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How Integrated Ocean governance in the Barents Sea was created by a drive for increased oil production

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ABSTRACT

The Norwegian integrated management plan for the Lofoten–Barents Sea areas (BSMP) was initiated in 2002 following an international push for implementing ecosystem-based management, as well as a national drive to make new areas available for petroleum exploitation.. Governance of the plan was achieved through an inter-ministerial steering group working through its underlying institutions that have been tasked to work together during both development and implementation. This has achieved a high degree of integration across sectors and between government levels. Having the dual objectives of sustainable exploitation and conservation gives rise to a conflict over whether or not to allow petroleum industry access to the ecologically most valuable and vulnerable areas. There was an attempt at resolving this conflict by acquiring more knowledge, but the conflict is fundamentally a value-based question, which is impossible to resolve by gathering empirical knowledge alone. Nevertheless, the BSMP has been a positive vehicle for increasing the legitimacy of the complex decisions a modern society has to take in the management of ocean resources.

1. Introduction

Norway was an early adopter of international requirements for integrated and ecosystem-based ocean management. The Lofoten–Barents Sea integrated management plan (BSMP) was initiated by a liberal-conservative government in their coming-to power declaration in 2001. In a subsequent report to the Parliament in 2002, presenting the future of Norway's oceans policy [1], the integrated management concept was further refined. The Norwegian Parliament endorsed the need for integrated management of Norwegian maritime areas based on the ecosystem approach, and the BSMP [2] was the first of such plans developed. The Lofoten–Barents Sea area was chosen because it is a productive, clean area of sea where considerable new petroleum-related activity was anticipated, and where fisheries have traditionally been significant. These potentially conflicting uses and high economic stakes made it important to start the development of integrated management in this area. Planning started in 2002 with adoption in 2006 [2] and first revision in 2011 [3]. This was the first of three regional marine spatial plans, the others cover the Norwegian Sea [4] and the North Sea [5]. Each plan covers the sea areas from 1 nautical mile beyond the coastal baselines to the 200 nautical mile or median line limit of national jurisdiction (Fig. 1).

All Norwegian integrated management plans share a strategic objective to promote economic development by allowing sustainable use, whilst ensuring healthy ecosystems [2,3]. They are built around the same general objectives and development aims, and give direct regulations for the allocation of marine space to the petroleum sector, in addition to setting out targets and aims for the impacts of other economic sectors (e.g. fisheries and shipping) on the ecosystem.

The management plans aim to clarify the overall framework and encourage closer coordination and clear priorities. They also aim to increase predictability and facilitate coexistence between different users and the natural resources. Through the management plans, the Government aims to take steps to simplify and improve the system for involving all interested parties, ensuring stakeholder participation and engagement.

The petroleum sector is the most important in the Norwegian economy, representing 21% of national GDP [10]. Fisheries/aquaculture is the third most important export sector after petroleum and land-based industry, exporting about 95% of all fish landed, making Norway the third largest fish exporter globally.

In contrast to other spatial plans (MSP), the Norwegian Integrated plans are not based on new MSP-specific legislation. Rather, they are implemented through existing sector-based

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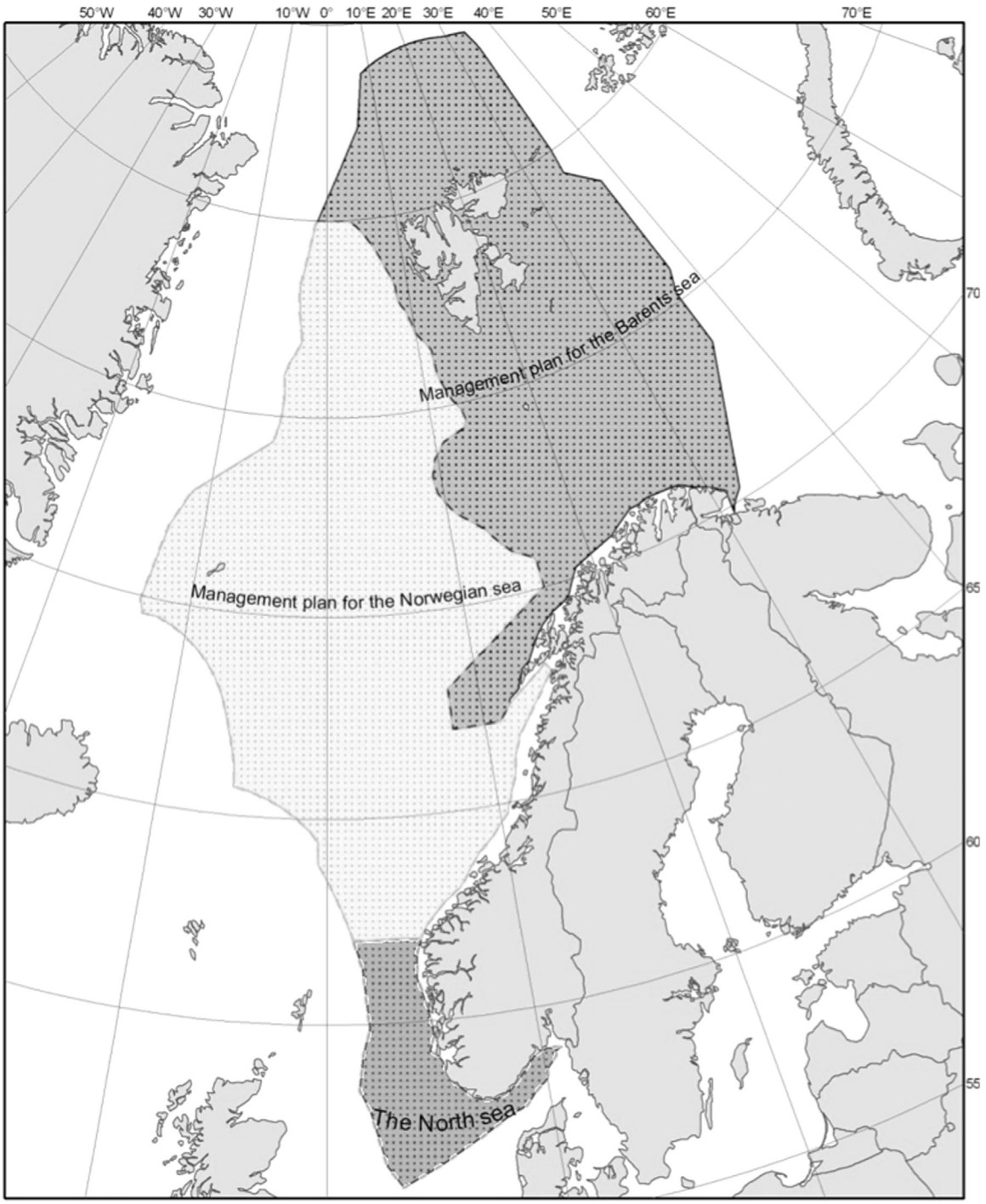

Fig. 1. Map showing areas for all three of Norway's integrated management plans: The Lofoten–Barents Sea area with the newly codified border with Russia; the Norwegian Sea; and the North Sea – Skagerrak.

legislation. The management plan is presented to Parliament for approval [2] after which the plans provide guidance for government in achieving the plan's goals and objectives.

Internationally, the North Sea Ministerial Conferences (NSC) and the 2002 Johannesburg declaration [6], as well as the 2002 World Summit on Sustainable Development and the Johannesburg Plan of Action coming out of that meeting were among the international drivers pushing the development process. Nationally, the petroleum industry's push to gain access to new areas further north and closer to shore was the most important driver of the process.

This paper focuses on the Norwegian Integrated Plan process in general, and on the BSMP in particular. The BSMP is the first and most developed plan, in which the governance structure for such processes was developed, and where the key conflicts of interests were laid out and became most pronounced, chiefly because the plan heralded the coming of new petroleum developments in the area.

The research methods used in this paper were a mix of active participatory observation (by EO, IR and LBM), and non-participatory external observation (by AHH and SH), with several authors having published in this area previously. This research followed the governance analysis approach and structure developed as part of the MESMA project [7].

2. Case study process and governance

The planning process for the BSMP was led by an inter-ministerial Steering Group, chaired by the Ministry of the Environment, with a number of other ministries participating and key decisions being taken at cabinet level in Government. This arrangement continues and steers the planning work for all three ocean areas (see Fig. 2).

Planning began in 2002, through a broad process involving a number of government directorates and institutions. Planning was initiated with a scoping phase providing status reports (e.g. for. environment and resources, socioeconomic aspects and valuable areas). The second phase (2004–2005) provided assessments of the environmental and socioeconomic impacts of various economic sectors, particularly petroleum, fisheries and shipping, as well as external influences, particularly climate change and pollution. The third and final phase (2005–2006) provided aggregated analyses of total environmental impacts, identified gaps in knowledge, and identified area use conflicts. During the last two phases, a set of indicators of ecosystem state was also developed [8]. The plan was adopted by the Norwegian parliament in 2006 and has been in operation since, revised in 2010–2011. Similar plans were developed for the Norwegian Sea (2005–2009) and the North Sea (2010–2013)

Three groups were set up to monitor and evaluate the planning process: the Management Forum, which was responsible for assessing achievement of the plan's goals, knowledge development and synthesising all yearly reporting to the steering group; the Monitoring Group, responsible for yearly monitoring on the state of the ecosystem; and the Risk Forum, assessing the yearly changes in environmental risk stemming from human activities (Fig. 2). All three groups were cross-sectoral, bringing together representatives from different government institutions and directorates. Feeding into the process was both new and improved knowledge stemming from mapping projects, such as MAREANO [9] (discussed in Section 7), regular monitoring and on-going research projects.

Government agencies and institutes carried out the development, implementation and revision processes (see Fig. 2). The planning process can be seen as a predominantly top-down approach with ministerial level steering, whilst lower government implementing levels and industry and other stakeholders are given the opportunity for bottom-up influence on the process through consultations or lobbying (Fig. 3).

Being an oceanic plan, the main stakeholders aiming to influence the BSMP are the national (or regional) industries, local governments, and environmental and economic NGOs. The main industries have been represented in the process through their interest organisations (Petroleum: Norwegian Oil and Gas Association, Fisheries: Norwegian Fishermen's Association, Norwegian Coastal Fishermen's Association, The Fishing Vessel Owners Association) who have given input directly through hearings at meetings, consultation, but also trying to influence the process through lobbying.

3. Conflict analysis

The balance between use and protection is the fundamental conflict in the BSMP, due to its aim of economic development

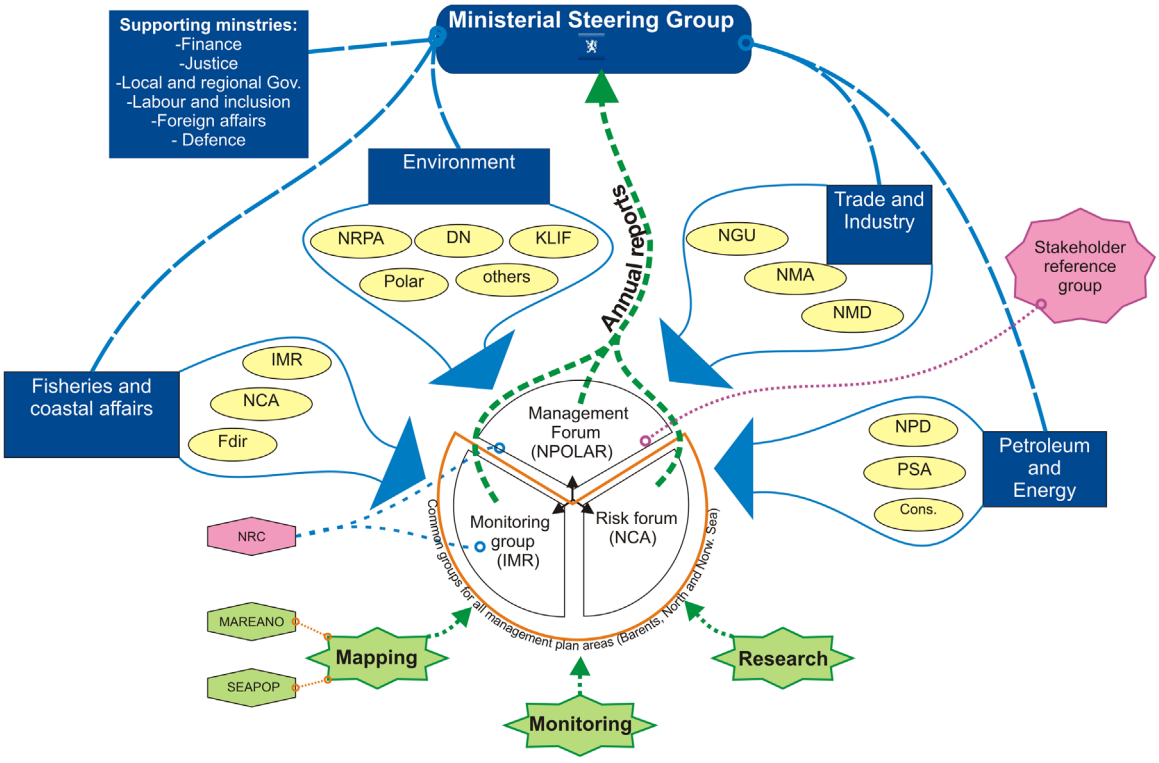

Fig. 2. The organisational and governance structure of the integrated management plan for the Lofoten–Barents Sea area. The ministries (blue) of fisheries and coastal affairs, environment (chairing the steering group), trade and industry, and petroleum and energy have been leading the process. Institutions and directorates (yellow) that have participated on demand by their parent ministry (encompassed by blue arrow/line): FDir – Fisheries Directorate, NCA –Coastal Administration, IMR – Institute of Marine Research, NRPA –Radio Protection Agency, Polar –Polar Institute, DN – Directorate for Nature conservation, KLIF – Climate and Pollution Authority (DN and KLIF are now joined into the new Enviromental Directorate), NGU –Geological Survey, NMA –Mapping Authority, NMD –Maritime Directorate, NPD – Petroleum Directorate, PSA – Petroleum Safety Directorate, Cons – consultants working for the Ministry of Petroleum and Energy. The three government forums following up the process are shown in the middle (chairing institution in parentheses). The forums received outside input from the Research Council (NRC), mapping activities(MAREANO and SEAPOP), regular monitoring and research (green stars). (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

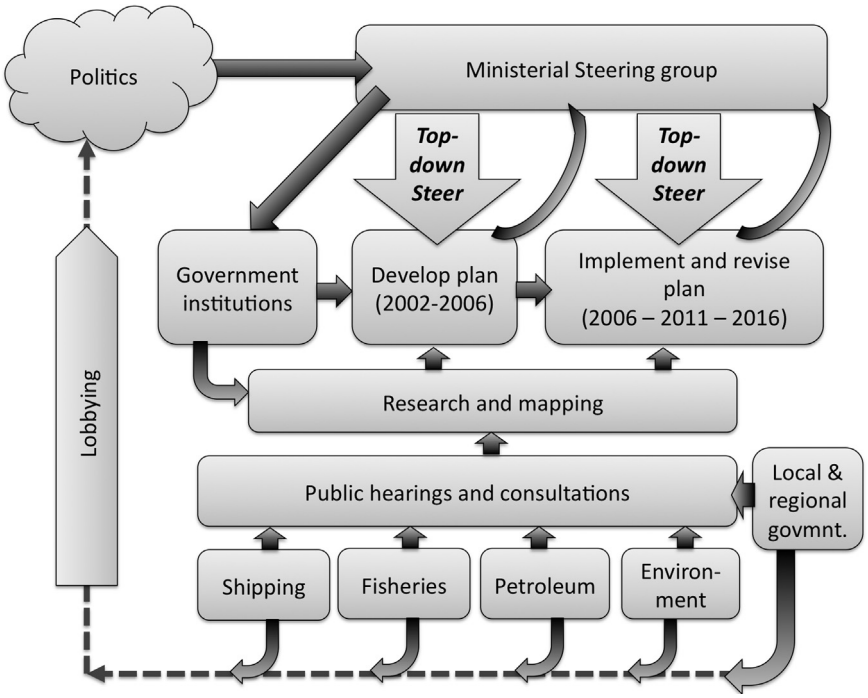

Fig. 3. Barents Sea Management plan development process showing how the ministerial steering group led the process through its institutions with clear top-down steer. Research and mapping, as well as stakeholder inputs from the sectors and local/regional government, also impacted the process directly and indirectly through lobbying, as well as through political steer resulting from lobbying.

through sustainable use while ensuring ecosystem health. This conflict plays out at both central governmental levels (political) and at local industry sector levels.

Specifically, the main conflict centres on whether the ecologically valuable and vulnerable Lofoten–Vesterålen area should be opened[1] to petroleum activities [11]. There are many facets to this conflict. There are disagreements about the environmental risks of petroleum development, i.e. how to treat worst-case scenarios such as large-scale oil spills, how to value ecological importance and the importance of socioeconomic effects of petroleum developments locally. Uncertainty is a further issue fuelling this conflict both in terms of disagreements over the magnitude of the uncertainty surrounding the environmental effects, but also about where to present the uncertainty. Should uncertainty be included in the scientific advice through the use of the precautionary principle, or should precaution only be included at the management level – not at the advice level. In essence, who is responsible for identifying and taking precautionary measures – the advisors (scientists) or the managers?

At the government level, there is a triangle of conflicting concerns between the three main ministries having interests in the issue: Ministry of Fisheries and Coastal Affairs, Ministry of Petroleum and Energy, and Ministry of Environment (see Fig. 4). Each ministry represents the interests of their sector: petroleum and fishing industries that have conflicting interests and the environment protectionists that sees both industries as a threat to the marine ecosystem. The strongest conflicts between petroleum and fisheries have been over the use of ocean space for seismic exploration. Production sites for oil and gas also exclude fishermen from an area, and the discharges of produced water concern fishermen. Fishermen claim that they have been permanently

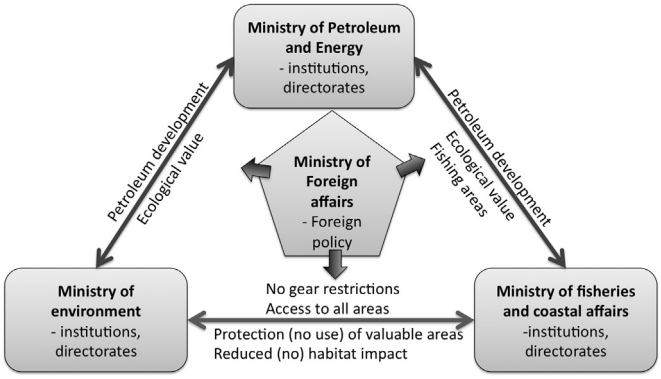

Fig. 4. Main conflict triangle for the Barents Sea. Arrows show the main conflicts between the players (boxes) and the text above the arrows describe the conflict. The ministry of foreign affairs is at the centre as foreign policy impacts and in some cases trumps the sectoral conflicts.

displaced from fishing areas in the North Sea and fear the same will happen in the Lofoten area if the petroleum industry is given wide access in an area where the continental shelf is narrow and space scarce. The petroleum industry on the other hand downplays the conflict with fishermen citing a 40-years of experience with co-existence in the North Sea. They also have a problem-solving attitude,, in relation to the concerns over seismic exploration and pollution. Fishermen are concerned that accidental oil spills might have long-term ecosystem effects, while the oil industry focuses on the expected small and short-term effects. Uncertainty and how to apply the precautionary principle are key issues in the conflict.

The same conflicts are also manifests at the local, industry and sector levels, Local and regional authorities have become important actors in this realm, in addition to the petroleum industry, fishing sector and environmental NGOs (see Fig. 5). The local benefits in terms of jobs and incomes for the regions and communities become an important part of the debate. Again,

[1] Although the environmental impacts of petroleum activities varies by stage of the development process, we make no distinction in this paper as it is assumed that opening an area to petroleum activities will involve all stages in a petroleum development process (eg. Seismic exploration, exploration drilling, production drilling, decommissioning)

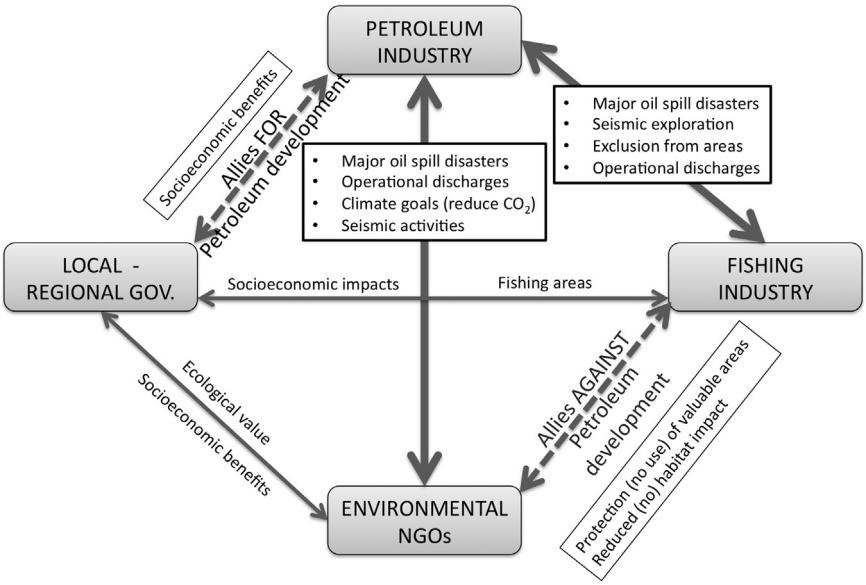

Fig. 5. Conflict at a regional/industry/sector level. The arrows describe the issues that focus their relationship, with the strength (width and intensity) of the arrows indicating the importance of that issue or relationship in the overall conflict debate.

uncertainty comes into play, but now also in relation to the potential socio-economic effects of petroleum-related activities. The petroleum industry's own analysis projected higher incomes and more jobs than a similar analysis developed by the government. Local and national interest groups add to this with their own analyses or interpretations of the existing analyses.

Since these conflicts involve issues of high importance for the national economy, as well as for regional and local interests, these conflicts are highly politicised along several dimensions: protection versus use, local versus national and north versus south.

These conflicts have been on-going since the start of the BSMP process, but have intensified in recent years. Although the government decided not to open the Lofoten area to petroleum activities in 2006, upheld the decision in 2011 and again upheld it in 2013, the area is not permanently protected. The government tried to prepare a better basis for making decisions through a strategic programme to acquire new knowledge on environmental risks, socioeconomic benefits and ecological values. However, after 11 years of building additional knowledge, it is safe to say that conflicts are just as intense as before, indicating that this is a conflict of values rather than one stemming from a lack of knowledge. In such a situation, applying a post-normal approach [12], where society discusses acceptance criteria *a priori* and involves local communities and stakeholders in an extended peer-review process, might be more suitable than the current deterministic technical analyses and modelling approaches.

4. The degree of integration of concerns

Integration of different interests and concerns across sectors and between levels of government is central to the BSMP (Fig. 6). Cross-sector integration has been achieved by setting up cross-sectorial groups, forum and meeting places for relevant sectors. Meetings between government levels, hearings and open public meetings have been tools to foster inter-level integration, although stakeholders have not been formal members of the actual development or implementing bodies set up by government.

The central conflict of use versus protection has been addressed in all forums (see Fig. 2), but most extensively in the management forum and risk forum. These multi-sector groups have allowed all

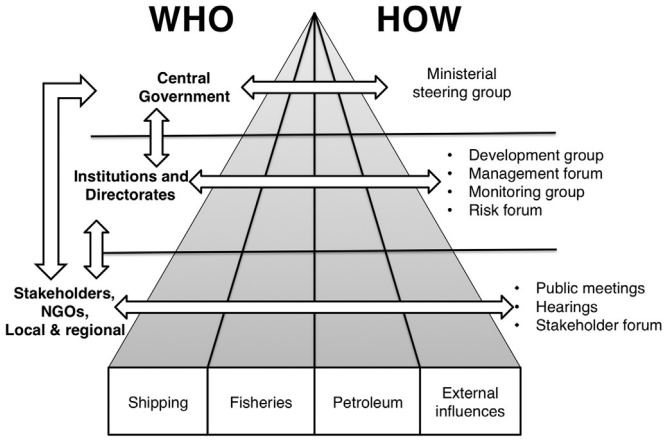

Fig. 6. Integration across sectors and government levels in the BSMP. Arrows indicate deliberate communication through the BSMP management groups and forums, and between government levels. (The figure is previously published in [18] under Creative Commons License 4.0 allowing unrestricted use, distribution and reproduction in any medium).

sectors to present their views on conflicting issues, and have also allowed other sectors an insight into how they analyse and evaluate them. Although this has not resolved the conflict(s), this horizontal integration has allowed for deeper mutual understanding and respect across the sectors. The forums and meeting places (see Fig. 2) have also provided arenas for building personal and institutional relationships increasing trust between sectors. This has fostered discussions comparing sectors, impacts and management, identifying deficiencies, inconsistencies, and potential for improvement.

Integration across sectors and between levels of government began at the start of the planning process. There was a strong political, top-down push for such integration, with clear mandates to the development groups, which served as precursors to the management forum, monitoring group and risk forum made up of representatives from the same government agencies. Forcing the various institutions to cooperate in a consensus-based process was instrumental for developing and implementing the BSMP in the short 4-year time frame. However, forcing consensus in a development process may lead to compromise recommendations that

suppress fundamental differences in opinion on value-laden issues. The central conflict of use versus protection is such an issue and it could be argued that it would be of greater benefit to the decision-makers if the differing views and options were presented, rather than hid in a compromise as was the case in the development phase of the BSMP.

One barrier to integration has been the sector-based legislation,. Norway's tradition of using flexible administrative arrangements in such processes has the benefit of promoting speed, pragmatism and efficient implementation. Also, by implementing through existing sectoral legislation and institutional structures, the policy is rapidly and effectively translated into practice without spending much time on developing new institutional structures.

5. Participation, transparency and accountability

The participatory mechanisms employed during the development of the BSMP included public consultations, hearings, and consultations through open meetings with relevant stakeholders, in addition to direct lobbying. These mechanisms have fulfilled both the required formal role of public hearings, and the informal role of information exchange and informal consultation. Therefore, the main form of participation has been through consultative arrangements. These are widespread in the Norwegian polity and an important feature of Norwegian public governance systems.

Public meetings have been open and transparent, and all underlying documentation of the planning process, annual reports and reviews is easily accessible to the public. Some of the plan documents [2,3] have even been translated to Russian and English for the benefit of Norway's eastern neighbour and the international community. However, the work in the ministerial steering group as well as the inner workings of the management forum, risk forum and monitoring group has been closed to the public. Reports and information available to the public were focused on the agreements and compromises reached at both the ministerial level and the institution level, though differences in opinion were not clearly communicated, and the deliberations and discussions between different sectors were not communicated. This has created a false perception by the public of government unity, whilst in reality there were many conflict filled discussions on central issues witnessed by two of the authors who participated in many meetings at different levels from 2002 to 2011. The lack of transparency limits external perspectives on the planning process as well as leaving an impression with some stakeholders that information is filtered.

Because of the political nature of the interest groups have engaged in lobbying the government and the Parliament. The petroleum industry has also used media advertisements to flag their views on what management decisions should be taken, which seem to have been effective given that pollution regulations on the industry were eased up following the 2011 revision of the BSMP.

Also, the BSMP has a list of concrete and ambitious management goals concerning pollution, safe seafood, acute pollution, and marine biodiversity [2]. The annual reports [13] evaluate the level of achievement of the management goals. Lastly, the degree to which identified and prioritised gaps in knowledge have been filled are reported and discussed.

6. Equity and justice

Currently, the petroleum industry has not been successful in gaining access to all the areas it wanted to, as environmental NGOs and fishermen's concerns about ensuring the health of the marine ecosystem have trumped the allure of petroleum jobs and revenues. At the same time, concessions have been made to the oil industry. After the 2011 revision some previously closed areas were opened, and discharge of produced water was allowed. This has increased the potential for conflicts with fisheries and environmental interests. Establishment of clear management goals, reporting and assessment system has shifted the public focus from single-sectors and single-species to the wider ecosystem picture.

There is a strong power struggle between the sectors, as discussed in the previous sections. All relevant stakeholders are represented in meetings, hearings and public debates, but it is the major industrial organisations and NGOs that define the debate. Being a political issue, the outcome is uncertain, depending both on the political balance in parliament, but also on the agreements reached between the political parties. In both the former left-centre and the new conservative governments, the view of the minority parties to protect the Lofoten–Vesterålen area from oil development has won through in the political agreements.

7. Uncertainty

7.1. Knowledge uncertainties

The short (4 year) development time-frame did not allow for new research to fill gaps before the plan was implemented. Rather, the plan was developed based on the best available knowledge at the time of development. Identifying and handling uncertainties became an integral part of the plan – throughout the process the development groups were asked to identify and prioritise gaps in knowledge. Gaps in knowledge and associated uncertainty were an important for the 2006 government decision not to open the Lofoten–Vesterålen area to petroleum activities.

Two examples of serious knowledge gaps were knowledge of the physical and biological conditions of the seabed, and seabird population distribution and ecology. The government therefore initiated the two mapping and monitoring programmes: the MAREANO (seabed mapping – see Fig. 7) and SEAPOP (seabird mapping and monitoring) programmes to systematise and improve knowledge about the Barents Sea.

Both MAREANO and the SEAPOP effectively reduced the uncertainty about these ecosystem components by providing new and important data about seabed conditions and seabird populations central to the revision of the BSMP plan in 2011. The new MAREANO information indicates large variations in biotopes and landscapes, e.g. many new coral reefs, and many potentially new biotopes and candidates for species of special Norwegian management responsibility under the IUCN red list agreement (see Fig. 7) [14,15]. In the other areas that have not been mapped, the level of uncertainty remained unchanged.

Understanding the potential environmental effects of oil spills has been another issue with great uncertainty. This issue has proved especially thorny, as there are differing views (see [16] for more details). The petroleum sector consider the current environmental risk assessments to be sufficiently precautionary to achieve acceptably low risk levels whilst the fisheries and environmental groups contend that the methods lacked precaution and were flawed, as they did not incorporate key biological processes and the data inputs were prone to uncertainty leading to large degrees of uncertainty in the outcomes. The fisheries and environmental groups contended that the focus should be on potential worst-case scenario effects of worst-case events to take into account the uncertainties and possibility of a major oil spill happening. The Deepwater Horizon blowout in 2010 underlined this group's view while the petroleum sector considered the Deepwater Horizon blowout irrelevant for the BSMP due to

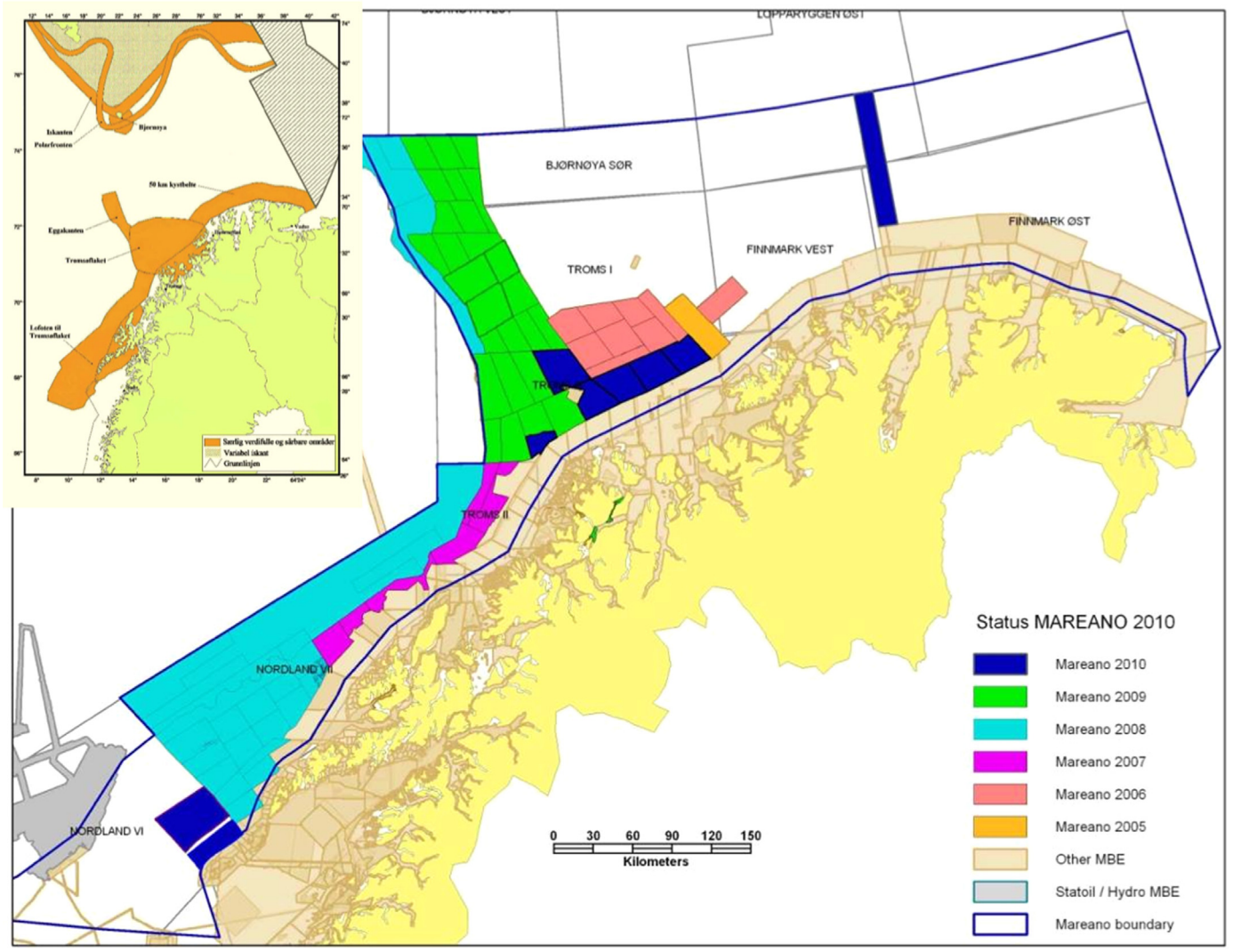

Fig. 7. The area mapped by MAREANO preceding the revision of the BSMP in 2010/2011 was targeted to provide knowledge from the particularly valuable and vulnerable areas (SVO-areas) identified by the BSMP (shown in upper left corner) in an area of special interest to the petroleum industry and fisheries.

differing geological depths and reservoir pressures. Operational discharges of produced water are another contended issue due to uncertainty of the long-term ecological effects [17].

The socio-economic benefits of various development scenarios are another uncertain issue to. Several scenarios have been developed both in the BSMP planning process, but also in parallel by industry and/or regional entities (e.g. Regional authorities). For example, the socio-economic studies use rather different assumptions about the consequences of petroleum activities for the regional labour market. Most have been debated and criticised for being either over-optimistic or over-pessimistic. The variety of possible future outcomes leaves the decision maker and stakeholders with large uncertainties about the potential socio-economic outcomes.

7.2. *Process uncertainties*

The political controversy surrounding the issue of opening Lofoten–Vesterålen has made it more difficult to predict a likely outcome, in particular in the shorter term. All governments since 2002 have been divided on the issue, and have chosen the same strategy – to leave the issue unresolved – just agreeing that the area will not be opened. Although this closes the area temporarily, it does not solve the issue permanently and creates uncertainty about the mid and long-term future.

A factor that contributes to the uncertainty in the political process can be found in the management plan principles that decisions should be science-based. Any decision maker who hesitates to make a political trade-off can claim that the knowledge base is inadequate and that more research is needed before taking a decision. The current 'non-opening' of Lofoten–Vesterålen is an example of this in practice, because instead of discussing the core value-based trade-off between socioeconomic benefits or protection of valuable nature, the politicians deflect the decision in asking for more knowledge. But after 11 years of research, mapping, monitoring and analysis this knowledge is already largely available. Therefore the current call for more knowledge about Lofoten–Vesterålen is a smoke screen for politicians to avoid debating the real, value-laden and difficult central trade-off of use versus conservation.

8. Conclusions

Norway's oil sector is driving the national economy and it is central to the continued national welfare that it continues to thrive and generate jobs, activities and profits. Currently, the Norwegian international pension fund, built through a rule that limits government spending of petroleum income, is the world´s largest,

standing at some 7000 billion NOK (€770 billion, pr. Aug 2015) – more than four annual national budgets. The supporting industries for the petroleum activities are also critical to the economy. Although important international drivers were in place to start Norway on the path to integrated marine spatial planning, it is clear that the need of the petroleum sector for new areas, thereby sustaining income flowing at high levels, was the single most important driver that led the government to start such a major planning process.

The Norwegian integrated management plan process has been multi-sectoral at all levels, with integration between ministries, institutions and stakeholders as a key process goal. Horizontal integration between government sectors has been achieved by setting up multi-sectoral groups at different levels and tasking these to deliver consensus-based reports and analyses. Effective horizontal and vertical integration has been key success factors for the Norwegian integrated management plans, similar to the experience in Belgium [18]. Although a consensus-based approach plays down real disagreements on facts, it forces the participants to listen and cooperate with each other. Whilst this has been an important feature of the process up to now, it could be argued that government would be better served with an approach displaying scientific disagreement and recognising value-based conflicts between use and conservation.

The major conflicts in the BSMP have been the question of opening the valuable and vulnerable areas off Lofoten–Vesterålen to petroleum activities. The BSMP has attempted to prepare a knowledge base for such a decision, but many of the key questions, like the effects of possible large-scale oil spills, are fraught with uncertainty that the fisheries and environmental groups argue lead to invoking the precautionary approach and keeping the areas closed. The petroleum industry, on the other hand, argues that this is too much precaution as the industry has operated offshore in Norway for 40 years without any spill causing major environmental effects.

Uncertainty surrounding the socioeconomic effects of a development or a disaster also adds to this, leading to value-laden and uncertainty-fuelled political debates at the top levels of all political parties. Although projects and initiatives are underway to improve the knowledge base further, it is unlikely that there will be enough knowledge to reach a political consensus on the issue in the foreseeable future. This thereby illustrates the limits of empirical knowledge and technical processes when trying to resolve issues that are essentially value-based. Here one should consider using other approaches, like more participatory governance in keeping with the post-normal approach, in parallel to the empirical methods currently favoured by the Norwegian government. So far, the uncertainty surrounding the issue has had the upper hand. It is therefore questioned whether the technocratic scientific tools and models used are suited or relevant to assess issues with high uncertainty, possible irreversibility of effects and high value magnitude and diversity.

Since the key issues at stake in the BSMP are of national importance, the plan process and implementation is in many ways very centralized, with little direct local or regional involvement. National stakeholder groups with ample resources have been active throughout the process, but it may be questioned whether smaller, regional stakeholder groups feel disenfranchised by the complexity and centralization of the plan and the actors surrounding it. Increasing local and regional participation and achieving buy-in at all levels may be suitable goals for future revisions, in addition to improving the knowledge base and refining the technical and scientific methods. One way to involve stakeholders and local and regional groups more could be to start a process of *a priori* agreeing on acceptance criteria for pressures and impacts, as is suggested in ecological risk analysis and in post-normal science [11].

The BSMP has contributed to setting the issues related to natural resource management on the national agenda, and has been a framework that has guided related public and scientific discussions. It has also contributed in making the discussion between different sectors more meaningful, not least at the level of ministries and government. By the large amount of work that is put into the planning and implementation of the BSMP, the government has also given a signal to the public that it takes the issue of exploitation of natural resources seriously. Thus the BSMP has been a positive element for increasing the legitimacy of the complex decisions a modern society has to take in the management of ocean resources, but it has the potential to evolve further to address the underlying value-laden questions of a scientifically *and* societally acceptable balance between use and conservation.

Acknowledgements

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