully/mostly implemented, partly implemented, weakly/not implemented and unknown. I also used the tables for classifying each measure according to the type of instrument applied (see summary in Table 1 in Paper 2).

The most difficult part of the analysis was to develop explanations of the achievements. I analysed the relevant parts of the data carefully and searched for repeated patterns in different sources. In retrospect, I may call it analytical, theory-driven induction. I had good information about how many individual processes had evolved, including participants' own explanations of causation. Thus, I had fundamental elements for descriptive process tracing, even though I did not apply the tool formally, including its logical tests for causal interference (Collier, 2011; Bennett & Checkel, 2015, pp. 20 - 35). I had several candidate explanations that I excluded before concluding with what I assumed to be the most important ones. This means that I evaluated the inferential powers of the information, however, without any formal test methods.

5.7 Writing up the papers

There is limited room for thick descriptions and multiple perspectives in the condensed format of journal articles (Flyvbjerg, 2006; Creswell, 2013). I experienced the need to compromise towards what may be ideal requirements on issues like the number of variables I could invoke, the depth in my explanations of each and the methodology.

I have written all my articles according to a traditional outline for scientific articles. Mostly, I present myself as the omniscient, distanced writer (Flick, 2009, p. 415; Creswell, 2013, p. 178). My only attempt to position myself clearly in the text, was to write in first person where I found it natural to demonstrate my responsibility for choices and interpretations. However, the reviewers of both the case studies disliked that, so I had to re-word. The only place where I insisted on using "I" was in the methodology sections, where I found it completely strange not to signal who had made the choices.

I brought other voices than my own into all of the texts: a couple of legal scholars in the analysis of EA norms, as well as several interviewees in the case studies. Mostly, I used embedded quotes to make the text float easily. Longer quotations were limited because of the limited space; I deleted several during the final editing. Such choices limit the authenticity of the text and conceal the less streamlined and more diverse reasoning by some of the interviewees. They also leave the impression that I

use the sources to a less extent than what I actually did. However, I relied heavily on the information from the interviews, even when there are no quotation marks. The multiplicity of sources distinguishes the article from the majority of the writings about BSMP and ESSIM. It is common that the authors write according to their own experiences and views, mostly after participating in the planning processes.⁵³ Typically, these papers contain no or only very brief methodology sections, often not a theory section either. The perspectives of certain participants surely are valuable, but the lack of other sources limits the trustworthiness of judgements in the texts.

I did not involve interviewees much in my interpretations. A few core informants received complete draft manuscripts for comments, but only two of them responded. I also showed longer textual context to those who should approve quotes. There are several recommendations for involving interviewees and the public in the analysis, for instance by the use of focus groups to discuss interpretations (Kvale & Brinkmann, 2009; Creswell, 2013, p. 209). I did not attempt to involve the interviewees more actively due to practical reasons such as access, travelling and time. In hindsight, I see that dialogues with interviewees can be useful and can strengthen the final interpretation. However, throughout the process, I had extensive dialogues with representatives of another community important for validation, the research community. In the later stages of the research, this involved organised discussions based on my oral presentations, later, also drafts of the manuscripts.

I distributed the papers to the interviewees and encouraged them to send me responses. Those who did responded positively, although that does not rule out the possibility that there also may be negative reactions. Beyond involvement, the main reason for doing this was to give back to the interviewees for their time and effort (Creswell 2013).

5.8 Reliability and validity

There are a plethora of approaches to evaluate qualitative research. Process oriented approaches include recommending strategies for research practice (Creswell, 2013, pp. 207 - 209), good workmanship (Kvale & Brinkmann, 2009, pp. 253 - 258) or quality management (Flick, 2009, pp. 409 - 412). Most efforts seem to be invested in formulating evaluation criteria that are specific to qualitative inquiry, not simply applying terms and underlying epistemic assumptions from quantitative research. The many different stances and lack of general accepted standards invite criteria shopping, whereby each researcher chooses his/her own standards. Despite the objections and alternative propositions raised to the terms, I will nevertheless reflect on my research along the lines of reliability and validity. I will come back to generalisations in the next chapter.

Reliability is related to the consistency and trustworthiness of the data. It is often explained as the extent to which results may be reproduced by other researchers. In my case, this applies primarily to interviewing, which is a method sensitive to differences in approaches. For the consistency of the research, it is beneficial that I conducted all the interviews, based on a rather standardised interview guide, and later transcribed and analysed them (George & Bennett, 2005). As regards replicability, other researchers might have reached different results. Firstly, their questions might have been different. I influenced my interviewees by raising the agenda of implementation and by distributing pre-formulated questions. Other sets of questions might have produced different results. Publishing my own

⁵³ Some prominent exceptions from this are Knol (2010b) on BSMP, and Flannery and Ó Cinnéide (2012) and Guénette and Alder (2007) on ESSIM.

interview guide is an attempt to mitigate that problem in the future. Secondly, even though other researchers would have posed the same questions to the same interviewees, there is always a risk that they might have obtained different answers. Personal relations, trust in the interviewer, time and the context of the interview always play a role. My response to this problem was to reflect upon the interview situations, subjectivity of the interviewees or biases that may stem from my questioning, as I did above, whilst analysing and writing up the papers. The most important to me was data triangulation (Blaikie, 2010, pp. 262 - 270): I always checked the information from interviewees with that of other interviewees, documents and previous research. The information in the papers is always based on multiple sources, unless I clearly refer to one specific interviewee.

Validity in quantitative sciences refers to the ability to measure (and draw conclusions about) the phenomenon that is studied. In opposition to positivist research, scholars have introduced a large number of alternative concepts, for instance, trustworthiness, credibility, authenticity and accuracy (Creswell 2008, pp 202 – 206). As referred to in the start of this chapter, I believe that there is a degree of social construction in most of our knowledge. This position makes it hard to rely on validation criteria based on the comprehension that there could be objective correspondence between reality and knowledge. Kvale and Brinkmann (2009) suggested an alternative, where validity is based on three criteria: evaluation of the quality of the craftsmanship, communicative testing of different claims of knowledge, and pragmatic judgement of how the knowledge contributes to action. Regarding craftsmanship, I have accounted for my procedures above. I feel quite confident about my descriptions of how the three cases evolved; this is based on extensive cross-checking of information and has been confirmed by some key informants. However, others may dispute my interpretations of the explanations for the achievements. It could be possible to provide different explanations, even on the basis of my own data. If that is possible, this will make the second criterion about communicative validation relevant. It means that the validity of the research would be established in dialogues over the knowledge produced, with the purpose that the involved will learn and possibly change. Here, I relied on traditional scientific validation by various peers. Since much of my interpretations builds on the accounts of interviewees, a more wide-ranging participatory validation than I have tried could be interesting. This could have tested my interpretations and eventually led to modifications or completely new ones. The same applies to wider validations by the public. However, whilst I see the merits of such dialogues, I also believe that the ultimate text is my responsibility. In case such processes would have led to differing views, I would have been flexible as regards corrections on more factual sides of the text, but more reluctant to change the interpretations. I rather believe that it would be fair to opponents and interesting to the reader if different views appear in the text. This is a better approach in my opinion than trying to write completely open texts (see Flyvbjerg referred in Section 5.3). Finally, the last validation criterion is related to the extent to which words from scientific texts also have the power to change behaviour; if they do, this will be a positive sign of validation. On this point, I believe that the questions raised by implementation research are highly relevant for eventually changing practices to the better. This is a challenging criterion. Many researchers, including me, hope to see such results of our activities. However, we have little control over such processes beyond distributing our articles and by other means communicating our research.

6 Results, discussion and future work

In this final chapter, I will start with a summary of the answers to research questions 1 and 2, which are addressed in this introduction as a context for the papers. Then follows a summary of the three papers, which in the case of Papers 2 and 3 also are the short answers to research question 3. I then turn to a discussion of the results before I point to some possibilities for further research.

6.1 Characteristics of ecosystem-based management

The first research question about the emergence of the EBM concept, and the characteristics of the approach, was addressed primarily in chapter 2. From its origin in terrestrial planning in the US, EBM has spread as a global concept and today has a stronger position in marine planning than on land (Engler, 2015). Despite the diverse uses and contexts in which it is applied, there seems to be agreement on basic definitions. EBM aims at achieving the good health and sustainable use of ecosystems by assessing cumulative impacts and taking action on negative influences. It is a holistic approach to managing human activities that integrates across ecosystem components, industries and their administrations, and different sciences and knowledge holders. The more detailed it is defined or described with principles and approaches, the more room there is for different interpretations.

Despite the many contexts into which EBM must be adapted, there are guidelines for how to proceed from international organisations. Recommendations are clear on the need to assess the ecosystems. The problems arise when moving from diagnosis to treatment. The fundamental need to formulate policy measures and implement them effectively is not clearly recognized or described in several guidelines (CBD, Arctic Council, LME approach). The UNEP recommendations are clear on the need to identify and implement measures, but provide only very general guidance for how to proceed.

Long-standing debates in planning theory may be useful for positioning practical cases of EBM. There is a tension between the scientific ambitions of achieving a comprehensive understanding of the ecosystem and steering by objectives in a long-term perspective, and more pragmatic approaches that are willing to decide and act based on uncertain knowledge and adaptive management. Another tension is related to the role of experts. On the one hand, EBM is knowledge-intensive, in practice, having privileged ecological expert knowledge. On the other hand, EBM is inclusive towards different stakeholders and types of knowledge, and reliant on political deliberations and decision-making. Discussions of power relations and conflicts, which have been important in planning theory and political sciences, seem to be mostly neglected in the marine EBM literature.

EBM sets the environment first, even though socio-economic considerations are also taken into account. It can be characterised as primarily the environmental pillar of fully integrated management for sustainability, in which social and economic objectives are considered on equal terms with environmental objectives. EBM may be implemented by spatial approaches, such as marine spatial planning, as well as non-spatial approaches such as pollution abatement, essential parts of fisheries policies and climate change policies. There seems to be a tendency that marine spatial planning is seen as a practical way of implementing a vague and complicated notion of EBM. The risks are that the links to ecosystem considerations become lost and that marine spatial planning simply becomes a vehicle for introducing new industries into the oceans by zoning of physical ocean space. Similarly, there is a tendency that designation of marine protected areas take over for prior ambitions of implementing EBM.

Marine protected areas is insufficient for marine conservation purposes unless supplemented by broader approaches, such as EBM.

6.2 Paper 1: Legal obligations for environmental assessments

The second research question addressed the role of environmental assessments in EBM and their legal status. Environmental assessments are adapted to different tiers of public policy, with specific methods for each. Strategic environmental assessments (SEA) are the most relevant to EBM since it is an approach for assessing strategic initiatives (policies, plans and programs). It is well suited for appraising cumulative impacts in regional assessments, which corresponds to a key task in EBM. Moreover, SEA attempts to integrate assessment into the preparation of strategic initiatives in a flexible manner, adapted to the needs for assessment. This is an important role for incorporating the results from EBM planning and decision-making into strategic initiatives of different sectors. Environmental impact assessment (EIA) is a tool for assessing the impacts of concrete projects, which can be conceived of as the lowest tier. If deliberately linked to higher tiers, EIA can build upon prior SEAs and higher level, ecosystem-based plans when assessing projects prior to their possible adoption.

Both SEA and EIA are tools for the prior assessment of impacts of proposed developments before decisions are taken. EIA has attained the status of customary law, whereas SEA has not. The problem with customary law, along with most international agreements relevant for the Arctic Ocean, is that the assessment obligations are unspecific; it is unclear what they imply. EIA and SEA may be relevant, but so may other approaches. The Law of the Sea Convention is an important example with its obligation to undertake an “assessment”. The Biodiversity Convention is specific on SEA and EIA, whereas the International Seabed Authority has made regulations for EIA for deep seabed mining. The Espoo convention on transboundary EIA and its SEA protocol are specialised assessment instruments.

A regional assessment regime for the Arctic Ocean can be found when interpreting all the legal sources in connection. The legal trigger for undertaking an assessment is the likelihood that an initiative may cause significant harm to certain values, which each treaty defines more specifically. Among the treaties that contain specific assessment obligations, the Biodiversity Convention is the only one that is transnational across all the maritime zones, for the specific purpose of assessing harm to biodiversity. The EIA regulations for deep seabed mining apply to the High Seas and the Area (the deep seabed), whereas the Espoo instruments apply to areas within coastal state jurisdiction only. Going on interpretations only, it may be argued that there is a transnational obligation to undertake EIA according to its standard form, also for other purposes than biodiversity assessment. Apart from the Biodiversity Convention, there are very few requirements for SEA in the Arctic Ocean.

In the article, I suggested that the regional assessment regime contains the following weaknesses:

- Insufficient acceptance of existing instruments.
The US is in a very peculiar position by not being a party to i.a. the Law of the Sea Convention, the Biodiversity Convention and the two Espoo instruments.
- Major sectors have either no or uneven assessment obligations beyond the minimum requirements in the Law of the Sea Convention and the Biodiversity Convention. Inside the high seas regulatory area of the North-East Atlantic Fisheries Commission (NEAFC), there are requirements for assessing the impacts of new and exploratory fisheries on vulnerable marine ecosystems on the seafloor. They do not apply to pelagic fisheries, or to any fisheries outside the NEAFC regulatory

area. There are no requirements to assess shipping and marine tourism. Only parts of the oil and gas activities are covered by specific assessment obligations.

- Domestic areas are not covered well by specific treaty obligations.
- Weak coverage of areas beyond national jurisdiction.

There are strong legal obligations to avoid transboundary harm. This includes assessing the likelihood for such harm to occur. It is striking to note the lack of specific rules for assessing harm originating in areas under coastal state jurisdiction towards the high seas and the Area.

- The specialised Espoo instruments for SEA and EIA have low relevance in the oceans due to the listing of sectors and activities to which they apply.
- Strategic initiatives are not covered well by specific assessment obligations. There is a mismatch between this situation and the expected expansion of economic activities in the Arctic Ocean, and the assessment obligations in EBM and the regular process for the World Ocean Assessment.

The weaknesses may be addressed both globally in the negotiations on a new legally binding instrument on biodiversity beyond national jurisdiction, and in a regional process under the Arctic Council. Important improvements would include the creation of a more specific default mechanism for prior assessment of marine activities, and closer linkages between assessments and substantive goals.

6.3 Paper 2: Implementing policy for the Barents Sea

The government has presented the Barents Sea Management Plan (BSMP) in the form of white papers to the parliament. Most of the 157 individual measures from the 2006 plan and the 2011 update have been put into practice. This has occurred despite the lack of a statutory basis for management plans, and several breaches of traditional advice for successful implementation: the objectives were unclear, there were only loose mechanisms for overseeing the sectoral administrations' implementation of a partly contested policy, and there was no pre-allocation of funds. However, it not possible to tell whether the delivered results of implementation, i.e. the *output*, contributed to a desired *outcome*. The reason is that the plan and subsequent monitoring do not establish linkages between the selected policy instruments and the outcomes.

A part of the explanation for this somewhat unexpected result is the Norwegian context, with a political system characterised by a consensus-seeking political culture, a professional administration, and the high freedom at the national level to act on ocean affairs. It should also be noted that the plans had a political origin in a long-lasting political conflict over petroleum policy and enjoy bipartisan political support. Further explanations for the implementation results are:

- The insights and political legitimacy achieved by a strong reliance on knowledge. The procedures employed, with broad mobilization of government agencies across sectors and public review of their assessments, have been important for the judgement of the system. This matches an appreciation of knowledge-based policy-making in Norway.
- The collaborative style of involving the ministries. The government set up an inter-ministerial group of civil servants from the relevant ministries. This fostered better understandings, trust and relationships, and gave ministries access to the others' resources. The ministries had to suggest policy responses within their own purviews as a response to challenges described in the assessments they had jointly commissioned. This created higher acceptance and avoided the common division between those formulating and implementing policy.
- The handling of conflicts with authoritative decisions from a coalition government that was in a parliamentary majority position. The political parties in the coalition negotiated major conflicts on oil, fisheries and the environment at the highest political level in the cabinet, often by

making compromises through package deals. The politicians had heard the opinions of stakeholders prior to making the decisions.

6.4 Paper 3: A comparison of Canadian and Norwegian approaches

The Canadian government delegated the responsibility for making management plans to the regional branches of the Department of Fisheries and Oceans (DFO). They were supposed to work with other government bodies and stakeholders according to collaborative planning principles. Both the Eastern Scotian Shelf Integrated Management Plan (ESSIM) and Placenta Bay/Grand Banks Integrated Management Plan (PB/GB) became strategic plans. The plans have not led to the implementation of any new measures.

A conspicuous explanation is that the content of the Canadian plans created a poor impetus for implementation: Their objectives made it unclear what they wanted to achieve, the designation of strategies made it open-ended as to what was to be done, nobody was responsible for following-up and resources were scarce. The reasons for this unclear design can be summarised in two properties of the policy formulation process. Firstly, the Canadian federal government did not attempt to overcome administrative fragmentation by a “whole-of-government” approach. Other departments considered the planning as a DFO initiative, so DFO had to persuade them to participate voluntarily. It also turned out that they were not willing to accept integrated ocean planning as an overarching framework over their sectoral mandates. Secondly, nobody had the authority to take decisions in the consensus-based collaborative planning. The participants concealed disagreements and conflicts in high-level and non-committal statements, and pushed concrete solutions forward to a next phase of action planning that never took place. The federal government played a crucial role for the termination of the two planning processes. A conflict over the planning area in ESSIM brought the initiative in conflict with the minister in DFO. PB/GB terminated because of a change in the national ocean policy, whereby the government dropped the ambitions of integrated ocean management in the Oceans Act. Voluntary commitments from other participants did not compensate for the lack of support from the federal government.

The concluding cross-case analysis highlights the striking difference in the leadership of the two governments and the way they organized for the planning. The Norwegian government led the planning in a traditional top-down *government* manner. The Canadian government relied on a *governance* approach and delegated the entire task, with unclear linkages back to the top. While the Norwegian government built organisational structures for trying to act more coherently across sectors, the Canadian government allocated the task to one sector alone, with insufficient supplementary co-ordination mechanisms. In the Norwegian model, the government listened to stakeholders and took decisions afterwards, ultimately negotiating compromises over conflicts in the Cabinet itself. The Canadian collaborative planning model made the heterogeneous group of stakeholders and government representatives equal in terms of decision-making power. This is a major reason why the ESSIM partners designed a policy that was not implementable, whereas the BSMP policy was. Important differences in policy design were BSMP’s setting of specific ecosystem targets with indicators, and designation of specified measures, as opposed to open-ended strategies in ESSIM. The different approaches taken reflect different national policy styles. Another explanation relates to the different political and economic contexts, which create different motivations for the two governments to engage consistently in ocean planning and resolution of conflicts.

6.5 Discussion

States have wide freedom to manoeuvre according to their own wishes in EBM since the approach is only contained in soft law arrangements. Paper 1 demonstrated that this is the case also when it comes to SEA, which is the most relevant instrument for assessments in EBM. Thus, there is a mismatch between the urgent needs for strategic assessments in the oceans, i.a. for EBM, and the weak legal status of SEA in the law of the sea. Strengthening SEA for the oceans will be an indirect way of strengthening EBM. The legal options available include requiring SEA in sectoral regimes, extending the marine scope of the SEA protocol, and entering into regional agreements (Paper 1). However, the negotiations of a legally binding treaty on biodiversity beyond national jurisdiction seems like the most interesting option now (Sander 2018c).⁵⁴

Paper 1 contributed to clarifying the status of international law prior to these negotiations. It does not only review international norms one by one, but is an attempt to interpret across the legal sources to define an assessment regime for the Arctic Ocean. The constellation of regional treaties and states here is specific, like it is in any other ocean. This affects the ability to generalise analyses across regions. In this case, however, it is not a problem since there are almost no regional treaties in the Arctic containing specific provisions on SEA and EIA.⁵⁵ The analysis therefore will be essentially the same if applied to other regional oceans that lack regional treaties containing specific assessment obligations (it must only be adjusted to the constellation of regional states and their accession to global treaties). Where assessment relevant regional treaties exist, they must be taken into consideration on top of my analysis. The most relevant ones are those that I excluded because of their geographical scopes: the EU directives on EIA and SEA, the Madrid protocol with EIA provisions for Antarctic waters and Regional Seas Conventions, whose geographical scope mostly is limited to areas within national jurisdiction. With these exceptions, the analysis is mostly applicable to other areas beyond national jurisdiction.⁵⁶

The other issue worth mentioning about paper 1 is that it tries to incorporate experience from the wider assessment literature, particularly about the effectiveness of EIA and SEA, into an article mostly based on legal reasoning. There are many unrealistic expectations as to what environmental assessments can deliver. It is therefore important to understand its roles and to draw lessons from the literature researching what it may achieve.

Paper 2 and 3 are rare examples of implementation theory, in the form of Winter's framework, applied to an ocean policy. There are lessons to be learned from this, both for implementation theory and for EBM. For implementation theory, the studies broaden the knowledge base for the tradition, and may generate insights that can contribute to generalisations across different policy areas. The papers also

⁵⁴ Information about the negotiations can be found at the UN website <https://www.un.org/bbnj/>.

⁵⁵ The only EA relevant treaty pertaining specifically to the Arctic used to be the Polar Bear Treaty, which only contains an implicit requirement for assessment. The more recent NEAFC rules on the protection of vulnerable marine ecosystems do contain assessment obligations, however, based on global FAO guidelines (cf. paper 1). The difference to other oceans therefore will be the extent to which the global FAO guidelines have been incorporated into the regulations of a regional fisheries management organisation.

⁵⁶ The article is about to be published in an edited book with papers from the International Journal of Marine and Coastal Law, made especially for these negotiations (Freestone, 2019).

demonstrate the importance of extending the focus of implementation studies beyond the implementation process alone, which many studies do despite advice of a broader focus (Sætren, 2014). In fact, the two papers find explanations for the implementation results in most parts of Winter's framework (see conclusions in Paper 3). Moreover, the two papers demonstrate the importance of the national government taking an active leadership role by engaging all relevant sectors and deciding in conflicts. The relevance of a classical top-down approach is noteworthy in the aftermath of the governance turn, which also influenced implementation studies.

For EBM, possibly also broader ocean policies, the framework is valuable because it introduces a theoretical platform for studying implementation processes as an alternative to each researcher finding his or her own angle. The terminology is clear and focussed on explaining how previous processes may explain the delivered results, not on understanding the processes for their own sake. Leaning on a long-standing theory tradition gives possibilities for learning from previous studies, for instance by finding explanatory variables that can be tested in an ocean context.

The combination of implementation theory and case study methodology applied in Paper 2 and 3 demonstrates an approach for generating empirical knowledge about which approaches that are conducive to the implementation of EBM under which circumstances. Possibly, this can also lead to theory development. Such knowledge should be fed back to practice by updating the advice given in recommendations for how to apply EBM in different contexts. The empirical support for EBM guidance seems at the best unclear, and in several cases, not fit for the main purpose of EBM, the adoption and the implementation of policy measures.

A critical question is how to advance from assessment of an ecosystem to formulation and implementation of policy. The cases examined demonstrate that this is a political process, not a technical issue or something that can be taken for granted. Participants in planning processes can get the same information about the ecosystems. That may create some joint understanding about the need for something to be done, as illustrated by the BSMP case. Still disagreement remained on what should be done by whom. Participants filter the information through their own lenses, and have different interests they want to secure. Stakeholders can also be divided by deep conflicts with a long history, as in the case of petroleum activities in the Barents Sea. Thus, it is inevitable that disagreement will arise, both on the understanding of the situation and on what should be done. If not managed properly, the results may be conflicts that can block progress towards solving outstanding ocean problems. The prevention and resolution of conflicts therefore is a key issue in EBM, as it is in planning for other purposes. If the stakeholders have conflicting views, maybe even after negotiating between them for a compromise, the cases demonstrate the importance of having legitimate decision-making processes for taking a position in conflicts. In the Norwegian political system, there is no doubt that this means elected political bodies.

EBM has long suffered from an implementation problem, for various reasons: an ecosystem is a complex management object; it is hard to coordinate planning and harmonise policies as required for its management; and there are a number of dilemmas and conflicts that need to be resolved. Still, I agree with Murawski (2007) and many others who have argued that it is possible to implement EBM. Norway, and arguably also the European coastal states, demonstrate this. They have not solved all ocean problems and once and for all achieved the objectives of EBM. What they have done, is to establish regular processes and routines for EBM. That is likely to put them in a better position for addressing ocean problems in the future. It is a warning sign when those who used to be the frontrunners, such as

the Biodiversity Convention, Canada and Australia, in practice leave their former ambitions of integrated, ecosystem-based ocean management. There is a risk that EBM ends up as an overarching principle in itself, a high-level discourse to be mastered, but not implemented for practical purposes. If I should highlight one key element for success from the Norwegian case, it is pragmatism. The high-level discourse on EBM, with all its principles, is overwhelming. There is a need to drag them down to earth and find practical approaches. If that is combined with a political will to address ocean problems in an integrated manner, there is a good chance that EBM may take off.

6.6 Further research

The work with the thesis has given several ideas for further research. A common theme is the need for empirical investigations of EBM. For many of the topics below, there are already a plethora of studies and theories available, developed in other contexts. The task is to apply these as background for studies related to EBM.

The relationship between SEA and EBM deserves more attention than in Chapter 3. An empirical basis for further research would be to study different uses of assessments in EBM in order to explore the assessment methodologies applied and how they function in planning and decision-making processes. With the scant interest in the assessment community for marine assessments, it would be useful to look into different ocean industries to see what types of strategic plans that have been made, to what degree these have been assessed for their (environmental) impacts and the uses of different assessment tools. Linked to the UN biodiversity negotiations, there is a need to follow the negotiation process, analyse the proposals, and communicate findings and reflections back to the negotiations.

The implementation studies can be followed up in many ways.

Firstly, as reflected in the conclusions of Papers 2 and 3, there is a need to follow the same research approach on more cases in order to expand the scope of the conclusions. New cases should be selected carefully in order to test applications under different conditions, and to study different approaches to all the elements in Winter's framework. For instance, my studies have not focussed on different approaches for studying the effects of policy instruments after they are put into practice, and how that may generate learning and adaptation of instrumentation. Such a research programme would benefit from going deeper into the general implementation theory and from using the results of comparable studies. It would be useful to see how studies have been designed, and what results and explanatory variables they have found. This can be used for generating hypotheses that may be tested on new cases of EBM. It would also be useful for defining variables more precisely than what I have done. Moreover, future studies should try to find the effects of implementation on policy outcome, not only output, which I have studied.

Secondly, political processes are key for achieving results of EBM, but seem to be little studied and clearly underestimated in the recommendations and frameworks for how to proceed in practice. An important topic is which mechanisms that are useful for achieving collaboration and coordination across sectors and levels of governance. Processes for suggesting, selecting and implementing policy instruments are of special interest. Are these processes supported by scientific advice, and in case yes, what kind of advice? The roles of industries and other stakeholders in planning processes, lobbying, alliance formation and decision-making is another topic. What are their interests, how do they manoeuvre to affect the policy-making, and how do their activities influence the adopted and implemented

policies? The cases that I have studied demonstrate that it is important to study the mechanisms for attempting to resolve disputes and conflicts that inevitably will arise in EBM.

Thirdly, the relevance of planning theory to EBM should be investigated more deeply. Collaborative planning has a strong status in many recommendations for EBM. However, it was an important reason for the lack of results in ESSIM. As pointed out in Chapter 2, EBM was coined in the US, which also was an important cradle for collaborative planning (Innes & Booher, 1999). One of the questions is what implicit assumptions collaborative planning holds from a US context that may not hold in other contexts, for instance, on the role of governments. Even the neighbouring Canada is different from the US, and differences to Europe may be even larger (Rudd et al., 2018). This may explain why criticism of collaborative planning has been strong in Europe (Innes & Booher, 2015). However, even in the US, there are opposing views on how collaboration works (Innes & Booher, 1999; Layzer, 2008; Margerum, 2014). The conflicting views on the conditions under which collaborative planning and consensus-seeking may function should be assessed. This should be a background for empirical studies of EBM processes. Koontz and Thomas (2006) raise a fundamental question for such inquiry: To what extent does collaboration lead to improved environmental outcomes?

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Paper 1

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Against all odds? Implementing a policy for ecosystem-based management of the Barents Sea

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ABSTRACT

Ecosystem-based management (EBM) should lead to policy that effectively addresses major negative impacts on the ecosystem in order to solve the problems identified. So far, there is little empirical knowledge about what is conducive to the formulation and implementation of such policies. The article suggests that implementation theory is an appropriate theoretical platform for acquiring such knowledge. General implementation theory is a starting point that gradually can be specified for implementation of EBM through carefully selected case studies. The article describes the theory and demonstrates its applicability by analysing the implementation of the measures in the Barents Sea Management Plan. Despite a policy design that violated several traditional recommendations for successful implementation, most measures in the plan were actually put into practice. The explanation lies in the Norwegian political-administrative system, the mobilization of knowledge, the collaboration created by involving a group of ministries and the authoritative handling of conflicts by the cabinet. All these explanations refer to processes occurring during the formulation of the policy, thus illustrating the need for a broader focus than the implementation process itself when studying policy implementation. The political leadership of the Norwegian government was decisive, demonstrating that EBM can be effectively implemented in a top-down fashion.

1. Introduction

Ecosystem-based management (EBM)¹ has been widely recognized as a strategy for the sustainable management of all the world's oceans. Integrated management of all human activities affecting an ecosystem is one of its core characteristics (Arctic Council ministers, 2013). This distinguishes EBM from traditional single-sector management. Moreover, EBM defines the whole ecosystem as the management object, not selected species, habitats or concerns. These holistic ambitions make EBM a complex undertaking that has been slow to move from conceptual ideas to practical approaches and implementation.

A substantial EBM literature has emerged (Curtin and Prellezo, 2010). Much of this is normative, defining the concept and potential approaches (Arkema et al., 2006; Grumbine, 1994; Juda and Hennessey, 2001; Levin and Lubchenko, 2008; Sutinen and Hennessey, 2005). Emphasis has been placed on understanding ecosystem properties and finding ways to assess cumulative human impacts upon them. However, for EBM to reach its objective of sustainable use of ecosystem goods and services, ecosystem knowledge must be translated into politics and management, ensuring that the findings from assessments are met with

effective responses that are put into action. It is therefore a problem that both the normative and empirical literature on EBM pay less attention to political processes, the content of policies and how to manage multiple human activities in an integrated fashion (Arbo and Thuy, 2016). In order to understand such issues, EBM should be studied through the analytical lenses of a variety of social science disciplines. Implementation theory should be particularly appropriate on the background of the many calls for implementation of EBM and the obstacles encountered (Sætren, 2014; Winter 2012). However, literature searches show that implementation theory has not yet been applied to EBM, and probably rarely on marine issues at all. Implementation theory has achieved substantial knowledge about what facilitate or hinder the successful implementation of public policies. This is a solid platform for studies also in the marine realm in order to reach empirically based conclusions for specific marine policies. Challenges are significant when coordination of different policy sectors and levels of governance is required, as is the case for EBM. As a point of departure, it would be reasonable to expect limited success, as indicated in the title.

This article introduces implementation theory as an analytical tool for empirical studies of attempts to apply EMB. This offers a theoretical

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¹ List of abbreviations: BSMP = Barents Sea Management Plan, EBM = ecosystem-based management, EEA = European Economic Area, IUU = illegal, unreported and unregulated (fishing), ME = Ministry of the Environment, MFCA = Ministry of Fisheries and Coastal Affairs, MPA = marine protected area, MPE = Ministry for Petroleum and Energy.

basis enabling a move from atheoretical accounts to carefully designed case studies that may lead to more systematic accumulation of knowledge, potentially also a contingent theory for implementation of EBM (George and Bennett, 2005). The Norwegian Barents Sea Management Plan (BSMP) is used as a case. This is a rare example of a mature system for EBM where political decisions have been implemented and systems for monitoring and revision are put in place. Implementation theory has been applied in asking questions to the case, and it has structured the presentation of the article. The findings thus are conveyed in a way that can facilitate later cross-case comparisons in order to test if the conclusions can be generalized to different contexts. Consecutive Norwegian governments have presented one white paper introducing a national ocean policy founded on EBM (ME, 2002) and three white papers on the BSMP (ME, 2006, 2011, 2015), which became the model for similar plans for the Norwegian Sea (2009, 2017) and the North Sea (2013). The major research question here is to examine the extent to which the measures in the BSMP have been implemented, and explain the results. As will be seen, addressing this requires an understanding of the characteristics of the policy formulation process, the selected policy and the implementation process. This distinguishes the article in several respects from the previous literature on the BSMP (for instance Knol, 2010b; Olsen et al., 2007; von Quillfeldt et al., 2009). It focuses on the policy and results of the plan, not on the initial assessments. Political actors play the main roles in the story, not experts. Moreover, the information is based on extensive interviews.

The article starts with a presentation of implementation theory, and a description of the methods applied. The subsequent sections are structured according to the theoretical framework before a discussion addressing explanations and a conclusion summarizing findings and putting the case into perspective.

2. Implementation theory

Studies of the implementation of public policies emerged at least as early as the 1950s (Sætren, 2005), but is often attributed to Pressman and Wildavsky's influential book "Implementation" from 1973 (Pressman and Wildavsky, 1984). They studied a federal program in the US that aimed to provide jobs for minorities, but with meagre results. A major explanation was that too many actors had to coordinate or give their consent in long sequences of decision and veto points. Such explorative studies of single cases were typical for the first generation of implementation studies, which frequently concluded that implementing public policy resulted in fallacies and failures. However, when followed over a longer period of time, researchers found that implementers learned from initial problems and adapted their approaches so that performance improved (Mazmanian and Sabatier, 1983, pp. 274–282). It also became evident that it was insufficient only to study the implementation process and blame the implementers when results did not live up to expectations. Success or failure also depends on the wider policy process, particularly the processes of formulating the policy, and the content of the policy itself (Mazmanian and Sabatier, 1983; Palumbo and Calista, 1990, pp. 5–17). Instead of continuing with searches for failures, more nuanced questions arose about the criteria for success or failure and what could explain either of these results (Hupe and Sætren, 2015).

Several attempts have been made to synthesize results, specify causal relationships and develop a general theory of policy implementation that could guide research and explain implementation results (Goggin et al., 1990; Hill and Hupe, 2014, pp. 44–59; Winter 2012). Despite such efforts, there is still no general theory across all the particular contexts (Sætren, 2014). Winter has argued that aiming for such a theory is utopian (Winter, 2012). Instead, researchers should develop and test partial theories and hypotheses by a diversity of methods and clearer use of concepts. His own contribution is a framework for implementation studies (Fig. 1). It is meant as a roadmap for analysis, not a theory itself; different theories may apply to different

parts of it.

Policy formulation is the phase where policy is developed, discussed and finally adopted. Conflict is one critical issue, and may lead to unclear compromises with vaguely described or inconsistent goals. That gives unclear guidance for action and wide leeway for implementers to modify the policy. Unresolved conflicts that persist in the implementation process may turn this into a new arena for continuous struggles. A core issue in the political bargaining is the selection of means to reach the ends. An effective policy must build on a valid causal theory and select means that work. Such a theory may not exist or be unknown to policy makers. They may also disregard its recommendations due to ideology, habit or interventions from stakeholders. Or they may resort to symbolic policy instead of substantive action because it can be advantageous to create a favourable image of themselves by demonstrating intentions, ideology or alliances (Winter and Nielsen, 2008, pp. 58–70).

The *policy design*, or adopted policy, typically contains objectives and measures consisting of policy instruments, designation of institutions in charge of implementation, and allocation of resources for solving the tasks (May, 2012). Traditional advice says that it is conducive to good implementation if objectives are clear, the degree of required change is low, and effective instruments and simple administrative structures are chosen (Mazmanian and Sabatier, 1983). This has been criticized as unrealistic. The political system routinely produces policies with ambiguous goals (Matland, 1995). Regarding the effectiveness of policy instruments, the way individual instruments work depends on the context, and there is little knowledge about the interplay when instruments are combined into packages (May, 2012). Moreover, designating simple administrative structures is not easy when governments increasingly get involved in solving complex problems where many public and private organizations have to find joint solutions (O'Toole, 2012). A more realistic advice is to design a policy that creates incentives for the implementers to take requisite actions by building their capacity, increasing their commitment to the basic policy goals, and signalling desired courses of action (May, 2012).

The *implementation process*: The management of relationships between organizations plays an important role in explaining the implementation of complex policies. Cooperation and coordination entail costs and benefits. On the cost side are reduced autonomy and substantial transaction costs, most evidently time and resources spent on establishing and maintaining the relationship. Different interests may also lead to conflicts and dysfunctional strategic games, like free-riding or turf wars (Lundin, 2007b; Winter and Nielsen, 2008). One common reason why collaboration still occurs is that the organizations involved are linked under the same hierarchy – for example ministries under a cabinet. A hierarchy can impose and support coordination with the authority needed. However, usually there are strong barriers towards involving the highest level when problems and conflicts arise (O'Toole, 2012). Organizations can also be convinced about the advantages of cooperation voluntarily. Sharing common goals is one reason for this. They may also get the advantages of resources in other organizations, such as access to funds, information, human resources and political legitimacy. Trust between the partners also plays a fundamental role (Lundin, 2007a). These assets must be continuously cultivated. Skilful administrators in complex organizational settings typically interact with counterparts in other organizations and stakeholders to build support, persuade, negotiate and coordinate, sometimes also to fend off disruptive influences. Networking this way can improve collaboration and the performance of policies (O'Toole, 2012).

There are two major options for selecting the dependent variable in implementation studies, or what should be explained: output or outcome (Hill and Hupe, 2014, pp. 141–143; Winter 2012). *Output* is the immediate delivery of results in the form of services to the public or exercise of authority. *Outcome* is the subsequent impacts, often measured as goal achievement compared with the policy's objectives. The linkages from output to outcome can be seen as a series of causal-effect

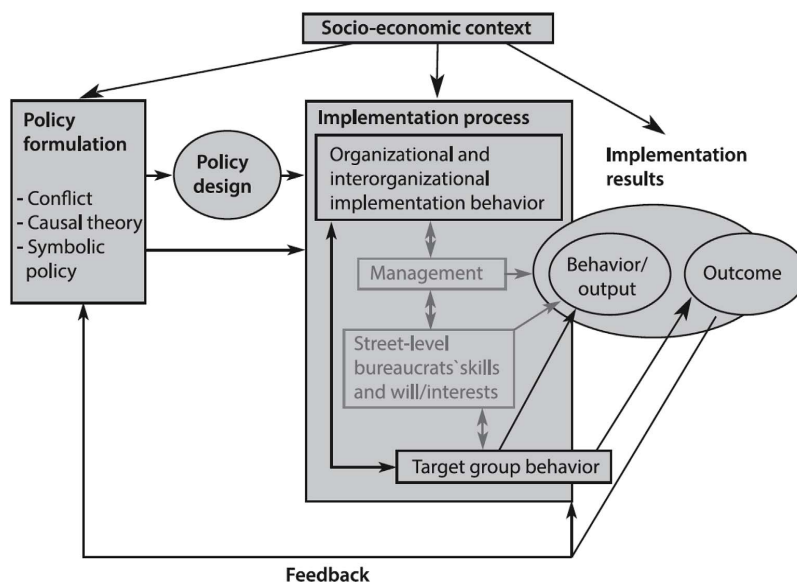


Fig. 1. An integrated framework for implementation studies (Winter, 2012). The parts of the framework concerning street-level bureaucrats are marked with grey because they have less relevance for the BSMP-case.

relationships, with many possible end points. The main problem in linking output to outcome is that other circumstances, such as other policies and external factors, occur simultaneously, supporting or counteracting the desired results. Long time spans and varying geographical scope may also complicate evaluation. Due to these complexities, implementation studies most often use output as the dependent variable. That is also the case in this study.

3. Material and methods

The study is based on publicly available documents and interviews that have been conducted according to a permission from the Norwegian Data Protection Official for Research. The main documents considered are white papers from the government and the recommendations to these from the Storting.² I conducted in-depth interviews with 30 individuals and made several requests to others to check details. The interviewees included seven politicians from four governments and current or former civil servants from the coordinating Ministry of the Environment (ME), the Prime Minister's Office, the Ministry for Petroleum and Energy (MPE) and the Ministry of Fisheries and Coastal Affairs (MFCA).³ The questions addressed the processes that led to the formulation of the plan, how measures had been followed up, the organization of the implementation process, and general questions about attitudes towards the management plans. I also approached some of their subordinate directors to ascertain the extent to which they had been involved in proposing measures to the plan, and to review the implementation process and its results. Moreover, I interviewed former leaders of the Norwegian Fishermen's Association (*Fiskarlaget*), environmental NGOs (*WWF* and *Naturvernforbundet*) and the Norwegian Oil Industry Association (*Oljeindustriens landsforening*) about their attempts to influence the policy

before its adoption and during the implementation process. The interviewees first received information about the purpose of the study. After giving their consent to participate, they received questions in advance. The interviews lasted between one and up to four hours when repeated. Afterwards, the interviewees received transcripts with journalistic editing, providing them the opportunity to clarify or add information. The transcripts and the documents were coded in NVivo in order to get a better overview of the extensive information. All the 157 measures identified in the two white papers (ME, 2006, 2011) were put into a spreadsheet along with information detailing what had been done to follow up each of them. When searching for explanations to the implementation results, the interviews gave good information about how many processes had occurred, sometimes also participants' own explanations of why results had been achieved. This was core information for arriving at plausible explanations and evaluating their explanatory power. The number of final explanations were limited in order to capture main mechanisms common across the individual measures.

4. The formulation and implementation of the policy

4.1. Background

The initiative for the BSMP was completely political and came as the result of decades of controversies over the future of the petroleum industry in Norway's northern seas (Andersen, 2017; interviews). The three centre-right parties in the Bondevik government (2001–2005) agreed in their political platform to prepare “a holistic management plan” as a part of a package deal on petroleum in the Barents Sea. The original petroleum agenda was substantially amplified when coupled with Norway's international commitments to implement EBM in the first formulation of a national ocean policy. In the resulting white paper, the government presented a vision for clean and rich seas and designated legally non-binding management plans as the major instrument for achieving this (ME, 2002). These cross-sectorial plans were to contain impact assessments, ecological quality objectives and guidelines for sectorial policies. The sectors, however, were to be responsible for implementing the measures needed to reach the

² In Norway, a white paper (*Melding til Stortinget*) is a document from the government to the parliament (*Stortinget*) with information about a policy, but without a proposal for a decision.

³ In 2013, the MFCA was dissolved, while the ME got new responsibilities and was renamed. Since most of the events in this article concern developments before 2013, the old names and functions are retained.

objectives. Another important decision was to appoint the ME to lead the work through a Steering Group with representatives from the relevant ministries. A first package of measures addressing most maritime sectors was also described.

The Stoltenberg government presented the first BSMP in 2006 (ME, 2006; hereafter referred to as BSMP-2006). This was a coalition of three centre-left parties emanating from a majority in the Storting between 2005 and 2013. The plan introduced a policy with management objectives and a program of measures for all relevant sectors. Due to political controversies over the plan's compromise on petroleum activities, the government presented a selective up-date focusing on the Lofoten area in 2011 (ME 2011; hereafter BSMP-2011).⁴ Despite this restricted scope, the plan included a new programme of measures covering wider areas and topics.

The Solberg government submitted another update in 2015 (MCE, 2015; hereafter BSMP-2015). The topic was the seemingly technical issue of moving the defined location of the ice edge further north due to ice melting. However, that would imply that petroleum activities could move northwards as well, without breaking the political agreement with two supporting parties that prohibited drilling in ice-infested waters. The Storting sent the white paper back to the Government, claiming that the normal procedures for making management plans had not been adhered to. Instead, it called for an ordinary revision. This white paper will only be referred to occasionally since it did not include new objectives or measures.

4.2. Policy formulation

4.2.1. Scientific and technical reports

The preparation of the first plan started with the establishment of the Steering Group with civil servants from four ministries, not politicians.⁵ They commissioned a series of studies from their subordinate agencies, starting with status reports and followed by sectorial impact assessments leading into a cumulative impact assessment (Fig. 2). A main conclusion was that the state of the Barents Sea was good. Fisheries had the greatest impacts on the ecosystems, while petroleum production, increased maritime transport and climate change were future risks. Other studies addressed objectives, valuable and vulnerable areas, and knowledge gaps (Hoel, 2008; Knol, 2010b).

The agencies involved later were organized formally into one cross-sectorial expert group, the Management Forum.⁶ Before the 2011 update, the group delivered one single report in a response to all the tasks commissioned by the Steering Group. For the 2015 update, the government wanted to save time and resources.⁷ The ME therefore assembled the information itself instead of using the Management Forum.

4.2.2. Drafting the white papers

It was a clear premise that the scientific and technical reports should provide a knowledge base for formulating policy, not propose policy responses to the challenges identified. That was perceived as the political realm and a task for the government. The Steering Group was instrumental also in this task. Thus, their role changed from guiding subordinate agencies to giving advice to the cabinet. Based on first drafts by the ME, the group drafted the white papers including proposals for packages of measures. Documents detailing the measures they

considered and the reasons for their selection are not publicly available. The interviewees refer to almost no previous analyses of the effectiveness of the instruments under deliberation. What the civil servants believed would work, which is tempting to call “traditional managerial knowledge”, seems to be the prevalent rational basis for selection. The degree of consensus or conflict was however important

4.2.3. Conflicts and conflict resolution

The Management Forum was instructed to reach consensus to the extent possible, and over the years there have been almost no dissenting opinions in their reports. This reduced the scope for disagreements about facts and the use of competing expertise in the ministries. The degree of conflict between them varied by issue. Norway's tradition for addressing pollution in international fora had universal support. Regarding maritime safety and oil spill response, “there was broad agreement professionally, between ministries and across the political parties” on what should be done.⁸ The political disagreements concerned the willingness to pay for risk reductions. The hardest issues to resolve involved a triangle of interests related to fisheries, petroleum and the environment, represented by three ministries. With respect to fisheries, overfishing was no longer a big issue following a major overhaul of the fisheries policy in the 1990s, whereas illegal, unreported and unregulated (IUU) fishing still was (Gullestad et al., 2014). The major conflicts arose over the sector's responsibility for environmental damage, particularly to benthic communities, and the use of marine protected areas (MPAs). Regarding petroleum policy, the conflicts concerned accident risk, pollution from regular activities, and access to new areas. The Lofoten area was the centre of the political struggle because of its petroleum reserves, rich ecological values and importance for fisheries. This marine discourse is mixed with wider arguments about climate change, the future role of the petroleum industry in Norwegian economy and regional benefits to Northern Norway (Jensen, 2012).⁹

In the co-ordinating ME, the politicians “considered at an early stage that it would have been too demanding to have two big conflicts running simultaneously”.¹⁰ They therefore decided to first negotiate most controversies regarding fisheries bilaterally, in 2006 and 2011. An intended political consequence was that the ministries for fisheries and for the environment would focus on joint interests in the petroleum conflict. Those issues were unresolvable in lower-level discussions with MPE.

The upper level of conflict resolution was to present the disagreements in a cabinet memorandum and put it forward for a cabinet meeting (Fig. 3). Considerable time in 2006 was spent by newly appointed cabinet members discussing how to structure processes before substantial negotiations over the first management plan started, issue by issue. Learning from this, the state secretary for ME in 2011 presented all major disagreements in one cabinet memorandum. The intention was to facilitate negotiating package deals, which was a technique frequently used by the Stoltenberg government to reach compromises (Kolltveit, 2014). However, “what we failed to come to terms with in meetings between the state secretaries was seldom resolved in larger forums” such as the cabinet meeting.¹⁰ When that occurred, “it was the practice in our government that the prime minister concluded that the issue would be best served by delegating it to the Cabinet Subcommittee¹¹ (...). Alternatively, he could authorize a set of

⁸ Civil servant.

⁹ Climate change is defined as a separate, cross-sectorial policy field in Norway. Mitigation of climate change therefore is not addressed in the management plans. Given their distinct marine scope, adaptation to climate change could be included. So far, it has not, apart from the initiative in the BSMP-2015 for moving the petroleum activities northwards after the receding ice edge.

¹⁰ Former state secretary.

¹¹ The Cabinet Subcommittee (*Regjeringens underutvalg*) is an informal inner cabinet in Norwegian coalition governments. It has concentrated power from the broad collegial cabinet to the prime minister and the coalition party leaders, supplemented by relevant ministers. Similar developments can be found in many European cabinets (Kolltveit, 2014).

⁴ The terminology about the Norwegian management plans distinguishes between a revision, which is a complete review of the whole plan, and an update, which can focus on selected themes or geographical areas.

⁵ Norway has a parliamentary political system, not a presidential. A typical ministry consists of a permanent staff of civil servants, headed by a minister, a state secretary and a couple of political advisors changing with the government.

⁶ Following several reorganizations, there is now one joint Management Forum (*Faggrupper*) for all the three management areas, not one for each. Only one permanent sub-group remains, the Advisory Group on monitoring.

⁷ State secretary.

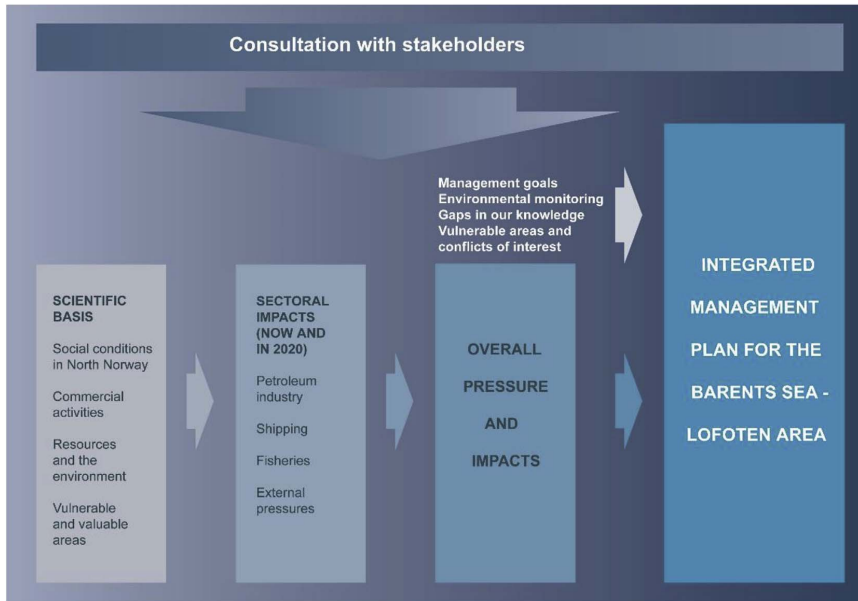


Fig. 2. Overview of the studies undertaken 2002–2005 that provided the input to the 2006 white paper.

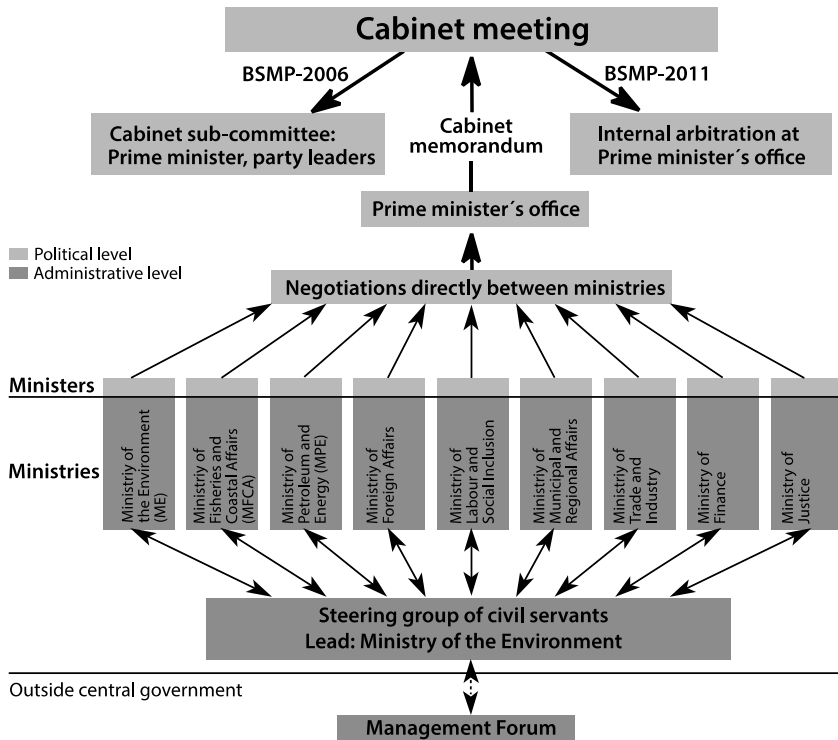


Fig. 3. Simplified map of the internal mechanisms in the Stoltenberg government for reaching agreement on policies before the final adoption of the complete plans by the Cabinet collegium.

ministries to settle the issue.¹² Thus, the prime minister and the party leaders from the governing coalition negotiated the text in the BSMP-2006 in meticulous detail, primarily with respect to the regime for petroleum activities. Participants explain this level of involvement by the high political stakes involved, the pioneering endeavour, and the early days of the coalition. Five years later, a minister without a portfolio at the prime minister's office led inter-ministerial negotiations. Interviewees describe this as a simpler process than in 2006. It was an update of a kind of plan that in the meantime had become more familiar, the Management Forum had not recommended major changes to the petroleum regime, and everybody knew the political constellations well. Since the Stoltenberg government had majority support in the Storting, these internal processes in the coalition in reality settled the issues.

4.2.4. Stakeholders' activities

The Management Forum invited stakeholders to several workshops in the beginning. Their assessments and reports later have systematically been submitted to public consultation. The processes of preparing the white papers, however, were closed, with no formal opportunities for participation. Subsequent hearings in the Storting committee were the only occasion to present an opinion on the policy directly to decision-makers. The organizations also tried to influence decisions through extensive use of media and direct lobbying, particularly directed at the political parties.

The organizations used the corporate channel too. The Oil Industry Association had formalized contact meetings 2–3 times a year with the minister for petroleum and leading civil servants (*Toppledorforum*). The Fishermen's Association also had regular meetings with their minister. The environmental organizations, however, did not have the same regular channels to the top of the ME. This corresponds to previous findings of economic organizations having closer corporate links to the government than environmental interests (Reitan, 2001). The Oil Industry Association gathered the largest national industrial and labour organizations in an umbrella organization (*Konkraft*) that developed and harmonized policies among the members. The industry also tried hard to come to an agreement with the fishermen's organizations. They found many flexible solutions to conflicting uses. However, they could only agree to disagree on the opening up of Lofoten and three other areas for petroleum activities. The oil industry made no similar attempts to reach agreements with the environmental organizations.

4.3. Policy design

4.3.1. Objectives

The objectives of the BSMP established in 2006 are complex (Fig. 4). The purpose of the plan was to provide a framework for sustainable use, while maintaining the structure, functioning and productivity of the ecosystems. Nine general objectives address value creation, ecological considerations, and co-existence between industries. These were supplemented by specific targets for managing biodiversity, controlling pollution, reducing risks, and ensuring safe seafood, branching into 15 sub-targets supplemented by indicators. The levels of target achievement based on monitoring on the indicators were assessed both in 2006 and in 2011 as a basis for the ministries' designation of measures.

The general objectives reflect the problem of striking an appropriate balance between conservation and use. They appear as a typical result of a political process trying to reconcile different views in a compromise where most stakeholders can find formulations supporting their interests. This gives weak guidance for resolving disputes. It opens for multiple interpretations of what to achieve, of criteria for evaluation, and of the direction of a marine policy. However, ambiguity reduces conflicts and ensures that everybody is kept on board (Matland, 1995).

Sacrificing clarity in the general objectives, thus, can be understood as necessary in order to keep all the ministries loyal to the process.

The broad, sustainability-oriented scope of the objectives is not reflected in the set of specific targets, which cover only the environment and no socioeconomic issues. This reduces the utility of the targets in the balancing of conflicting goals. Another problem with the targets was that they only covered the state of the environment. Without additional indicators for pressures on the environment and more specific indicators for impacts, it is hard to explain observed changes (van der Meeren, 2015). Neither can the system measure the effects of adopted policies since there are no response indicators.

4.3.2. Measures

The measures were formulated in 122 action points in the BSMP-2006 ("The Government will..."). The 2011-update comprised 57, partly repeating and reinforcing the original ones, partly introducing new ones. The measures contained a number of policy instruments. That is the set of techniques that governmental authorities apply when attempting to affect societal change (Bemelmans-Videc et al., 1998, pp. 7–50). The idea is that any policy consists of a limited set of basic approaches that are common across different policy fields. These are adapted to the particular circumstances and often merged into packages. The selection of policy instruments will reflect main lines of political or administrative strategies referred to as policy styles, and may vary between countries, sectors and periods (Bemelmans-Videc et al., 1998, pp 2 and 39; Lascoumes and Le Gales, 2007; Winter and Nielsen, 2008, pp. 43–71). One major change is what has been characterized as a turn from vertical government to horizontal governance, with partnerships, co-management and networks as core ingredients (Salamon, 2002). In environmental policies, the so-called ecological modernization introduced new instruments based on markets and information to consumers (Jordan et al., 2013).

The instruments are classified according to the columns in Table 1.¹³ The largest category by far is initiatives to improve knowledge. A backdrop for this is the decision to base the studies undertaken in 2002–05 on existing knowledge, and the subsequent identification of "knowledge gaps" that were addressed in the plan (Knol, 2010a). The second largest group is what is called government initiatives. This consists of the classical regulations (laws, regulations, enforcement) and governmental plans, policies and strategies. The third largest group is international initiatives. On closer examination, the largest sub-category is initiatives to improve international regulations on particularly contaminants and IUU fishing, whereas other initiatives aimed at better collaboration and enhancing common understandings with foreign actors.

The review of the measures leaves a clear impression of a traditional governmental policy style. Regulations predominate, while there are no attempts to influence actors in the markets by economic incentives, or involve them in co-management. The high number of programs for improving knowledge and the international initiatives are peculiar to EBM. This reflects norms about applying the best available knowledge and the need for collaboration across jurisdictions in EBM. The implication for following up was clear: the government was the sole implementer.

4.3.3. Funding

There were initiatives from members of the Stoltenberg government to ensure commitments to funding for new initiatives in the white

¹³ This is inspired by Vedung (Bemelmans-Videc et al., 1998, pp 21–51). He recommends a minimalistic approach with only three categories: Regulations, economic means and information. This should serve as a starting point for further sub-divisions and adaptation to the particular case. Here, regulations is linked to other government initiatives in order to shed light on the government/governance dimension. Moreover, information is split into the classical information from the government in order to influence actors, and the information to the government in order to increase the knowledge base. Detailed classification is available on file by the author.

¹² Former minister.

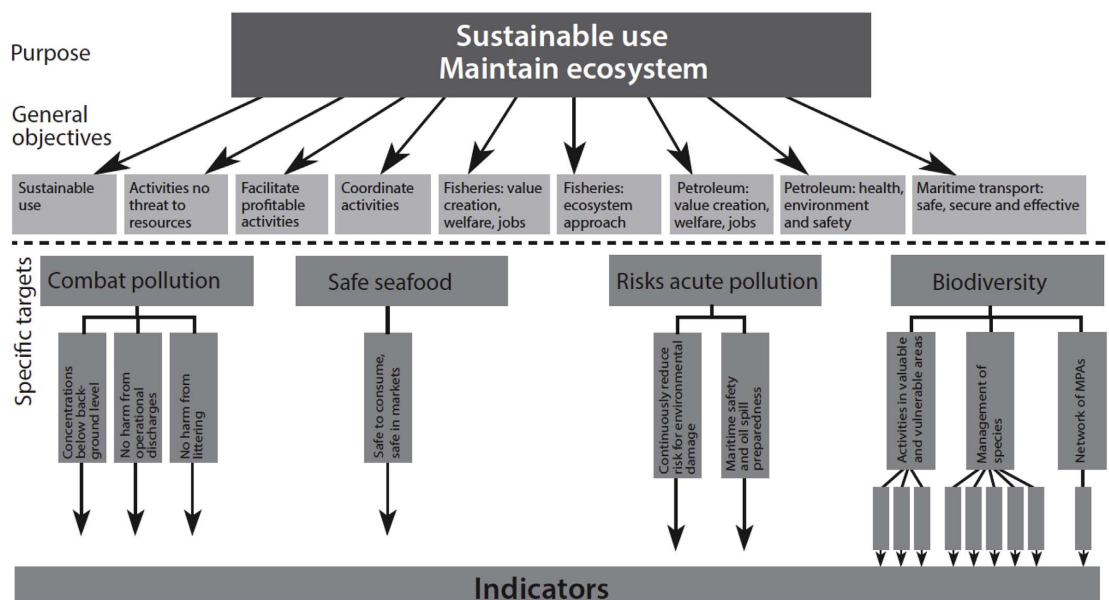


Fig. 4. The structure of objectives and targets for BSMP with key words for formulated goals.

Table 1

Measures in the two BSMP white papers classified according to type of instrument.

	Government initiatives		Economic means	Information:		International initiatives	Technology	Organization	Total
	Regulations	Plan, policy, strategy		From government	Better knowledge				
BSMP-2006	21	13	0	2	45	32	2	7	122
BSMP-2011	7	7	0	2	34	3	3	1	57
Sum	28	20	0	4	79	35	5	8	179

papers. This triggered a general conflict with the Treasury, which wants to consider all appropriations holistically in the annual budget. The Treasury view won, and the white papers only used the standard formulations that the budgetary consequences would be clarified in the budget.

4.4. The implementation process

In the 2002 white paper, it was established that the management plans would constitute a framework for the sectors, which were to be responsible for the measures. Thus the BSMP-2006 did not specify any new organizational structure for the implementation, only for the scientific advice. The main responsibility remained with the individual ministries, often with assistance from subordinate directorates or agencies. Many of the agencies were well prepared for the tasks since they had been giving advice to their ministries during the preparation of the policy.

To begin with, the Steering Group had no role in the follow-up; they were busy preparing new plans for the Norwegian and the North Seas. Contacts that had been established were useful for informal coordination, and issues could be brought up on an ad-hoc basis. They later made a systematic overview of all the measures and all the allocated responsibilities. Since then, the ministries have reported occasionally on how they have followed up the measures.

At the political level, neither the Prime minister's office nor the politicians in the coordinating ME established any systematic

mechanism to oversee the implementation. The politicians in the ME, however, engaged eagerly in a number of issues, aiming to ensure a consistent marine policy across sectors, implementation of the measures, and sufficient funding of strategic projects.¹⁰

5. Implementation results

In order to measure the extent of implementation, I have systematically interviewed civil servants about each of the 179 measures, and consulted government documents. Some of the measures were akin to aims, indicating the desired direction of processes instead of defining a concrete deliverable. In such cases, it is harder to assess what has been achieved, even though there generally have been substantial follow-up activities. Concentrating on the majority of action points that have more concrete demands for results, the overall conclusion is that most of the measures have been implemented. Moreover, there seem to be few adaptations of the measures during the implementation and few completely breaches of intentions. Before discussing how this has been achieved, some major results are highlighted.

5.1. Cross-sectorial EBM

The first group of measures in BSMP-2006 addressed how to make a system for holistic EBM across the sectors. Coordinated, cross-sectorial monitoring of the state of the ecosystem has been established, consisting of indicators, reference values and action thresholds. The

Management Forum provides comprehensive assessment reports every third year and annual updating of each indicator on the Internet (van der Meer, 2015).

The BSMP-2006 stated that the management should be area-based. This was followed particularly by the zoning of shipping and petroleum activities (see below). However, a comprehensive system for cross-sectorial marine spatial planning has not been established due to opposition from several ministries.

It was an ambition in 2006 to establish a representative network of MPAs by 2012. There were hard internal struggles in the government on this issue. In the end, no MPAs were established in the Barents Sea. This is the clearest breach of intentions encountered. The Storting is not satisfied with the situation, and has called for a national plan for MPAs from the government.

Another set of initiatives aimed at improving the common knowledge base through expanded research and improved surveys. Three of these are prominent: MAREANO is a comprehensive programme for mapping the seabed that has cost 758 MNOK¹⁴ over its first 12 years of operation (Buhl-Mortensen et al., 2015). SEAPOP monitors seabird populations and has led to an additional expenditure of 103 MNOK in the same period, on top of other ornithological programs in the Barents Sea.¹⁵ A campaign for seismic exploration of the Lofoten area was conducted at a cost of 518 MNOK. Moreover, a number of research initiatives have addressed pollutants, climate change and marine acidification, including the impacts on the Barents Sea ecosystem.

Several initiatives were directed at engaging Russia in establishing EBM in their part of the Barents Sea. This has been a major task for the bilateral Norwegian-Russian environmental collaboration. Joint scientific assessment have been made. Russia is working according to a road map that aims at establishing a pilot project for EBM in the Barents Sea, based on new legislation.¹⁶

5.2. Initiatives towards the sectors

The second group of measures was aimed at preventing and reducing pollution and safeguarding biodiversity. Here, policies towards three important sectors are highlighted:

5.2.1. Petroleum activities

A new framework for the petroleum sector's access to areas was introduced in 2006 (Fig. 5, left). Almost all the areas that had been identified as particularly valuable and vulnerable were completely closed for petroleum operations (Knol, 2011a). In the new compromise in 2011, the conservation interests managed to maintain the most controversial areas around Lofoten closed. The political prize for that victory was that the oil industry got access to other areas where restrictions were lifted (Fig. 5, right), and that processes for legally opening up new areas for their activities were initiated for the formerly disputed area with Russia and off Jan Mayen. The Storting opened the southeastern Barents Sea in 2013. The preparations for opening up the areas around Jan Mayen have been put on a halt as a result of the political negotiations over the platform for the Solberg government.

The other major issue was the *physical zero* discharges requirement introduced in 2003 as a stricter condition for operations in the Barents Sea. It was revoked in BSMP-2011 and replaced by the same requirement that applies to the rest of the Norwegian continental shelf: no *harmful* discharges (Knol, 2011b). These requirements as well as time and area based restrictions have been incorporated into the production licenses and discharge permits issued to the oil companies.

¹⁴ MNOK = million Norwegian kroner. All expenditure figures have been provided in correspondence with the programme managers.

¹⁵ Intro to the programme: <http://www.seapop.no/en/about/>.

¹⁶ For more information, see <http://www.barentsportal.com/barentsportal/index.php/en/>.

5.2.2. Fisheries

The BSMP-2006 stated that the government would continue the development of an ecosystem-based management regime that takes into account how fisheries affect the whole ecosystem. The new Marine Resources Act formalized this in 2008 by establishing the ecosystem approach to the management of wild-living marine resources as a principle.

The two white papers introduced several measures to protect sensitive bottom habitats: the mapping of benthic areas, the presentation of the results in nautical charts, and the development of less damaging fishing gear. Following their new legal mandate, the fisheries authorities have closed coral reefs to fishing and introduced rules for immediate stop in operations when the intermixture of sponges and corals in the catch exceeds defined limit values. The collaboration in SEAPOP has reduced the conflicts over seabirds, but has not resulted in new measures applicable to the fisheries. Many seabird populations are in severe decline, and the Storting has called for an action plan for seabirds.

In the traditional fisheries management, the BSMP-2006 called for an increasing proportion of stocks to be managed according to formal management strategies with precautionary reference points. The Fisheries Directorate argued that it would be too expensive to acquire the knowledge needed, as compared to the value of the catch. Instead they introduced a system of tables synthesizing knowledge about stocks, fisheries, and the management of species that are not being fished according to annual quotas (Gullestad et al., 2017). The initiatives to reinforce control measures and deter IUU fishing in the Barents Sea had a high priority. Norway particularly engaged with Russia and the EU, and played an active role in the negotiations of the 2009 Port State Measures Agreement. The peak of IUU fishing of cod and haddock in the Barents Sea was estimated to be 206,000 tonnes in 2005. Today, it is close to zero for these two largest commercial stocks (Anon, 2015; ICES, 2016).

5.2.3. Maritime safety and oil spill response

The most important measures for improved maritime safety are the establishment of a traffic service centre in Vardø, a mandatory routing and vessel separation scheme along the coast (Fig. 6), and improvements to the tugboat services. Restrictions on heavy bunker oil in Svalbard were introduced to prevent oil spills. The government's oil spill equipment has been completely modernized over the last few years at a cost of approximately 400 MNOK.¹⁴

6. Discussion

The high level of implementation can seem surprising based on traditional recommendations from implementation studies. There were no legal obligations backing the process. The goals were unclear, no funding was pre-allocated, and there were only loose mechanisms for overseeing the implementation of a complex and partly disputed policy based on distributed responsibility. What might explain this somewhat unexpected result?

6.1. The context

A part of the explanation lies in what is the context according to Winter's framework. First, the Norwegian unitary state has considerable autonomy in ocean affairs. The agreement between Norway and the EU about the EEA has geographic and thematic limitations that exempt Norway from EU policies in most ocean affairs. At the national level, the management of the oceans outside of the coastal zone is a national responsibility that the state has not shared with municipalities and counties.¹⁷ These circumstances give the state latitude and control.

¹⁷ As a contrast, coastal areas out to the baseline + 1 nm (ref. the geographical scope of the EU Water Framework Directive) are managed according to the Planning and Building Act. The act gives municipalities a major responsibility for spatial planning also in the sea.

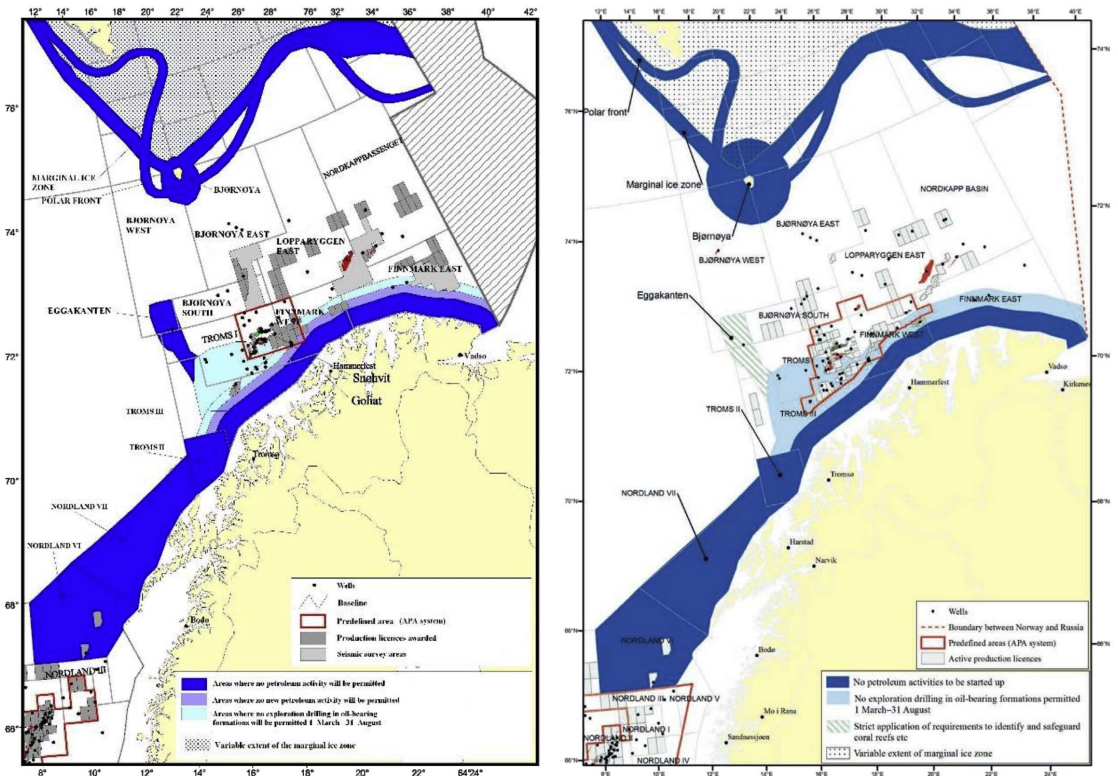


Fig. 5. The Framework for petroleum activities in BSMP-2006 (left) and BSMP-2011 (right).

Second, the Norwegian political model is characterized by a cooperative and consensus seeking policy style and relatively small differences between the political parties. The population has a high level of trust in the political system. There is a well-qualified staff of civil servants with a professional ethos of loyalty toward parliamentary decisions (Olsen, 1983).

6.2. Political ownership

It is noteworthy that the whole idea of management plans was political, not the result of the advocacy of professional organizations. Since the Bondevik government coined the concept and shaped its basic content, subsequent coalition governments have followed up and refined the system. These governments together comprise all the established political parties in the Storting. Recent events indicate that the backing of parliamentarians has grown firmer. The Storting has decided to revise the plans at least every 12 years, based on new knowledge and a thorough process. Updates should happen every fourth year to check goal achievement and eventually revise the measures.

It is suggested that there are three reasons for this political support that also explain the high level of implementation:

6.3. The role of knowledge

The political system in Norway has a long tradition for appreciating knowledge-based policies (Christensen and Holst, 2017). Almost all the interviewees refer in some way to the knowledge production when asked about ranking the most important achievements of the BSMP. A

CEO in the petroleum industry for instance stated: “(the management plans) assemble much knowledge, and also new knowledge. Knowledge (...) provides greater awareness of what the issues are rather than cheap arguments. It does not mean that everybody agrees with everybody, but it serves as a basis for discussions.” The Management Forum is highly regarded in this respect. This was illustrated by the critique in the Storting of the circumvention of the Forum in the preparation of the BSMP-2015: “For the majority, it is important that revisions or updates of the management plans only occur on a factual basis established by the Management Forum, and after these reports have been put on public review”.¹⁸

The trust put in expert knowledge raises several dilemmas. The increasing influence of technical expertise challenges Norwegian popular democracy (Christensen and Holst, 2017). The BSMP is a prominent example, with the high dependency on expert advice and interpretations. On the one hand, the politicians want this advice. It gives them necessary insights into science, but also tempting ammunition for justifying their own views by selectively picking science-based arguments. Such strategic use of knowledge and repeated calls for new assessments to achieve “sufficient knowledge for decisions”, have often overshadowed argumentation based on values and interests (Knol, 2010a). On the other hand, it is interesting to observe that the Storting was conscious about the need for a distinct political role versus the experts when they argued for regular updates to the plans: “The political parties too must be allowed to take part in the necessary and on-going work on

¹⁸ Rigmor Eide in interpellation debate 7 April 2016.

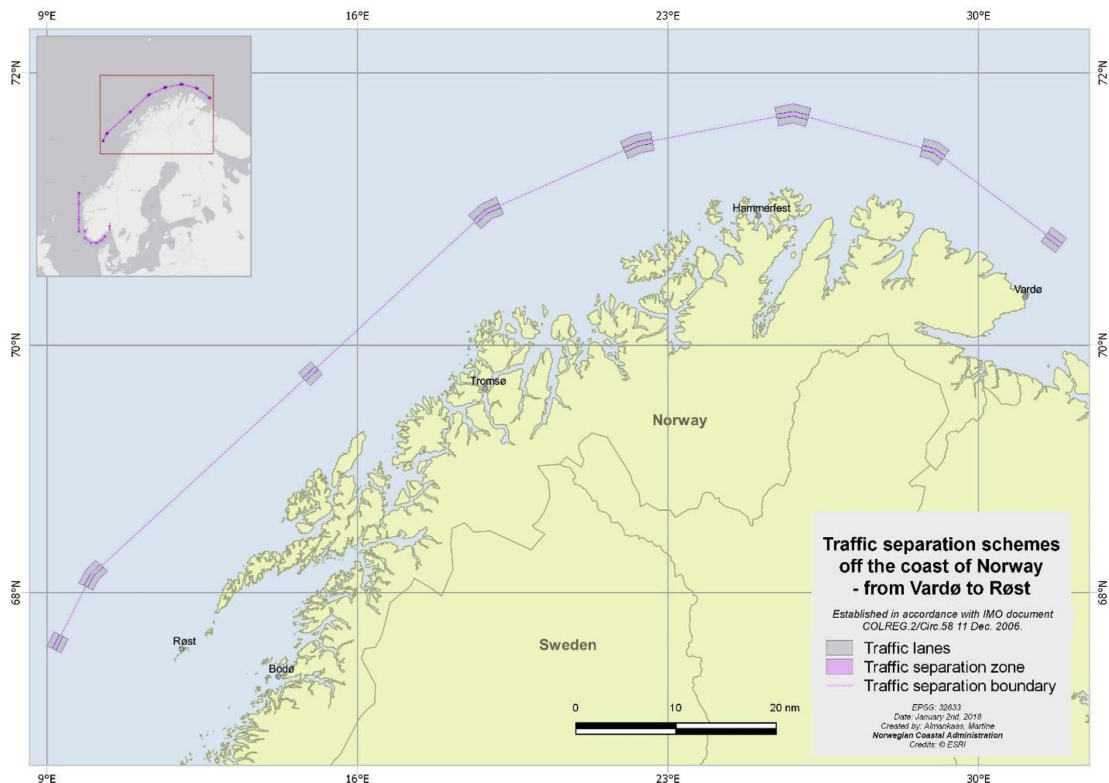


Fig. 6. Traffic separation schemes from Vardø to Røst.

the management plans. (...) It must not become merely a scientific issue that is not anchored in the parliament.¹⁹

6.4. The active involvement of relevant ministries

Many of the soft mechanisms in the Steering Group resonates with the literature on what is conducive to collaboration between organizations (Lundin, 2007a; May, 2012; O'Toole, 2012). The very establishment of a *group* of ministries implied a less hierarchical organization more prone to collaboration and negotiations than if the task had been allocated to one ministry alone. Mutual understanding and trust was built by learning about the other ministries' areas of responsibility and motives, and by the personal relationships evolving from working together for years. There are also several examples of ministries getting access to the resources of others. The most apparent is the pooling of expertise and money needed to run the Management Forum and fill knowledge gaps. This produces credible and legitimate results that the individual ministries would not have achieved by their own. Individual ministries also could enjoy access to political resources, like access to decision-makers in other ministries, support for their initiatives from a broader group of ministries, and access to another standing committee in the Storting. While interviews reveal a recognition of the way the ME facilitated the processes, there were also complaints about the extra workload. That is no surprise and probably a necessary cost in implementing complex policies effectively (Lundin, 2007b).

The reports from the Management Forum influenced the perception of the task in the Steering group. The reports defined common challenges that the ministries had to address jointly by proposing measures within their own areas of responsibility. A former coordinator in the MFCA said that their response was to propose “what we knew we could implement”. This did not imply that their ambitions were low; rather, it illustrates how the measures were rooted in their own system. The involvement of the ministries in this way meant that the same ministries that participated in formulating the policy were also responsible for the subsequent implementation. That averted the split created when an adopted policy is handed over to someone else for implementation, thereby substantially increasing the risk of deviation from the intentions (Pressman and Wildavsky, 1984). The active participation is also important in explaining why the implementation by the sectorial administrations ran smoothly without new organizational structures.

6.5. Conflict resolution

The close involvement of the very top of the political hierarchy in this case is extraordinary compared to how most organizations operate (O'Toole, 2012) and what is normal for most policies in Norway. It provided the selected policies legitimacy that prevented continuous struggles that might have impeded implementation.

The two most prominent disputes played out quite differently. Major conflicts regarding the fisheries' responsibility for the environment and the distribution of authority between the fisheries and environmental administrations, were gradually addressed in a series of

¹⁹ Marit Arnstad, interpellation debate 7 April 2016.

political compromises in the Stoltenberg government²⁰. Today these developments are not disputed, but there are different opinions regarding whether the fisheries sector alone or also the management plans should take credit for the changes. The ecosystem approach to fisheries had evolved during the 1990s as a sectorial variant of EBM that gradually was introduced in Norway (Gullestad et al., 2014). Interviewees from the fisheries administration acknowledge that the management plans pushed them further and that the cross-sectorial ecosystem approach was new to them. It seems fair to say that this is a good national example of the international trend of co-evolution of the regimes for fisheries and biodiversity conservation (Garcia et al., 2014). Though there are continuous disputes over the environmental performance of fisheries, they play out within a new framework that has wide support.

As a contrast, the conflict over petroleum continues to be one of the most prominent current expressions of a historical green cleavage in Norwegian politics (Jansen and Mydske, 1998). Extensive programmes that have produced new knowledge only seem to move the trenches to new battlegrounds (Blanchard et al., 2014; Hauge et al., 2014). There are two fundamentally opposing views colliding on access to new areas. The petroleum industry sees the whole Barents Sea as a natural area for expansion, whereas the environmental and fisheries organizations want to permanently close particularly the Lofoten area to them. So far, the BSMP has not approved any of the views since the restrictions in the plans are limited in time by the next update, or until a new political constellation emerges after a general election. The deciding factor is that it has not been possible to establish new coalition governments after 2001 without compromising on holistic package deals that make concessions to those who want to restrict the petroleum industry's access to especially the Lofoten area in exchange for increased activities in other areas²¹.

The outer positions of the coalition partners in both the Bondevik and the Stoltenberg governments reflected these incompatible views. It was a political reality that they had to reach compromises in order for the coalitions to survive. The consensus seeking political culture in Norway played a role in the negotiations. "I was very determined not to create winners and losers, but to try to find joint solutions", the examiner who negotiated internally in the Stoltenberg government explained. Other interviewees shared the impression that it was a fair process and a reasonable compromise, given the power balance between the parties. "We won what we had to win. But we also had to lose something", the chief negotiator from one of the other parties summarized.

Several interviewees have said that the powerful MPE at times has been reluctant to participate in the management plan system and strongly opposed to an area-based framework beyond their own control. However, non-participation is unachievable as long as the governments and the Storting use the management plans as a key mechanism for conflict resolution. Neither is it an option not to implement agreements, with politicians, stakeholders and the media attentively watching.²² Though the petroleum industry has not been granted access to Lofoten, the political compromises have assigned them access to substantial new areas. This has been achieved by a process that enjoys wide legitimacy, as opposed to the controversies when the MPE ran

similar processes alone (Andersen, 2017). The ministry has retained full control over the licencing policy, and the activities are about to expand into all the areas made available. These processes are viewed with considerable mistrust by the environmental organizations.

7. Conclusion

The starting point for this analysis was that there is a need to undertake empirical studies of the implementation of EBM policies. It was suggested that implementation theory offers a platform for systematic case studies that would enable accumulation of knowledge. In the case of the BSMP, most measures have been put into practice as planned. To explain why, the study applied Winter's framework for implementation studies (Winter, 2012). The policy that should be implemented had broad and ambiguous objectives. On the other hand, specific environmental targets with indicators established a yardstick for appraising the need for policy measures. The designated measures were to be implemented by the government apparatus alone, however, without any pre-allocation of funds for new initiatives, and only a weak mechanism for overseeing the implementation processes that were handed over to the sectorial administrations. When the implementation is successful despite these breaches of traditional recommendations, the explanations must be found in the policy formulation processes and the context. In a political culture favouring knowledge as a basis for policy formulation, there has been a broad mobilization of government agencies and research institutions in delivering policy-relevant assessments. A group of ministries has been instrumental in collectively finding policy responses to the challenges in the assessments. Disagreements were solved authoritatively in top-level negotiations between three political parties that had to compromise and reach agreement if their majority government should survive. The experiences have strengthened the status of the Norwegian management plans as political tools for informed decision-making and conflict resolution. An important contextual factor is that the Norwegian unitary state has wide freedom to manoeuvre in ocean policies, reducing the challenges of multi-level governance.

This paper's analysis demonstrates the importance of having a broad scope when searching for independent variables in implementation studies, as recommended by Winter's framework. Despite the wide support for this (Mazmanian and Sabatier, 1983; Palumbo and Calista, 1990; Pressman and Wildavsky, 1984), most empirical studies focus on the implementation process alone (Sætren, 2014). In the BSMP case, the major explanations relate to what happened in the policy formulation process. The analysis also illustrates the problem of selecting dependent variable. The most common dependent variable in implementation studies is output - the delivered policy, as opposed to the intentions in an adopted policy. Here, a rather instrumental approach to output measurement has been applied, the extent to which a measure has been realized. In many cases, this raises immediate "so what" questions, for instance when the measures are new government initiatives (regulations, plans etc) or knowledge production. It is easy to argue that what really matters is the outcome – the extent to which the policy reaches its objectives or reduces the problems that motivated its formulation. The BSMP illustrates the problem. The measures have been successfully implemented. But neither ex ante assessments nor ex post evaluations have demonstrated their contributions to positive outcomes. The implemented policy may or may not build on a valid causal theory and produce desired results; we do not know. In order to address this missing link, there is a need for multidisciplinary evaluations. Social scientists' contribution would be to link the use of policy instruments to changes in human behaviour, including changes in patterns of sea uses. That would be a starting point for natural scientists' evaluation of ecosystem impacts. Without a strong focus on the efficiency and efficacy of policy instruments, EBM will not contribute to fixing the problem of a deteriorating state of the oceans, as reported in many assessments.

²⁰ The cases involved were the Marine Resources Act (2008), the Norwegian Sea management plan (2009) and the Nature Diversity Act (2009).

²¹ The most recent illustration of this mechanism occurred in January 2018, when the Solberg government was broadened from two to three parties following the general elections in 2017. The political platform of the new government prolonged the limitations on the petroleum industry's access to new areas for the next four years (ref. section 5.2.1). At the same time, a record high number of new exploration licenses was awarded in the licensing round called TFO 2017.

²² This was demonstrated when the MPE in 2016 invited the petroleum companies to nominate areas for the next licencing round in Lofoten. Such a blatant violation of the political platform for the Solberg government became an embarrassing scandal, and the invitation was withdrawn.

The BSMP is also a clear-cut example of successful top-down implementation, achieved by traditional, government-based policy instruments. The feasibility of this as opposed to bottom-up approaches has been widely discussed in implementation theory. The discussion is relevant to EBM as well, since a strong involvement of stakeholders often is recommended, sometimes also bottom-up processes. The Norwegian management plans are parts of a national policy style that may be referred to as centralized consultation. Stakeholders enjoyed wide opportunities for commenting the assessment reports, but had no formal chances for commenting or discussing the policy before it was published. Despite this limited role, the stakeholders interviewed expressed appreciation of the plans.

Finally, how much can we generalize from this single case? Analytically, we can. The problem is that we do not know the scope of the conclusions beyond the individual case yet. That can be gradually expanded by a systematic selection of supplementary cases for cross-case comparisons, for instance bottom-up approaches (George and Bennett, 2005). Such studies may test the applicability of the in-case explanations set out here and will certainly reveal additional explanations and causal mechanisms. This is a building block approach to building new theory on EBM implementation. As for the general implementation theory, it is unlikely that a general theory of EBM implementation can be found. However, reaching contingent conclusions on circumstances under which EBM can be successfully implemented, for instance based on typologies of cases, would be a helpful generalization for practitioners in the field.

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Paper 3

Sander, Gunnar 2018: Ecosystem-based management in Canada and Norway: The importance of political leadership and effective decision-making for implementation.

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Ecosystem-based management in Canada and Norway: The importance of political leadership and effective decision-making for implementation

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ABSTRACT

A comparison of a Norwegian and two Canadian management plans reveals that most of the measures in the Norwegian plan were put into practice, whereas the Canadian plans did not result in the implementation of any new measures. This paper applies implementation theory to explain the different results. First, there is a striking difference in the leadership of the two governments and the way they organized for the planning. The Norwegian government led the process in a top-down manner and tried to apply a “whole-of-government” approach. The Canadian government delegated the entire task to the regional branches of one ministry alone. The different roles taken may be explained by different political and economic contexts that create different motivations for the governments to engage. Second, there were different ways of deciding when conflicts arose. The Norwegian coalition government negotiated internal compromises in the form of package deals. In Canada, the collaborative planning based on consensus concealed disagreements in high-level statements and pushed concrete solutions forward to later action planning that never occurred. These processes reflect different national policy styles and resulted in policy designs that created a very different impetus for implementation. The analysis demonstrates how theory-driven case-study methodology can lead to cumulative results.

1. Introduction

Ecosystem-based management (EBM)¹ has become a key concept for the management of the oceans. The purpose is to keep the ecosystem in good health and to reduce user conflicts. In order to achieve this, all human activities affecting an ecosystem should be managed in an integrated manner (Arctic Council ministers, 2013; Curtin and Prelezzo, 2010). Thus, it is of vital importance to formulate and implement policies that lead to necessary changes in the operations of relevant human activities. Unfortunately, there is not much empirical knowledge about how to achieve such changes (Arbo and Thüy, 2016). This has motivated the current research on the extent to which policies formulated in ecosystem-based plans for large marine areas are actually implemented.

In a previous case study (Sander, 2018), implementation theory was applied to evaluate and explain the results of the Norwegian Barents Sea Management Plan (BSMP). This article follows up by a cross-case comparison of BSMP with two Canadian cases, the Eastern Scotian Shelf Integrated Management Plan (ESSIM) and the Placentia Bay/Grand Banks Integrated Management Plan (PB/GB). The research in Canada built on the same theoretical platform as the study of the BSMP and was conducted in the same manner (George and Bennett, 2005, pp 67–73). The first question to all the cases was to evaluate the degree to which

the measures in the plans were implemented. While the Norwegian government system implemented most of the measures in the BSMP, early in the investigation of the Canadian plans, it became evident that they had not led to the implementation of any new policies or measures, despite years of work. The main question for the research thus became to explain *why the results of the planning in BSMP differed so much from those of ESSIM and PB/GB?* After all, Canada and Norway share many features affecting the governability of their ecosystems (Mahon et al., 2010), and the two states started with EBM at about the same time (Cicin-Sain et al., 2015; Hoel, 2008). Answering this question would also help in identifying what is conducive to the implementation of policies formulated in ecosystem-based plans in general.

The article starts with a description of the analytical framework for implementation studies that has guided the research, before turning to methods and materials, in particular case study methodology. Then, an introduction to the cases follows, presented as chronological narratives. The next section contains the comparative discussion of the cases, structured according to the analytical framework. The focus is on the Canadian cases, contrasted with the relevant findings from the previous analysis of BSMP, finally being summarised in an explanation for the Canadian results alone. The last section draws general conclusions about variables that may explain the different results, structured according to the elements in the analytical framework. In addition, some

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¹ List of abbreviations: BSMP = Barents Sea Management Plan DFO = (Department of) Fisheries and Oceans Canada (a federal ministry); EBM = ecosystem-based management; ESSIM = Eastern Scotian Shelf Integrated Management Plan; PB/GB = Placentia Bay/Grand Banks Integrated Management Plan; LOMA = Large Ocean Management Area (see Fig. 2); MPA = marine protected area.

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suggestions for further research on what is conducive to the successful implementation of EBM plans are provided.

2. Implementation theory

Given the many calls for implementing EBM, it is surprising that empirical studies of EBM have not applied implementation theory prior to Sander (2018). In fact, literature and database searches indicate that there are few applications thereof to marine policies in general. This may be the result of marine sciences' tendency to build their own traditions at sea, disregarding experiences from land (Jay, 2010). Another reason may be that there have been few cases of adopted EBM policies to study.

Implementation studies primarily grew out of evaluation research in the 1970s, in the aftermath of societal reforms in the US that did not live up to the expectations (Winter, 2012). The field's first contribution to explain why was to search for "failures" in the way policy interventions were actually performed (Pressman and Wildavsky, 1984). Later, it became evident that there was a need to move beyond the implementation phase and take the wider policy process, the policy design and the context into consideration (Palumbo and Calista, 1990). Researchers expanded upon their initial search for failures by investigating success stories as well, and more nuanced questions arose about the criteria for evaluation. The core field of study thus is the translation of public policy into practice and the reasons as to why the results are achieved. Despite several attempts to synthesise the findings, there is no general theory available, regardless of contexts and policies (Goggin et al., 1990; Mazmanian and Sabatier, 1983; Sætre, 2014). Winter (2012) has argued that aiming for such a theory is utopian. Instead, there is a need for more specific theories and hypotheses. This has inspired the current initiative to apply implementation theory specifically to EBM plans.

Winter also has synthesised previous research in a frequently cited analytical framework that covers the entire policy process (Fig. 1). It is meant as a roadmap for investigations, presenting key factors and mechanisms that often explain implementation results, not a deterministic, all-inclusive theory (Hupe and Sætre, 2015; Winter, 2012).

The framework presents two main alternatives for evaluating the results of a policy, which is the dependent variable. *Output* is the delivered results after implementation, often in the form of the exercising of authority or services to the public. *Outcome* is the subsequent impacts, often measured as goal achievement towards the policy's objectives. An alternative measure for outcome is the effects on the problems that motivated the policy's introduction. Relating policy interventions to outcomes is more complex than explaining output. Other policies may support or counteract the policy under study, and a number of external factors beyond the control of policy-makers may occur simultaneously (market forces, climate change etc). Therefore, output is often preferred in implementation studies, though both alternatives for evaluation are needed (Winter, 2012).

The independent variables, which could explain the results, can be found in the context, the policy formulation process, the design of an adopted policy, and in the implementation process.

The *context* may cover numerous factors (Mahon et al., 2010). Changes in socio-economic conditions, like economic cycles, may affect the political perception of which problems that require attention, as well as the resources available to address them. Changes in governments can also have profound effects on ongoing policy processes.

Policy formulation covers the political processes of agenda setting, finding acceptable ways of addressing identified problems, and the final decision-making leading to the adoption of a policy. Winter has highlighted three factors in this phase (Fig. 1). Conflicts will often arise when actors with different interests and resources try to get their problem definitions and solutions accepted. An important question is whether such parties would accept a final decision, or whether struggles would continue during the implementation phase. For a policy to be efficient, it is also important that the selected policy instruments work in support of the objectives. This requires knowledge of cause-effect relationships that often is unavailable, and a willingness by the decision-makers to select effective policy instruments. However, decision-makers may be more engaged in symbolic behaviour, such as demonstrating good intentions, ideology or alliances, than in designing policies that actually solve problems.

A *policy design* will typically contain a description of problems, a

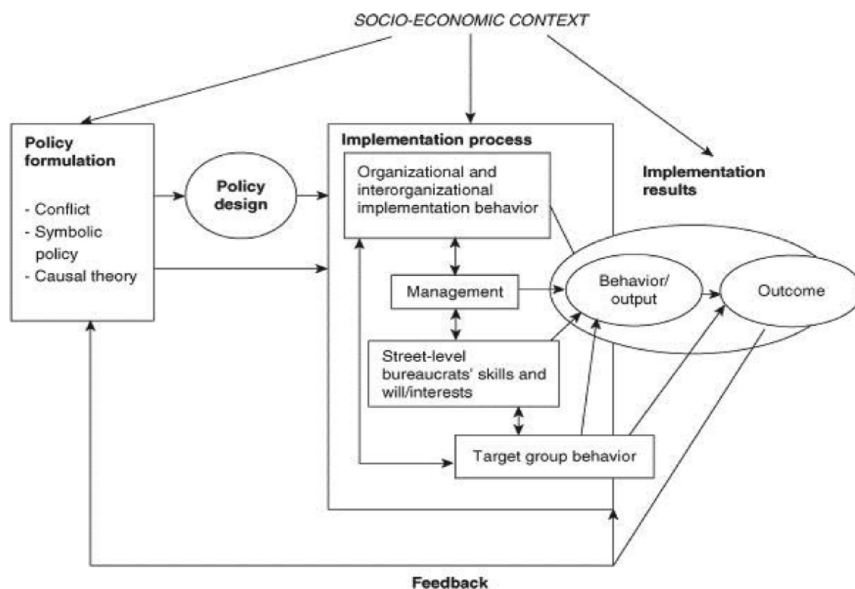


Fig. 1. Winter's Integrated framework for implementation studies (Winter, 2012).

desired direction of change expressed in the form of a vision or objectives, and a set of measures. Measures are usually a package of policy instruments (Lascoumes and Le Gales, 2007), combined with an allocation of responsibilities and resources for their implementation (May, 2012). Traditionally, policy-makers have been advised to set clear objectives for guiding the implementation (Mazmanian and Sabatier, 1983). However, that is unrealistic; policy-makers do not want to achieve only one thing and uses ambiguity as a way of reducing conflicts (Matland, 1995). The selected policy instruments and organizational structures are the visible result of a political process in which actors try to maximize their interests and achieve control over the implementation process (Matland, 1995).

The implementation process covers the activities of one or several organizations responsible for putting the adopted policy into practice. Thus, this process transforms policy intentions on paper into delivered results. Policy-making often continues in this phase and leads to modifications of the adopted policy, or the realization of only parts of it. Such changes may lead the policy astray, but can also be necessary adaptations to realities that were not foreseen during policy formulation. The available resources and the motivation of organizations and individuals play an important role. For complex policies, it is crucial that several organizations can cooperate and coordinate their activities. The parties can be dictated to do so from the top of a hierarchy, or take the decision voluntarily because they find that the advantages exceed the transaction costs involved (O'Toole, 2012). Particularly when a policy delivers services, the discretion exercised by frontline workers ("street-level bureaucrats"), caught between the agendas of their managers and target groups, can be decisive for the delivered results (Meyers and Nielsen, 2012).

3. Method and materials

A fundamental task in case study methodology is to specify what types of cases are to be studied (Seawright and Gerring, 2008). This corresponds with Winter's call for developing specific theories, as referred to above. In this article, it is EBM of large marine areas, such as are globally defined by the Large Marine Ecosystem initiative,² or by the Arctic Council (Skjoldal and Mundy, 2013). It is also noteworthy that all three cases under study take place within single national states. Such cases pertain to a sub-class of EBM, different from initiatives involving several states, smaller-scale initiatives for instance for a bay or an estuary, or non-spatial applications in international or national policy documents (Cicin-Sain et al., 2015; Wondolleck and Yafee, 2017). Experiences gained from other EBM applications, or other related policies, may or may not be relevant; that is an empirical question. Conversely, experience from this EBM sub-class is not necessarily generalizable to other case classes.

If the ambition is to attain generalisations, possibly also to build and test theory, cases should be selected carefully within the wider population. Cases should be representative and contain useful variations on the dimensions of theoretical interest (Seawright and Gerring, 2008). The three cases selected here are clearly representative of the applicability of EBM to large marine areas. When searching for Canadian cases for comparison with BSMP, I looked for areas with comparable activities in order to reduce the variability. ESSIM was originally the only Canadian case because it, like BSMP, was a national pilot project. As such, there is a rich body of scientific literature about both of them.³

² See the map at <http://lme.edc.uri.edu/index.php/lme-introduction>. This article uses the expression "large marine areas", not *ecosystems*, in order not to exclude cases of EBM that deviate from the LME initiative on the criteria for designating management areas, the size of the areas and the initiative's modular approach.

³ The literature on ESSIM comprises overview articles (Hall et al., 2011; O'Boyle and Worcester, 2009; Rutherford et al., 2005), analyses of specific

PB/GB was included later in order to test some important mechanisms found in ESSIM on what was expected to be a more mature Canadian plan. The research on PB/GB is not as thorough as on ESSIM, and is thus used as a supplementary case.

Structured and focused comparison is the standard approach for multiple-case studies (George and Bennett, 2005, pp. 67–73). I have asked the same question to both the Canadian cases and BSMP regarding implementation results, as well as the planning processes and the content of the plans. The criterion used for evaluating results was the extent to which the individual measures or strategies in the plans had been put into practice. The analysis of BSMP may be described as analytical, theory driven induction based on insights achieved regarding working mechanisms and participants' own explanations of causation. The research in Canada also had an element of deduction in terms of testing out the Norwegian results (George and Bennett, 2005, pp. 74–75; Bennett and Checkel, 2015, pp. 17–18). However, the comparison also shed new light on BSMP. Certain features stood out as even more important, while others that had seemed insignificant became relevant.

The author stayed in Canada four months the autumn 2017 for data collection. The sources of information are the plan documents, Canadian policy documents and secondary literature about the cases,³ combined with interviews. The interview guides developed in Canada followed the analytical framework, and also relied on the study of BSMP (see supplementary material). I started with the co-ordinators of the plans, and continued with additional interviewees based on "snowball-sampling" and the intent to capture a broad spectrum of participants. In total, I interviewed 19 individuals from the private sector (fisheries, shipping, the oil and gas industry, community organizations, environmental organizations), and the government sector (two provinces, a petroleum board, three federal ministries and a municipality). For comparison, the research on BSMP involved 30 former or current members of governments, civil servants and stakeholders (Sander, 2018).

4. The cases

4.1. The Canadian policy background

In 1996, Canada adopted the Oceans Act. The Act made the Department of Fisheries and Oceans (DFO) responsible for integrated ocean management. The minister of DFO was allocated the specific mandate to lead and coordinate the development and implementation of integrated management plans. However, the minister received no additional authority and therefore had to cooperate with other federal departments (ministries) and other jurisdictions (Calderbank et al., 2006, p. 110; Juda, 2003).⁴

(footnote continued)

elements, such as integrated assessment methodology (Foley et al., 2013), objectives and indicators (O'Boyle et al., 2005; O'Boyle & Jamieson, 2006; Walmsley et al., 2007) and participation (Arbour, 2009; Flannery & Ó Cinnéide, 2012). Most of the authors of the aforementioned articles participated in the process. The plan has also been compared to an Australian case (Foster et al., 2005) and a Chinese one (Yao, 2008). Moreover, ESSIM has been used as a case in discussions of Canadian ocean policies (Chircop and Hildebrand, 2006; Guénette and Alder, 2007; Jessen, 2011; Kearney et al., 2007; Rutherford et al., 2010) and in developing indicators for measuring progress (UNESCO, 2006). Note that this paper is the first to be written after the termination of the ESSIM initiative. Searches for literature on PB/GB resulted in only one publication, a master's thesis about participation (Tucker, 2011).

⁴ Canada is a federation, as opposed to Norway, which is a unitary state with one legislature and one government. The national constitution shares power and responsibilities between the federal level, 13 provinces and territories with their own legislatures and governments, and indigenous (aboriginal) peoples. Both states, however, are parliamentary democracies and constitutional

The government issued several policy documents elaborating upon the Act,⁵ leading to the designation of five *Large Ocean Management Areas (LOMAs)* as priority areas for the preparation of integrated management plans (Fig. 2). EBM should be a core principle.⁶ The Liberal government that launched the new ocean policy was followed by a Conservative one led by Stephen Harper (2006–2015). The Conservatives cut federal budgets substantially. From 2011–12, DFO had to terminate or wind down administrative programmes and research capacity, laying off hundreds of staff members (Bailey et al., 2016). The work with the LOMAs was vulnerable because of the Harper government's anti-environment policy (Barnett and Wiber, 2018). Besides, there were problems documenting the results (DFO, 2012b). However, the Harper government did commit Canada internationally to establish Marine Protected Areas (MPAs). Planning for MPAs became the remaining ocean initiative supported from the top, as long as it did not require more resources or make political noise. Despite the cuts and changed priorities, all of the LOMA initiatives but ESSIM survived. The new Liberal government led by Justin Trudeau (2015–) endorsed the last one on the Pacific coast in 2016. As will be seen, endorsement was no guarantee for the implementation of such plans.

4.2. Eastern Scotian shelf integrated management plan (ESSIM)

ESSIM started in 1998 because there was a need for additional measures around Canada's second MPA, the deep-water canyon called "The Gully". The DFO headquarters in Ottawa (the capital) considered its regional branch for the Maritimes Region to be innovative and to possess substantial capacity to conduct planning. The project therefore got wide leeway to find its own approaches as a national pilot project. DFO practiced learning-by-doing and developed supporting science, as well as policy, in parallel with practical experiments. The pioneering experiences of ESSIM became important for the formulation of national guidelines for integrated ocean and coastal management (DFO, 2002).

Except for DFO, no federal ministries mandated their regional representatives to participate in the planning. A fundamental task therefore was to engage others and to organize their participation in the planning process. DFO Maritimes started with other federal agencies, and later extended the invitations to the Province of Nova Scotia and a wide and complex array of industries and stakeholder groups (Arbour, 2009). It took approximately four years to reach agreement on who should be represented and how they should be organized. The organization consisted of one government structure, led by senior executives from federal and provincial organizations. An annual ESSIM Forum was convened, which was open for anybody to attend. The most important group, though, was the Stakeholder Advisory Committee. This became the forum for dialogue between the government sector and selected stakeholders. Assisted by the ESSIM Planning Office in DFO Maritimes, this organization worked according to a collaborative planning model (DFO, 2007, pp. 21–27). One major principle was that all decisions were to be made by *consensus*.

(footnote continued)

monarchies. For more information, see <http://www.thecanadianencyclopedia.ca/en/article/constitution/> and <http://www.thecanadianencyclopedia.ca/en/article/aboriginal-rights/>.

⁵ A Liberal government in 2002 launched an Oceans Strategy accompanied by a Policy and Operational Framework for Integrated Management (DFO, 2002). This was followed up by the Oceans Action Plan in 2005. The Conservative government narrowed down the focus in the Health of the Oceans (2007), which nevertheless became an instrument for financial support for ministries other than DFO for a while. See reviews of the Oceans Act and these policy documents in for instance Chircop and Hildebrand (2006), Mageau et al. (2015), Ricketts and Hildebrand (2011) or Rutherford et al. (2010).

⁶ The Norwegian ocean policy sets out EBM as the overarching approach, not integrated ocean management. In practice, the difference between the two states in this respect is not significant.

DFO Maritimes defined the ESSIM planning area early in the process (DFO, 2007, pp. 14–19). Along the coast, two boundary lines used in fisheries management designated an area less intensively fished than further southwest, and less complex in terms of fishing industry stakeholders. Seawards, the focus was outside the territorial sea, where there would be no jurisdictional conflicts with Nova Scotia, and far outside complicated coastal issues. "They designed the scope of their project for potential success. (...) They didn't want to bite off more than they could chew", one stakeholder observed. However, there were two tensions related to the designated area. One group of stakeholders were mostly interested in coastal areas. They decided to stay in the project for the lessons to be learnt should the federal government proceed with a coastal plan.⁷ The Province was interested in coastal affairs too, and responded to ESSIM's ocean focus by developing a coastal plan in parallel, without, however, adopting it politically.⁸ The other conflict related to the north-eastern boundary. In 2002, an arbitration panel settled the maritime boundary between the provinces of Nova Scotia and Newfoundland-Labrador for the special purpose of managing oil and gas activities under the two federal-provincial Petroleum Boards.⁹ Late in the process, Newfoundland-Labrador representatives participating in ESSIM complained about others taking decisions in their area, as the north-eastern delimitation of ESSIM went beyond the arbitration line. They therefore wanted ESSIM to adjust its planning area accordingly. Nova Scotia would not accept this, whereas DFO was flexible. This conflict would become fatal to ESSIM.

ESSIM made a number of assessments and reports, most prominently a state of the ecosystem report, an atlas with ocean uses, and reports on governance and on setting of objectives (DFO, 2007, pp. 65–66). The project did not make final reports of impact assessments, selection of indicators, and designation of ecologically and biologically significant areas. The ESSIM Planning Office had scarce resources for hiring consultants and prepared most of the reports itself. Where DFO did not possess the data, they collaborated with scientific institutions, other government agencies and sea users. There were no formal mandates for the work. DFO mostly presented ideas for what to do in order to get feedback and input, and later drafts for discussion. When the process moved from assessments to formulating a plan, a major conflict broke out. The participants could not agree on whether they should produce an action plan that could result in "change on the water", as it was formulated, or a strategic plan. It ended up being a strategic plan with three overarching goals and 30 objectives describing what the plan wanted to achieve, each with a set of strategies associated with it. Action planning was postponed until a next phase.

Late in 2006, the various bodies of the ESSIM organization endorsed the plan. When presented to the minister of DFO, Loyola Hearn, who was from Newfoundland, he refused to sign it because of the dispute over the planning area. The non-governmental organizations and the ESSIM Planning Office tried for almost two years to convince him, without results. Finally, the administrative level in the DFO headquarters accepted to make the plan publicly available. The effect of this conflict on the participants' motivation was devastating: why continue when the initiator would not accept the result? People ceased attending the meetings or sent junior personnel instead of managers. Other

⁷ Interview with stakeholder(-s).

⁸ An interviewee who had a central role in the planning explained this with changed political priorities after a provincial election. He also underlined the lack of federal leadership in coastal management as an obstacle. Documents from the process can be found at <http://novascotia.ca/coast/>.

⁹ The two provinces and the federal government are in principal disagreement over the right to the resources on the continental shelf. They have agreed to disagree and found a practicable way of managing the petroleum resources and sharing the revenue through two Federal – Provincial Petroleum Boards (Calderbank et al., 2006: pp 167–177 and 189–199). The arbitration panel's decision can be found at https://www.cnsopb.ns.ca/sites/default/files/pdfs/phaseii_award_english.pdf.



Fig. 2. Canada's five Large Ocean Management Areas (LOMAs). The two cases studied here are located on the Atlantic coast, outside the provinces of Nova Scotia and Newfoundland-Labrador.

abrasive factors also contributed to the project running out of gas: "Remember we had been going on a long time on this. There were other interests, people got distracted, ESSIM was not new anymore, it was not exciting, and we did not see the benefit (...) because we were not developing action plans."⁷ As a last effort, the Stakeholder Advisory Council decided to evaluate the work itself in order to get recommendations for future initiatives (McCuaig and Herbert, 2013). In 2012, after the evaluation was finished, DFO Maritimes terminated the initiative.

4.3. Placentia Bay/Grand Banks Integrated Management Plan (PB/GB)

From the late 1990s, DFO's regional office in Newfoundland-Labrador engaged in several coastal initiatives, including the preparation of a plan for Placentia Bay.¹⁰ When it became clear that they should also make a plan for a LOMA, Placentia Bay and Grand Banks were merged into one planning area. Planning started in 2007, with the neighbouring ESSIM as an inspiration in addition to the national guidelines (DFO, 2002). The Province of Newfoundland-Labrador in parallel adopted a coastal and ocean strategy, partly motivated by the desire to feed into PB/GB based on priorities developed through extensive consultations.¹¹

PB/GB was based on collaborative planning. The organization was similar to ESSIM, with a structure for federal/provincial collaboration, and a committee where the government representatives and stakeholders met (DFO, 2012). However, the participation was not as broad as that of ESSIM. There were fewer representatives from maritime industries, few environmental and no local organizations. A study undertaken during the process found that participants had problems understanding the goals and processes, and did not buy in (Tucker, 2011). DFO tried to engage other participants, but ended up doing most of the work themselves. They also made more decisions alone than DFO Maritimes did in ESSIM.

PB/GB fulfilled more of the tasks in the national policy framework than ESSIM. The plan consisted of a vision and three overarching goals, followed by 32 strategic objectives and 113 initial management strategies. Unlike ESSIM, the planners managed to prioritise, and ended up with 14 final strategies. Some of them were broad and general, such as "mitigate and/or prevent conflict" and "prevent pollution", others more focussed, like "rebuild Atlantic cod". The intention was that the 14 priorities should result in 14 action plans with timelines and responsibilities. There were also plans for implementation, evaluation of the

(footnote continued)

by the Province until also their budgets for following up were cut. The documents are available at: http://www.fishag.gov.nl.ca/fisheries/sustainable_fisheries_oceans/coastal_oceans.html.

¹⁰ These early initiatives are presented at <http://www.icomnl.ca/cma/>.

¹¹ The strategy was adopted in 2011 and guided subsequent implementation

effectiveness of the process and revisions every five years.

The minister of DFO endorsed the plan in 2012, even though the south-western border was the same that had caused the former minister Hearn not to endorse ESSIM. Unfortunately, this occurred at the same time that the Harper government was effecting substantial cuts to the oceans programs and called for a winding down of the LOMA initiative. With DFO in the driver's seat and a lack of voluntary buy-in from other participants, the intended action planning and implementation never occurred. The interviews gave the impression that the participants had shelved PB/GB; it was not relevant any more.

4.4. The Barents Sea Management Plan (BSMP)

The initiative for BSMP came in the platform for a coalition government in 2001 as a part of a compromise over a long-lasting political conflict concerning the northward expansion of the petroleum industry. A 2002 white paper amplified the scope substantially by introducing a new ecosystem-based ocean policy, without a statutory basis (The Ministry of the Environment, 2002). Cross-sectoral management plans should create a framework for sectoral policies, whereas implementation should take place within the sectors. The government appointed a group of ministries led by the Ministry of Environment to oversee the work. The white paper was their only guidance, as the government provided no additional policy documents.

The Steering group defined the management area (Fig. 3) and commissioned a series of joint assessments from the ministries' subordinate agencies. Major issues were assessments of the impacts of ocean activities, analyses of valuable and vulnerable areas, and environmental objectives (Hoel et al., 2008; Knol, 2010). The challenges described in the reports provided a basis for formulating policy responses, not analyses of or suggestions for policy; that was defined as pertaining to the political realm. The Steering group assisted the Cabinet in drafting white papers, according to interviewees, based on very few analyses of the effectiveness of the policy instruments under discussion. The three political parties in the majority Stoltenberg government (2005–2013) negotiated over conflicts, ultimately making compromises at the highest political level. Stakeholders had no formal opportunities for discussing the policy before the government published the white papers with the plan and the update five years later (Ministry of the Environment, 2006; 2011). However, they had the opportunity to comment on the assessments prior to the formulation of the policy. Several of them were also engaged in lobbying and heated public debates, particularly about the petroleum policy.

The policy contained a purpose and nine broad objectives, reflecting an unclear compromise between ocean use and conservation. There were 179 measures in total in the plan from 2006 and the update from 2011. A detailed review showed that most of them have been put into practice, despite no indication of responsibilities and a decentralised model for implementation (Sander, 2018). The first group of measures introduced a permanent system for EBM. It formalised a cross-sectoral organization of government agencies, the Management Forum, that works according to the instructions of the inter-ministerial Steering group. The agencies cooperate on monitoring the state of the ecosystem, reporting and evaluations, as well as making assessments for updates and revisions of the plan. Moreover, as many as 79 measures should address knowledge gaps, most prominently by mapping the seabed, increasing the monitoring of seabirds and a seismic exploration of Lofoten-Vesterålen. The second group of measures aimed at combating pollution and safeguarding biodiversity. The most visible initiative was the introduction of a new political framework for the petroleum industry's access to areas. This was a compromise between fundamentally opposing positions in the Stoltenberg government. It maintained the closure of the most disputed areas in Lofoten-Vesterålen. The political prize for this was the expansion of the industry in other areas, including the marginal ice zone (Steinberg and Kristoffersen, 2017). Safety of navigation was improved primarily by a

traffic separation scheme and better surveillance. To prevent harm from accidents, the government has modernised its oil spill equipment and updated contingency plans. The legal introduction of the ecosystem approach to fisheries has been applied particularly to reduce damage to cold-water coral reefs and sponges. A major achievement was the near-elimination of illegal, unreported and unregulated fisheries for the largest commercial stocks. The most prominent breach of the intentions is the failure to establish MPAs in the Barents Sea. Moreover, the implemented plan did address certain spatial initiatives, but did not create a holistic system for marine spatial planning.

5. Discussion: variables and mechanisms at work

The discussion makes a systematic comparison of the cases according to the implementation framework. It starts with the *explanandum*, the results. The next sections contain discussions about explanations for the different results. The intention is to reveal mechanisms in the relevant parts of the framework that substantiate causation (Bennett and Checkel, 2015). The discussion goes backwards through the framework (Fig. 1), starting with the policy design before addressing two factors pertaining to policy formulation, and finally, the context.

5.1. What are the results?

The analytical framework describes alternative options for defining implementation results. The criterion used here, the extent to which measures have been put into action, is an output variable. Even though the Norwegian government apparatus has implemented most of the measures in BSMP, it is still an open question as to whether this has contributed to the desired outcome, an improved state of the marine environment. The reason is that neither the assessments prior to the selection of measures, nor the feedback from monitoring afterwards, have established a causal link between the selected policy instruments and the outcome. Instead, the focus has been on the marine environment. Without such a causal link, it is not possible to say whether the policy actually works as intended.¹²

ESSIM and PB/GB did not reach the implementation phase, thereby illustrating a general problem with the LOMA plans (DFO, 2012, 2016). Still, it is possible to identify certain later initiatives that conform to the strategies in the plans. Interviewees, as well as the ESSIM review, attributed these to the involved organizations pursuing their general mandates and new initiatives, not to the impetus of the plans (McCuaig and Herbert, 2013). The plans therefore did not result in any new policies or measures being put into action. However, there are two other types of achievements, which may contribute to the longer-term evolution of EBM. The first is the value of the information and knowledge products assembled. This is useful for other DFO purposes, such as fisheries management and the ongoing MPA network planning. Outside DFO, information has been used in environmental assessments and in the sustainability certification of certain fisheries. The other type of achievements is related to the effects of organizing multiple stakeholders. All interviewees who participated in ESSIM highlighted the initiative's inclusive and open approach. They met new people, learned about different perspectives and had dialogues. The contacts established have proved useful, particularly for DFO. The regional committees coordinating the federal and provincial departments continued afterwards.¹³ However, the effects of the planning diminished over

¹² The Steering group has asked for a review of the implementation of the measures and an evaluation of the effects as a part of the preparations for a revision of BSMP in 2020.

¹³ The Regional Committee on Ocean Management in Nova Scotia operated until 2015. It broke up because of a recurrent conflict over MPAs, which the Nova Scotian government feared could unduly affect oil and gas activities and

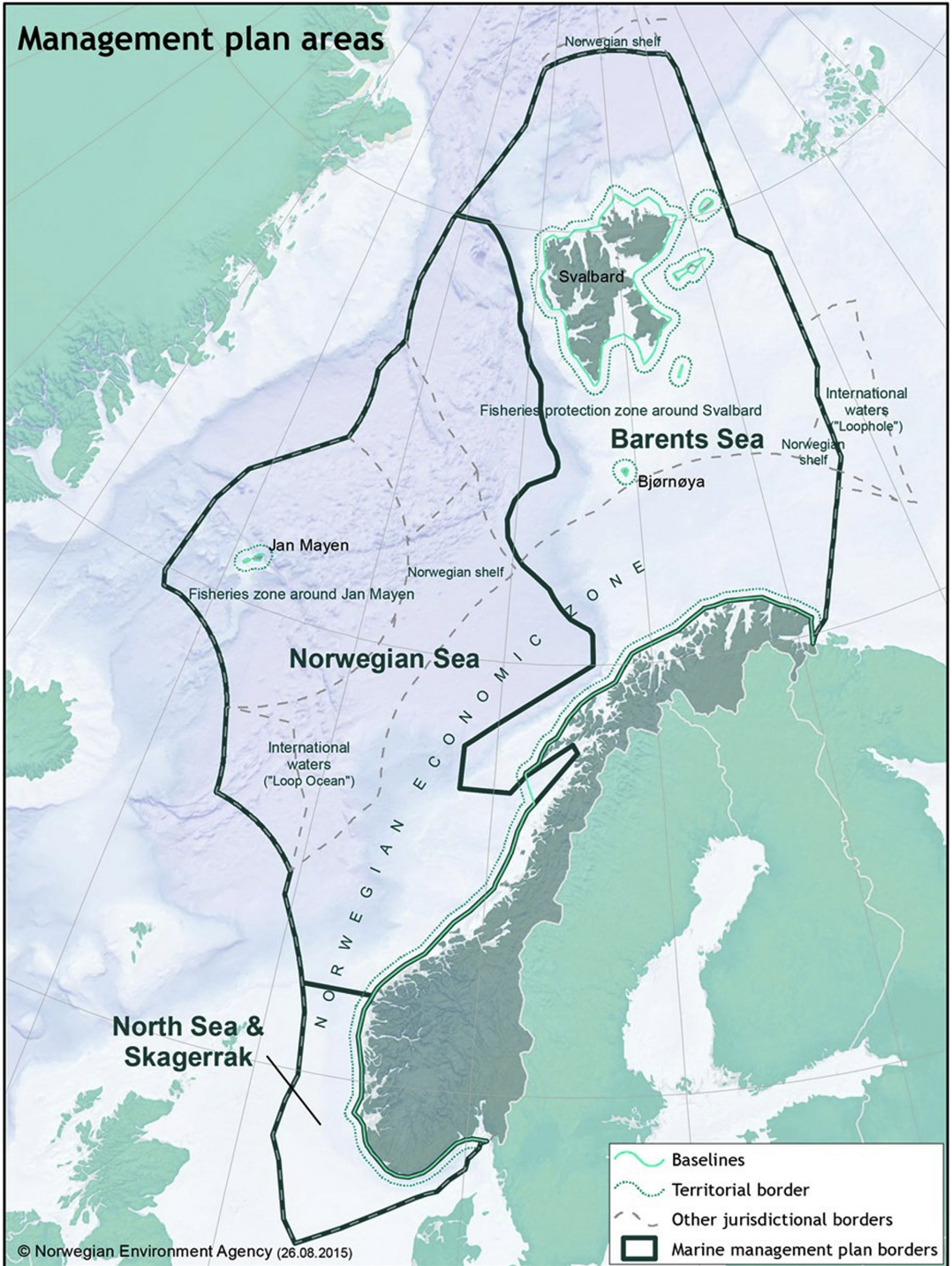


Fig. 3. The Norwegian management plan areas. BSMP was the pilot project that became the model for similar plans for the Norwegian Sea and the North Sea.

time: the social learning rested on individuals who in many cases had left their former organizations. The information gathered was a snapshot in time. Last, but not least, integrated ocean management was not a task anymore. BSMP illustrates that when EBM becomes a continuous task, the information base is regularly updated, and there is a continuous cross-sectoral dialogue.

5.2. Policy design: what was there to implement?

All the three plans discussed are strategic with similar intentions. Nevertheless, there are substantial content-differences that create different drives for implementation. A first noticeable difference is the description of status and challenges. The ESSIM plan on a couple of pages referred to rapid and large changes in the ecosystem. However, there was no documentation of trends, explanations of changes or linkage to human activities. Similarly, there were references to conflicts between human uses, but almost no details on their nature and location (DFO, 2007, pp. 16–18).¹⁴ PB/GB was somewhat more informative than ESSIM, not least on socioeconomic issues, but the descriptions are still at a general level. It is therefore hard to understand the issues that the Canadian plans tried to solve. This is clearer in BSMP, which contained separate chapters analysing the status of the ecosystem, impacts from human activities, and conflicts between industries (Ministry of the Environment, 2006, pp. 57–88).

The overarching objectives in all the plans contain many potentially competing interests that, in sum, provide poor guidance for the direction of implementation.¹⁵ Based on the theory above, this should be no surprise for such a broad and complex policy as EBM. In addition, BSMP established environmental targets supplemented with indicators and reference points (environmental quality objectives) in an integrated monitoring system. This specified the desired outcome for the ecosystem. The assessment of goal achievement towards these targets was a basis for formulating the policy. Similar yardsticks for what is acceptable are absent in the Canadian cases, despite a special provision in the Oceans Act about quality objectives¹⁶ and due attention to the topic (DFO, 2002; O'Boyle et al., 2005; O'Boyle and Jamieson, 2006; Rutherford et al., 2005; Walmsley et al., 2007). Integrated monitoring of the ecosystems takes place in neither the ESSIM nor PB/GB areas, only sectoral programs. This provides a weak foundation for EBM and integrated, adaptive policy-making.

The planners formulated measures for achieving the objectives differently. The BSMP designated mostly concrete actions, whereas the two Canadian plans designated strategies. A strategy indicates a direction of desired change and may guide a number of actions. It is therefore unspecific as to what to do and depends on subsequent action planning. When the action planning never occurred, ESSIM and PB/GB remained aspirational, unspecific plans.

There is a common assumption that allocation of clear task-responsibilities is conducive to successful implementation (Mazmanian and Sabatier, 1983). In fact, none of the plans allocated responsibilities. The plans had fundamentally different ambitions as to who was supposed to implement. The BSMP saw the Norwegian government apparatus as solely responsible. Despite weak mechanisms for overseeing the distributed implementation process, this worked because of the active

(footnote continued)

fisheries. In Newfoundland-Labrador, there are still regular meetings at two levels, mostly for information exchange.

¹⁴ There are some more details in the strategies and in the background documents.

¹⁵ These reflections refer to ESSIM's and PB/GB's goals for sustainable human use and healthy ecosystems. The third major goal, collaborative governance, focus on the performance of the management processes. BSMP contains no such "internal" objective.

¹⁶ Para 32 (d): (T)he Minister may, in consultation with (...), establish marine environmental quality guidelines, objectives and criteria (...).

involvement of the relevant ministries in the prior planning (Sander, 2018). ESSIM and PB/GB aimed further, and intended to mobilize all interests both within and beyond governments to voluntarily commit to a joint policy and take on responsibilities. The advantage of this approach, as compared to the Norwegian, would have been the commitments of industries and non-governmental organizations. However, this was not achievable as long as representatives from government departments were unwilling to commit, and there was no push from the federal government.

5.3. The role of political leadership

Political will and support are important for the achievement of marine policies (Balgos et al., 2015; Mercer Clarke, 2010). It is noteworthy that BSMP was born out of a political conflict over petroleum policy in 2001. Since then, management plans have proven to be a useful mechanism, helping the political parties in reaching compromises over that conflict and thereby reducing a threat against the stability of successive governments. Over the years, the political interest also in other ocean issues has increased. Thus, in 2016, Parliament (*Stortinget*) decided that the government should update the plans for all the management areas every four years, and revise them thoroughly every twelve years (ref. Fig. 3). In Canada, government interest and efforts towards oceans and coasts have been characterised as ebbing and flowing like the tides, following a pattern of raised expectations and diminished hopes (Mercer Clarke, 2010). The problems with integrated ocean management started long before the Conservative Harper government, as documented in prior reviews complaining about the "glacial speed" of progress (Chircop and Hildebrand, 2006; Guénette and Alder, 2007; Jessen, 2011; Juda, 2003; Ricketts and Hildebrand, 2011). Since 2010, the internal order in DFO has been to concentrate on concrete, tangible results like MPAs instead of integrated planning of bioregions,¹⁷ into which it has divided Canadian waters (DFO, 2016). This neglect of the integrative ambitions of the Oceans Act was still the case during the fieldwork for this article.¹⁸

The two governments' different engagement is visible in their frameworks and support for the planning. First, the differences in how the governments have organized themselves is an important explanation for the different results. In Canada, the lack of a "whole-of-government" approach is a major problem (Mercer Clarke, 2010; Ricketts and Hildebrand, 2011; Rothwell and VanderZwaag, 2014, p. 401), despite coordinating mechanisms both internally in the federal government and between the federal and provincial governments.¹⁹ The Oceans Act gives the mandate to lead and facilitate integrated management planning to the minister of DFO. For ESSIM, this meant, "it was always seen as a DFO initiative. This was an Achilles heel for the project".²⁰ The local planners had to persuade other government departments and agencies to voluntarily allocate resources to ESSIM instead of using

¹⁷ See map at <http://www.dfo-mpo.gc.ca/oceans/maps-cartes/bioregions-eng.html>.

¹⁸ The Trudeau government has increased funding and re-staffed DFO. The top priority for the oceans is to increase the proportion of MPAs in Canadian waters. Its initial ocean policy is found at <https://pm.gc.ca/eng/minister-fisheries-oceans-and-canadian-coast-guard-mandate-letter>.

¹⁹ Internally in the federal government, there have been Interdepartmental Committees on Oceans at various levels. Strategic coordination towards the provinces and territories can take place within the Canadian Council of Fisheries and Aquaculture Ministers (there are also regional committees for such collaboration, ref. footnote 13). According to interviewees, the Harper government almost shut down these collaborative arrangements, whereas the Trudeau government has started actively using them again. This is substantiated by information in DFO (2012b). DFO (2016) concluded that "these committees have not succeeded in fulfilling their intended function" and need to be reestablished.

²⁰ Interview with the ESSIM coordinators.

them to fulfil their sectoral mandates and tasks. In BSMP, the participation of government agencies was not an issue; their superiors in the ministries appointed the participants. The agencies received co-ordinated mandates that ensured that the work would become policy relevant and certain budgets to hire consultants. This broad mobilization of knowledge from sectors with different interests created legitimacy. Policy-makers and stakeholders alike were therefore more inclined to accept the results as credible. In a political culture with rationalistic traits in its faith in knowledge (Christensen and Holst, 2017), the reports became important for agenda setting and policy-formulation (Knol, 2010). Later, the politicians could legitimise their policy through science. Interestingly, interviewees in Canada did not question the legitimacy and credibility of the assessments, even though DFO had a dominant role in producing them. Nevertheless, the impression from ESSIM is that facts attained from assessments did not play the same role as in BSMP, and that more issues became the subject of political bargaining amongst the participants.

Second, funding of the tasks following a new ocean policy was challenging in both states. It required the reallocation of resources and tasks, and seed money. For the implementation, it is noteworthy that none of the plans allocated resources. The Norwegian government mobilized internal resources from many ministries, during both planning and implementation. That ensured the basic capacity. Only major new initiatives needed appropriations in the annual budgets. In Canada, DFO alone had to change priorities to fund the new tasks during the first eight years after the adoption of the Oceans Act. First then, the Liberal government allocated funds for integrated ocean management, followed up a short period by the Conservatives (Jessen, 2011; Mageau et al., 2015). The experience of ESSIM was that such allocations motivated some agencies to participate, but only as long as the money lasted. The two approaches illustrate that the resource problem becomes more severe when the government does not mobilize all relevant ministries with their internal resources.

Third, in BSMP, the ministries determined the boundaries of the management area early in the process. The lack of nationally predefined boundaries for the LOMAs caused much uncertainty in the ESSIM process, and the later boundary conflict with Newfoundland-Labrador and Minister Hearn. The later designation of all Canadian waters into bioregions, based on scientific advice, ensures a more stable geographic framework. The experience from ESSIM and PB/GB also accentuates the need to define boundaries and nested approaches between ocean, near-shore and coastal management areas (Mercer Clarke, 2010; Johnsen and Hersoug, 2014).

Fourth, the duration of the planning, affected by the government mandates, had consequences for the results. The Canadian government set no deadlines for specified deliveries. Instead, the national guidelines were concerned with allowing stakeholders enough time to express their views, and building trust and consensus (DFO, 2002). Thus, the ESSIM process lasted 14 years in total, the PB/GB five. The long duration produced stakeholder fatigue, illustrated by a persevering stakeholder who referred to herself as “an ESSIM survivor”. Another consequence was that replacements of people in the participating organizations made it necessary to re-negotiate previous agreements. Most severe, though, was that the projects became vulnerable to changing political priorities. ESSIM suffered a preemptory blow from the lacking endorsement of the plan, whereas budget reductions and a move away from integrated ocean management stopped the implementation of PB/GB. For BSMP, the ministries set deadlines when commissioning specified tasks. The preparation of the assessments first time took approximately three years, while the government spent almost a year formulating the policy in a white paper. This was a learning-by-doing process too, with much uncertainty about what would work. Compared to ESSIM, BSMP saved time because of clear instructions about participation and deliveries, and a different model for stakeholder consultation and decision-making.

5.4. Conflict resolution

The underlying premise for ESSIM's collaborative planning model was that “a plan developed through collaboration will be broadly accepted and used by all”. The plan also assumed that it would prevent conflicts (DFO, 2007). Though the selection of the planning area reduced the scope for conflicts, the ESSIM partners still had problems dealing with disagreements. After the long and thorny process of finding an organizational structure, new disagreements arose over the plan's guiding principles. The coordinators then realised that it was unrealistic to obtain consensus on action plans, as originally intended: “We would have needed another five years if we should have done that”.²⁰ Though several stakeholders, as well as the DFO headquarters, wanted something concrete, the only acceptable solution was to make a strategic plan. Thereby “all the difficult issues, decisions and negotiations required to achieve change” (Hall et al., 2011), were pushed forward to the next phase of action planning.

One of the reasons for this was that several participants were uncomfortable with the multi-stakeholder forum and the idea of an overarching plan. “For example, the offshore fishing industry was very clear in saying that we do not want to discuss our dirty laundry in front of the environmental NGOs and other groups”.²⁰ Another participant observed: “It sounds great with open and consultative processes. In reality, it was threatening for some of them.” Several interviewees understood that the government sectors did not want a framework imposed over their mandates, with a content defined in processes over which they did not have full control.²¹ Correspondingly, interviewees reported that many participants in PB/GB were present mostly to protect their mandates and interests.

The preferred alternatives for regulatory agencies and industries were the traditional sectoral mechanisms. They ensured privileged access to decision-makers and maintained prevailing power relations. It became an objection that ESSIM was not the right forum. Support for this goes back to the weak status of the Oceans Act regarding responsibilities enacted to other ministries (Calderbank et al., 2006; Juda, 2003). Thus, the national framework stated that integrated management “cannot be forced on anyone.” Moreover, “It will not infringe on the legal authority of the participating decision-makers, [and] administrative and legal jurisdictions will be respected” (DFO, 2002). These rules of the game, combined with consensus-based decision-making, gave veto power to any department and agency wanting to preserve its autonomy.

Though all participants interviewed appreciated the ESSIM dialogues, there were limits to what could come out of them. If descriptions of environmental impacts became too precise, or somebody suggested a proposal too directed at a specific sector, that sector would often object. This led to negotiations, ultimately line by line, until everybody could agree upon the wording. The result was the lowest common denominator of what was acceptable. “I can recall all kinds of much, much, much too much time spent on parsing sentences and worrying about words and what this comment or statement or this small thing would mean. Stuff that we just should have made a decision about and moved on. But it seemed, if I recall accurately, that this was a convenient way for people who didn't want the process to move on to specifics to slow it down”.⁷ Similarly, interviewees from the PB/GB process reported about “wordsmithing” to conceal disagreements in high-level, “feel-good statements”.

The ability to solve disagreements and conflicts is closely linked to decision-making, ultimately by the final endorsement of a plan. There are no rules for how to endorse integrated ocean management plans in Canada. The national framework did not foresee the endorsement of the

²¹ This is in accordance with a main conclusion in Guénette and Alder (2007) and observations of the behaviour of federal departments as reported in Flannery and Cinnéide (2012).

minister of DFO, who does not possess this competence.²² ESSIM first relied on the participants, receiving letters of support from some government agencies and non-governmental organizations. Later, the project searched for ministerial endorsement in order to be positioned for an eventual follow-up. The voluntary endorsement of the plan by individual decision-making authorities, industries and stakeholders, was according to the national framework (DFO, 2002). If a sectoral interest had not already achieved what it wanted through the collaborative process, denying endorsement was the ultimate blockade against intrusion into its turf.

Searching for consensus at all levels in the BSMP process was also important. However, it was very clear that the Cabinet was the key decision-maker because it would be answerable to Parliament for the content of the white papers. Failures to reach consensus at lower levels of government led the civil servants to hand the conflicts over to their political superiors. The highest level in the Cabinet, led by Prime Minister Stoltenberg personally, negotiated compromises in the beginning. This illustrates the political importance of this particular plan (Sander, 2018).

The different decision-making procedures also raises the issue of who could legitimately make the trade-offs necessary when formulating a broad, ecosystem-based policy. The broad array of decision-makers foreseen in the Canadian framework could only decide upon the affairs for which each of them were (legally) responsible. No political bodies were envisaged to take a holistic decision regarding the plans, as in Norway, whereby different interests could be balanced against each other. The Canadian government in reality devolved the decision-making to its underlying bureaucratic structures and invited stakeholders. These, in turn, watered down issues of potentially high political interest until there was almost no political content left.

5.5. Contextual explanations

To what extent may different contexts explain the different engagement and approaches of the Canadian and Norwegian governments?

About two-thirds of Norway's export revenue originates from ocean-based industries, particularly petroleum products and fish. Thus, a clear bipartisan recognition of the need for political engagement in ocean management and industries has emerged. At the same time, there is political deadlock over the northwards expansion of the petroleum industry, making it impossible to form coalition governments after 2001 without making political compromises in package deals. The creation of the management plans therefore met urgent economic and political needs. For Canada as a whole, the corresponding export value is of an order of magnitude lower than that of Norway. This may partly explain why Canada, according to Ricketts and Hildebrand (2011), “sees itself primarily as a terrestrial rather than a maritime nation”. Several of my interviewees referred to the same. Their concern was the differences between the maritime Atlantic region and the majority inland economy and population, including the capital. Though ocean affairs could be of high regional importance, they felt that the oceans only play a marginal role in the national political scene.

A federal constitution, such as in Canada, often creates a more complex governance situation than in a small unitary state, such as Norway,⁴ particularly when federal and provincial responsibilities

²² The Oceans Act art 31 says that the minister of DFO shall “lead and facilitate” the development and implementation of plans in collaboration with others, but says nothing about endorsement. Since the minister's purview only extends “to matters assigned by law to the Minister” (art. 32 a), his/her endorsement raises the question of how the interests of other ministries are safeguarded and whether an endorsement is on behalf of the whole government. When the Trudeau government endorsed the Pacific LOMA plan (PNCIMA), it solved these uncertainties by getting letters of support from six ministries.

intertwine. However, as a rule of thumb, the federal level in Canada has jurisdiction over ocean affairs outside the low-water mark (Calderbank et al., 2006).²³ In Norway, the national level (*staten*) has the sole management responsibility for oceans outside the coastal zone, where municipalities and counties exercise delegated powers for marine spatial planning (Johnsen and Hersoug, 2014). Both national governments thus have a similar latitude in ocean affairs. Still, one enters into consensus-based collaborative planning with lower levels of government, while the other decides after first having listened to lower-level political-administrative units. Different policy styles therefore may be a more plausible explanation for this difference than the constitution and national division of responsibilities.

5.6. An explanation of the Canadian cases

The discussion above can be summarised as parallel to Sander's (2018) in-case explanation to BSMP. Following Winter's framework, the first and evident explanation to the lack of implementation results is that the two strategic plans lacked the impetus for implementation. Their objectives were unclear on what they wanted to achieve, the designation of strategies made it open-ended as to what was to be done, nobody was responsible for following-up, and resources were scarce. Two factors in the policy formulation process explain this vagueness: the lack of leadership exercised by a co-ordinated Canadian government and the model for collaborative planning. First, integrated ocean management was seen as a task for DFO alone. Other federal departments considered their participation to be voluntary, and had to be convinced to do so locally. They were not willing to accept integrated management plans as an overarching framework. Instead, they protected their traditional ways of solving issues within their own forums, by virtue of sectoral mandates and tasks. The lack of a whole-of-government approach clarifying fragmented governance issues prior to planning thus led to the continuation of the traditional, piecemeal sectoral management (Flannery and ÓCinnéide, 2012; Jessen, 2011). Second, the consensus-based collaborative processes, in which nobody had the authority to take decisions, did not resolve conflicts. Instead, participants concealed disagreements by wordsmithing and pushed their solution forward to a next phase of action planning. This phase never took place due to lack of political support from the minister in DFO and changes in the government's political priorities. Voluntary commitment from the local participants was not strong enough to ensure that further planning and implementation nevertheless continued. The power play between the participants during policy formulation led to a policy that was the least common denominator of what was acceptable and almost void of political substance.

6. Conclusions

Implementation theory has inspired research into two fundamental questions of ecosystem-based policy, as expressed in plans for large marine areas: what are the results of putting a policy into practice, and what can explain the achievements? The research has been guided by Winter's integrated framework for implementation studies (Fig. 1). When applied to BSMP in a single-case study, the policy formulation process and some contextual factors explained why most measures in the policy had been put into practice, whereas the implementation process was not significant as *explanans* (Sander, 2018). The current exploration of ESSIM and PB/GB finds explanations in the same parts of the framework, though with new mechanisms, but also in the policy

²³ Newfoundland is one exception with its three nautical miles territorial sea. The province achieved this due to its accession to the Canadian federation in 1949, after the evolution of the territorial sea as a legal concept. Ref also footnote 9 about different views on the right to the natural resources of the seabed.

design. The implementation process was still not significant, this time for the obvious reason that it turned out that such processes had not occurred. Thus, the policies in ESSIM and PB/GB were not put into practice. The three cases therefore are *diverse*, with an almost maximum variation on the dependent variable (Seawright and Gerring, 2008). This was fortunate for identifying variables and mechanisms that can explain the different achievements, here summarised chronologically according to the relevant parts of the analytical framework:

Context: Two sets of variables seem to have influenced the different approaches of the two governments. First, the Norwegian politicians were prompted to create the management plans to loosen-up political deadlock, which in turn affected industries of high economic importance. Conversely, it is hard to identify an urgent need for federal governments in Canada to make integrated ocean management a prioritised political project. Second, despite different constitutions, both governments had a similar latitude in the oceans. Their different approaches towards lower levels of governance instead seem to reflect typical national policy styles.

The cases also shed light on the continuous debate on the role of law versus political approaches. A comparative study of national ocean policies contended that those formally embedded in law tend to be more successful in the longer term than those solely based on executive action (Balgos et al., 2015). Such a general conclusion is not supported neither by the successful implementation of the entirely policy-driven BSMP, nor by the non-implementation of the legally based Canadian plans. The Canadian Ocean Act definitely has inherent problems, most apparently the allocation of responsibility to one minister alone, the unclear relation to sectoral legislation and the absence of decision-making power (Calderbank et al., 2006; Chircop and Hildebrand, 2006; Foster et al., 2005; Juda, 2003). However, the Trudeau government demonstrates that there is room for political manoeuvring within similarly unspecific legal provisions by its active engagement in designating MPA networks.²⁴ Avoiding a breach of the international obligations on MPAs has evidently prompted the political will to push for results.

Policy formulation: The active leadership from the top of the Norwegian government, as opposed to the almost complete absence of political engagement in Canada, is a striking difference between the cases. A major challenge for EBM is to overcome fragmentation of policies. In order to act more coherently, the Norwegian government introduced new cross-sectoral organizational structures involving both ministries and governmental agencies. In Canada, the mechanisms for coordination with the relevant federal sectors and provinces were not strong enough to prepare for the planning through a whole-of-government approach. The Norwegian government led the planning process top-down, eventually formulating the plan itself. In Canada, the responsible ministry delegated the entire planning to its regional branches. It was up to them to engage participants within and beyond governments in collaborative planning. As regards decision-making, the cabinet decided in Norway, and actively negotiated agreements in conflicts that were unresolved at lower levels of government. In Canada, the participants in the local planning processes were supposed to take decisions by consensus and later endorse the plans individually. However, the participants did not resolve conflicts, but instead watered down the content of the plans by wordsmithing and non-committal statements. The long duration of the planning led to stakeholder fatigue. It also made the plans vulnerable towards changed political priorities, which in turn hindered implementation. The comparison also demonstrates that an advance clarification of a plan's status in relation to the sectors prevents insecurity and conflicts, as does an early and

authoritative designation of planning areas.

These results are consistent with negative experiences of consensus-based planning in related areas, such as terrestrial and aquatic EBM in the US (Layzer, 2008) and integrated coastal zone management in Europe (McKenna and Cooper, 2006). Collaborative planning can lead to maintaining status quo and lower protection of the environment and other public goods than traditional decision-making. Asking stakeholders to generate consensual plans relieves policy-makers of “the burden of making politically risky decisions” (Layzer, 2008, p. 290). Instead of empowering the public, the equalisation of all parties in decision-making effects paralysis, which enables powerful players to exploit the situation (McKenna and Cooper, 2006). There are many recommendations for participatory approaches in EBM (Ehler and Douvere, 2009; Gimton et al., 2010; Kearney et al., 2007; Oates and Dodds, 2017; UNESCO, 2006). It should therefore be an important research task to identify if and under which conditions collaborative consensus-based planning, as applied to large ocean areas, might avoid such pitfalls.

Policy design: Planning in all the three cases produced ambiguous objectives, thus confirming what one would expect of a complex policy like EBM (Matland, 1995). However, the comparison singled out other mechanisms pertaining to policy design that could contribute to more clarity. One is to describe the desired outcome by virtue of more specific targets and indicators, such as environmental quality objectives (BSMP). Different ways of formulating the measures also play a role. Formulating strategies provides direction for actions, but does not specify what is to be done (ESSIM and PB/GB). Actions concretely define what is to be done (BSMP), and give even more impetus for implementation if specifying the allocation of responsibilities and resources. Moreover, designating actions implies a response to decision-dilemmas, in which policy-makers have to balance different interests against each other. This will reveal their real preferences better than general objectives.

This cross-case comparison and the previous single-case study (Sander, 2018) demonstrate how theory-driven case-study methodology can lead to cumulative results (George and Bennett, 2005). They have gradually filled the general analytical framework with content that is specific to the class of events under study, EBM plans for large ocean areas. For further investigations on what is conducive to the implementation of policies resulting from such plans, researchers should select additional cases carefully. For instance, it would be interesting to analyse cases with different implementation processes and different feedback-mechanisms than those of BSMP. New cases could test the explanations found so far, amplify the scope of prior conclusions by introducing more variability on existing variables, define variables more exactly and identify new ones. Hopefully, we are at the start of a systematic exploration of what is conducive to the implementation of ecosystem-based policies. It is not satisfactory if planning for designated ocean areas only becomes a learning process producing even more policy-on-paper. Substantive results requires the implementation of measures that work in solving identified problems.

Declarations of interest

There are no conflicts of interest.

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²⁴ Ref. Oceans Act art. 35–36. There is one important difference compared to the provisions on integrated management plans: Art. 35(3) allocates decision-making to the *Governor in Council* (in practical terms, to the whole Cabinet), on the recommendation of the minister of DFO.

and doing their best to answer all my questions about Canada and its ocean law and policy. I also wish to thank the interviewees for frankly sharing their reflections with me. The manuscript has been discussed in my research group and commented several times by my supervisors Peter Arbo and Bjørn Hersoug. The comments from three anonymous reviewers also helped to clarify the text.

Appendix A. Supplementary data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.ocecoaman.2018.08.005>.

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