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Marine Spatial Planning: Norway's management plans

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Abstract

Since the adoption of a government white paper on ocean governance in 2001, Norway has worked on the development and implementation of marine spatial planning in the format of regional management plans. Management plans for the Barents Sea and the oceans off northern Norway and the Norwegian Sea were adopted in 2006 and 2009, respectively, and a management plan for the North Sea is planned for 2013. A key aspect of the plans is integrated assessment of the cumulative impacts on marine ecosystem from human activities (fisheries, petroleum, marine transportation, etc) on the one hand, and external sources (climate change, long range pollution) on the other. Another important feature is the identification of valuable and vulnerable areas requiring special management measures. These valuable areas have been used as input to define the spatial measures in the plans which includes routing systems for international ship traffic and zoning plans for petroleum activities. Fishing activities is also partially regulated used spatial measures such as MPAs and temporary closed areas. A monitoring system is set up with indicators and reference levels. The plan has been implemented through the regular governance structure without the establishment of new, formal institutions or new jurisdiction. An inter-ministerial committee oversees the work, guided by three working groups. A revised version of the Barents Sea plan will be adopted late in 2010, taking marine spatial planning in Norway into its second generation.

Key words: Marine spatial planning, Norway, Barents Sea, ecosystem approach

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Introduction

There is a growing understanding that more integrated approaches to oceans management are needed to respond effectively to the challenges related to climate change, pollution, and increasing economic activities (Ebbin et al 2005). Integrated oceans management is addressed by a number of concepts: marine spatial planning (Ehler 2008), ocean zoning (Crowder et al 2006), ecosystem-based oceans management (McLeod and Leslie 2009), are some of these. The essence of the literature is that the cumulative impacts of various uses of and pressures on the marine environment necessitate integrated approaches to its management.

In order to understand the translation of such concepts into practice, studies of their actual implementation is necessary (Hoel 2010). The case of Norway is of particular interest, since Norway has been working on integrated oceans management for nearly a decade (Olsen et al 2007), and is about to enter a second cycle for the management plan in the North.

In the following the development and implementation stage of all three management plans are described in greater detail. The current revision process for the Barents Sea management plan is also described and lastly we try to look at the Norwegian management plan process from a more critical perspective. What were the main shortcomings, limitations and what are the possibilities for improvement

The advent of the Norwegian plans

Norway has jurisdiction over more than two million square kilometers of oceans, six times its land area. Due to its long coastline, vast ocean areas and a small population, different uses of the oceans have coexisted with lesser levels of conflicts than seen in many other countries. The oceans range from the temperate waters of the North Sea to the polar waters to the North of Svalbard.

Norway's oceans are rich in natural resources and are critical to the economy of the country and the welfare of its citizens. The offshore petroleum industry accounts for about one third of government revenue. The fisheries resources provide for annual landings around 2,5 million tons (2009), with cod, herring, mackerel and haddock among the most valuable species. The salmon based aquaculture industry produces some 900.000 tons per year. With a small population and marginal domestic market, both petroleum and fish production is exported.-

Development of the Norwegian integrated management plans were first heralded in the coming to power declaration of the new government in the fall of 2001 (Anon 2001), and was in 2002 formalized and sanctioned by Stortinget (the parliament) in a government white paper (Anon 2002).

The development of the first plan then started in 2002, and the first sea area chosen was the Barents Sea – Lofoten Island sea area off Northern Norway. There were several reasons for starting in the north, one being that there was only one major international border thereby limiting the foreign-policy aspect to one country (Russia). Another important reason was the push to open the southern coastal areas off Lofoten to oil and gas exploration. Given the international move to EBM and integrated ocean management the government saw it as opportune to flag Norway's compliance with the various international conventions (CBD, OSPAR) and "soft law" arrangements (Agenda 21, WSSD 2002 Johannesburg Plan of Implementation).

The Barents sea plan was adopted by the Storting in June 2006 and implementation initiated the same year following the four year development phase. The same year development of a similar integrated management plan for the Norwegian sea was initiated and was adopted in 2009. Again the plan was passed through Stortinget in the form of a white paper. The latest integrated management plan is the North sea plan that was initiated in 2009 and is still under development, but planned to be implemented from 2012.

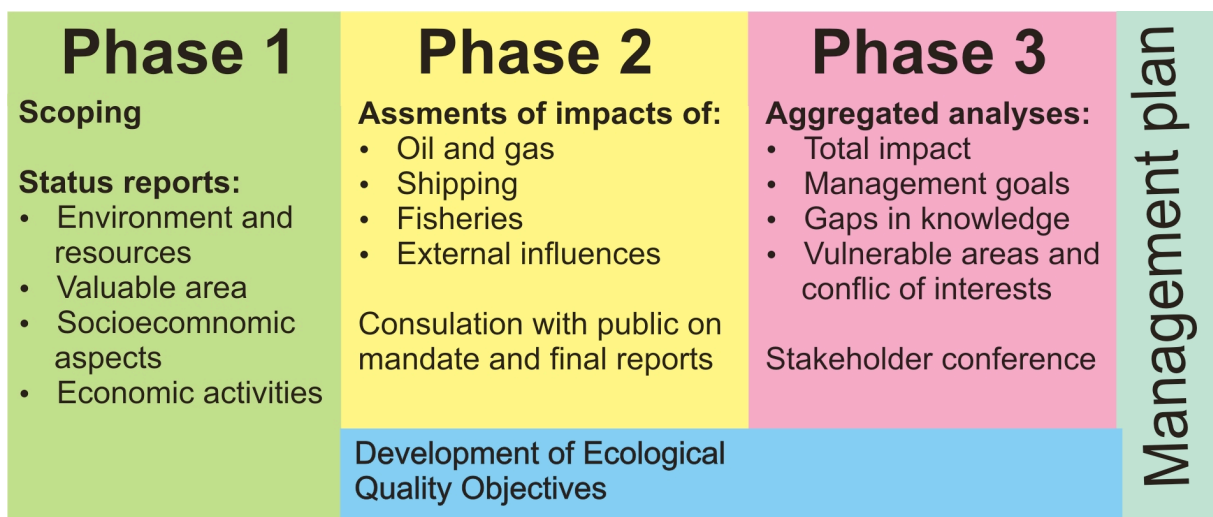


Figure 1 Planning process for the Barents Sea management plan (Figure from von Quillfeldt et al. 2009)

Development of all plans have and still follow a three phase process (see figure 1) starting with an initial scoping phase (1) assessing the state of the ecosystem and the different sectors. In phase 2 the ecological impact of different human activities was assessed for each sector separately. In the 3rd and last phase the development of plans the cumulative impacts are assessed in addition to defining the particularly valuable and vulnerable areas (biologically, see figure 2), defining the gaps in knowledge and setting management objectives (Olsen et al. 2007; Olsen and Auran 2008).

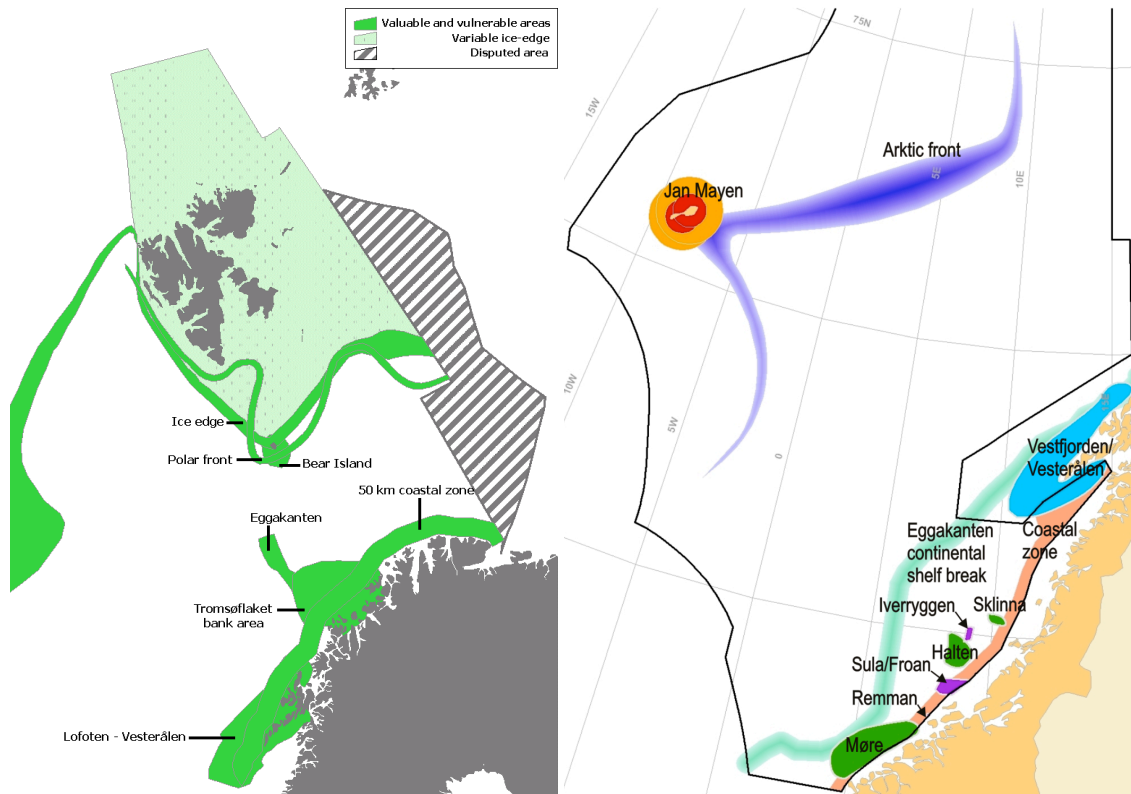


Figure 2. Particularly valuable and vulnerable areas in the Barents Sea (left, from von Quillfeldt et al. 2009) and Norwegian sea (right, Olsen and Auran, 2008)

Following the development stage the plans were implemented in the real world by setting up three new bodies to ensure the cooperation among government institutes and directorates. These address monitoring, risk assessments, and management (see below).

The most tangible management outcome from the plans have been the zoning frameworks (figure 5) for the petroleum industry in the Barents and later the Norwegian seas.

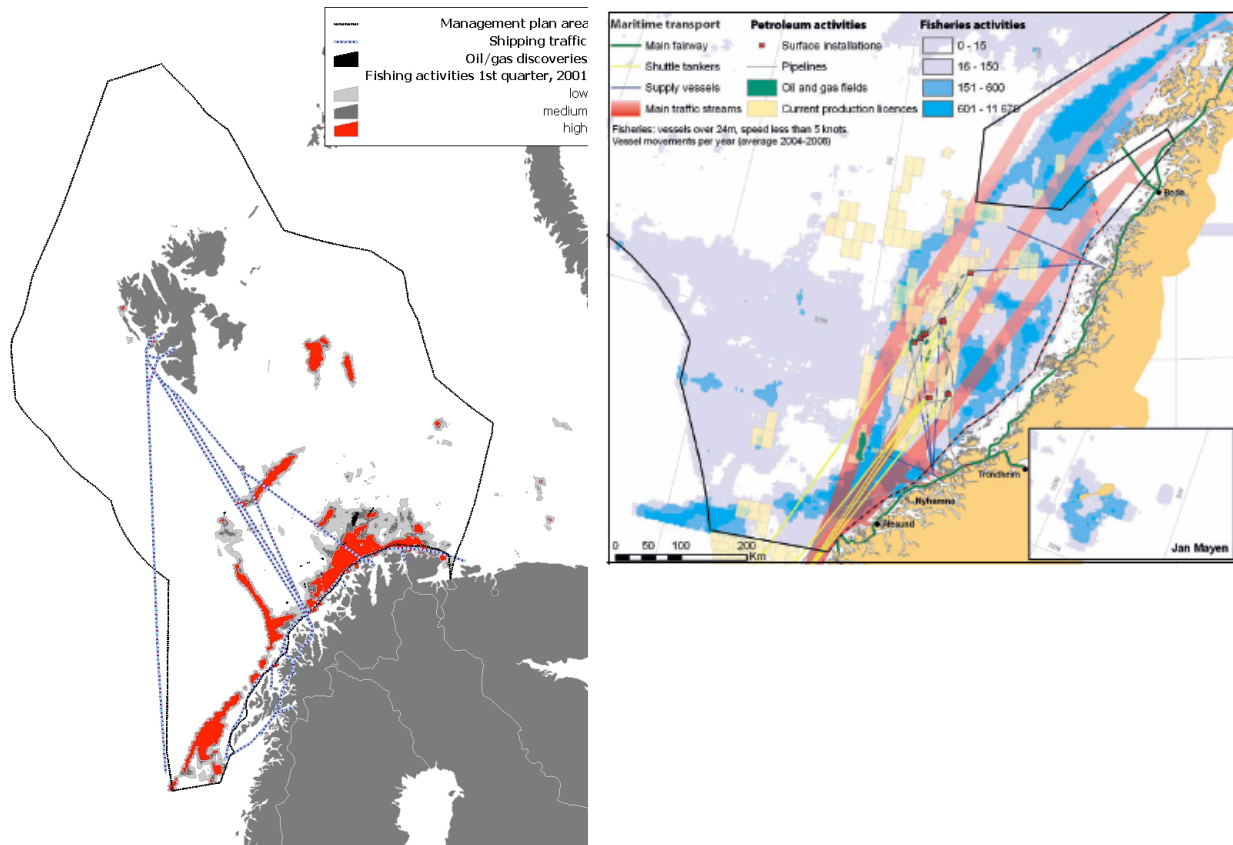


Figure 3. Human use of the Barents sea (left) and Norwegian sea (right)

Central themes in the implementation of the plans

The Norwegian plans are not built around new legislation, but focus on setting up structures that make existing, sector-based government structures work together. This form of governance requires a level of trust and respect among the participants to be effective. An important outcome of the plan work thus far, is that the cooperation over time in the three working groups has enhanced mutual understanding among agencies and institutions in different areas. The structures used to achieve this cooperation occur at different levels of government as well as in practical management.

New meeting places and fora have been set up to achieve the desired inter-governmental cooperation. The planning as well as the implementation of the plans is a top-down process led by a multi-ministerial steering group led by the Ministry of Environment. The Ministry of Fisheries and Coastal Affairs, The Ministry of Energy and Petroleum, and the Ministry of Foreign Affairs have been the three other ministries involved. The ministerial steering group has three government agency sub-groups to follow up the implementation of the plans at a practical level. One is the Advisory Group on Monitoring, another on the Forum on Environmental Risk Management, and the last is the Management Forum. All three groups report annually to the ministerial group and have continued and extensive collaboration and communication between them.

The annual following up and reporting on the plans require cooperation on a number of issues. The plans have objectives for the status of the marine environment and how human activities are to be conducted. The objectives cover four areas: pollution, safe seafood, accident and associated pollution, biodiversity. These four areas are then split into sub-goals and objectives that become increasingly more specific. At the lowest level the goals are related to species or species groups and their status. Achievement of the goals are evaluated annually and reported publicly to the government by the Management Forum, thereby acting as a check if government has been acting actively towards achieving the goals.

The plans were developed with a strict time schedule and no time could be allotted to conduct new studies or experiments. Therefore, an important part of the plans have been the reporting of gaps in current knowledge. An important task of the Management Forum has been following up on how these gaps have been filled during the reporting period, and if new gaps have been identified.

The Norwegian plans cover the whole ecosystem, but it is impractical (impossible) to evaluate the state of the entire ecosystem with the 1000s of species and populations. Therefore the Norwegian plans rely on an indicator-based system (see table 1) for assessing the state of the ecosystem on an annual basis. Assessing the state of the ecosystem is the main objective of Advisory Group on Monitoring.

The task of the Forum on Environmental Risk Management is to assess how the environmental risk associated with human activities in the ecosystem change over time. This has proven to be the most complicated task both technically and organizationally, as it is at the question of the potential environmental impact of future oil/gas developments that the largest differences in opinions between the cooperating agencies exist.

The zoning plans have been the part of the Norwegian management plans causing the most political attention nationally as it is one of the first examples of large-scale zoning of important marine activities. The zoning plans have imposed strict limits on where and how the oil industry can operate in the Norwegian Sea and the Barents Sea. Most of the plan area is opened to the industry, but in the Barents sea the environmentally most valuable areas have been set off –limits at least until the revision in 2010. In the Norwegian Sea the petroleum industry has been operating for a decade so the zoning was not as strict as in the Barents sea, but again the most in the most vulnerable areas no new activities were allowed.

For shipping an off-shore routing system has been introduced along the Norwegian coast in the Barents sea and further south, in effect functioning as a zoning plan for the international shipping activities. However, the smaller scale and coastal shipping activities have not been set under a similar zoning regime. The same applies for fisheries, the plans have not introduced new zoning measures, but a number of such measures are already implemented in the sector-based management regime for fisheries. Therefore, at present the zoning part of the Norwegian plans are mainly zoning of the petroleum industry in relation to environmental concerns and fishing activities.

An important aspect of the plan work is that the actual regulation of economic activities is carried out on the basis of existing legislation and institutions. Integrated oceans management is achieved through the plan work itself, the three working groups that work across agencies and sectors, and the ministerial co-ordinating committee.

Table 1. List of indicators within 10 categories used in the Barents Sea and Norwegian sea management plans.

1-Ocean Climate
Ice distribution in the Barents Sea
Temperature, salinity and nutrients in oceanographic sections
Transport of Atlantic water into the Barents sea
2-Ice-edge
Phytoplankton biomass along the ice-edge
3-Phytoplankton
Timing of spring bloom
Phytoplankton biomass described by Chl-a concentration
Species composition
4-Zooplankton
Zooplankton biomass
Species composition
5-Unexploited fish species
Biomass and distribution of juvenile herring
Biomass and distribution of blue whiting
6-Exploited fish species
Spawning stock biomass of cod
Spawning stock biomass of capelin
Spawning stock biomass of Greenland halibut
Spawning stock biomass of Atlantic redfish
Spawning stock biomass of deepwater redfish
7-Benthos
Species composition and biomass of fauna caught in research trawl
Distribution of corals and sponges
Occurrence of red king crab
8-Seabirds and marine mammals
Spatial distribution of seabird communities
Population development of common guillemot
Population development of puffin
Population development of Brünnich's guillemot
Population development of black-legged kittiwake
Spatial distribution of marine mammal communities
By catch of harbour porpoise
9-Alien species
Occurrence of alien species
10-Vulnerable and threatened species
Red-list species

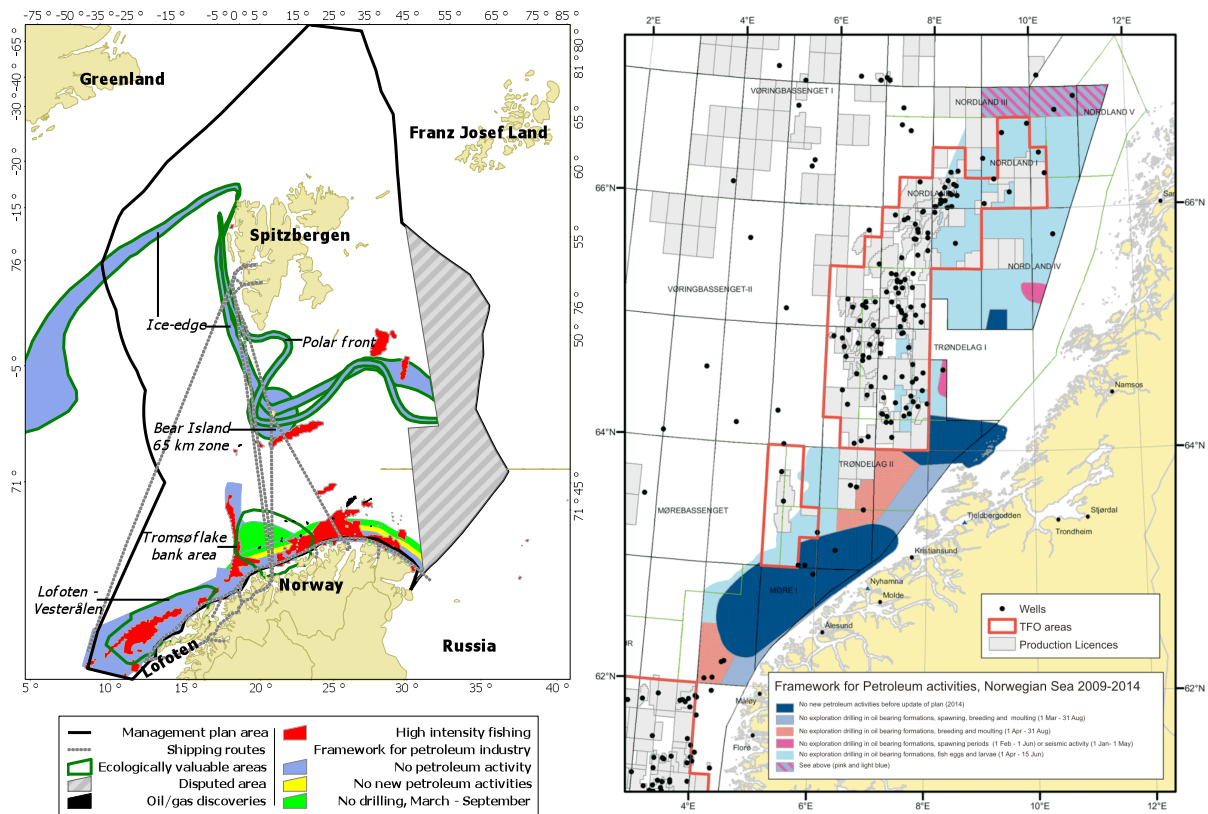


Figure 4. Zoning plans for the Barents Sea (petroleum and shipping, from Olsen et al. 2007), and Norwegian Sea (petroleum, from Norwegian Petroleum Directorate).

Future developments

The Barents Sea plan was implemented in 2006 and is due for revision in 2010/11. At the time of writing Norway is in the middle of this revision process. The first part of this process has consisted of presentation of the annual reports from the three government agency sub-groups. These have emphasized new knowledge that has been gathered since 2006. Especially the MAREANO seabed mapping program has collected much new and detailed information on both bathymetry, geology and biology of the sea-floor. The second part of the revision process is a period of public hearing and debate where society has been given three months to comment on the documentation presented. Following this public hearing period the government will start the development of the revised plan which will be presented for parliament as a white paper in 2011.

Originally the revision process was planned to be finished by the end of 2010. But the Gulf og Mexico oil spill after the Deepwater Horizon explosion made the government pause the process while knowledge from the GoM spill was gathered and can be assessed in relation to the situation in Norway. This assessment is still ongoing and will likely have a large impact on the revision process, especially the evaluation of environmental risk from the oil industry.

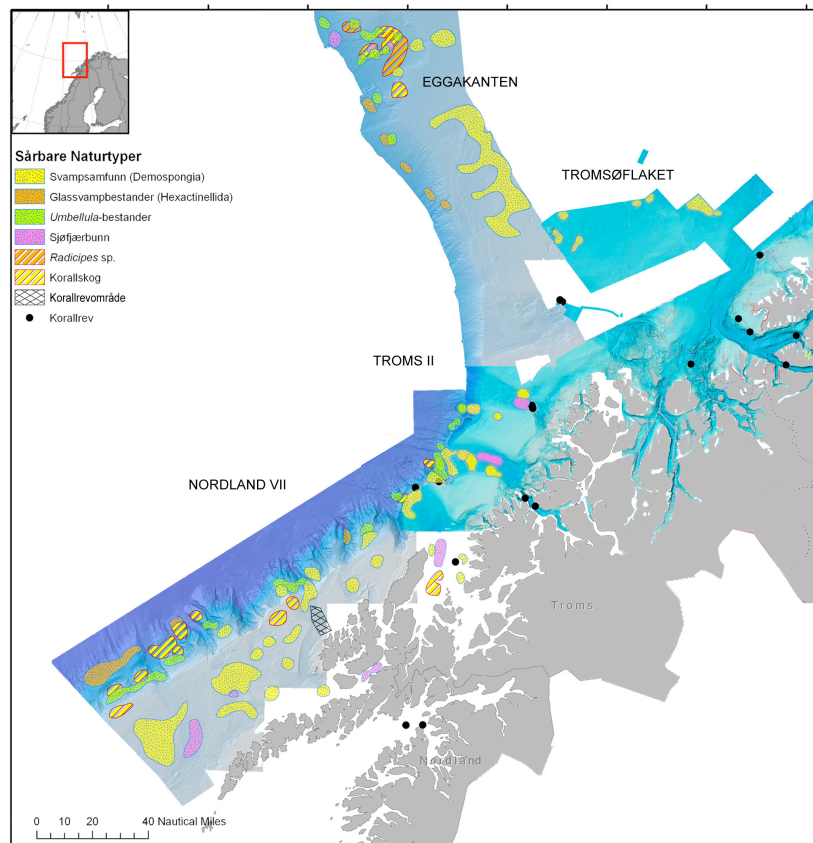


Figure 6. New knowledge gathered in the period 2006-2009. Map of vulnerable bottom habitats as identified through the MAREANO program.

Potential for improvements

The Norwegian approach to integrated oceans management is characterized by being pragmatic, incremental, and, rationalistic. It is pragmatic in the sense that the work is based on existing knowledge and institutions; incremental in moving step by step towards a synoptic approach; and rationalistic in applying a logic where the establishment of objectives and associated measures is believed to lead to desired ends.

There are a number of areas where the work on the management plan can be further developed and improved upon. This is to be expected, any large scale planning process will yield new insights (xxx), and it is important to provide mechanisms for capturing such insights and understandings. Lessons learnt can be valuable contributions to the further development of the plan work.

The plan work has been carried out in cooperation between scientific institutions on the one hand, and government agencies on the other. While strongly informed by science, the plan work has not been a scientific process, and therefore misses some of the qualities associated with that. In particular, process transparency and the importance attached to peer review in

a scientific process is missing here. The reasons for this have to do with the nature of the planning process, necessitating compromise between government agencies and observance of tight deadlines to meet the requirements of the political system. It can however be argued that at least some aspects of the work could benefit from a rigorous peer review inspired by scientific standards. This would contribute to ensure that the science underpinning the plan work is sound and stands the test of international scrutiny. A review of the work on the plan is in the works, but will address the organizational aspects rather than the quality of science as such. Also, the review is not a full scale open peer-review process which is common in other areas such as the US or Australia. The strong legal traditions of testing government decisions in the courts in these countries have led to strict peer-review processes being the standard way of implementing new government plans and regulations in the US.

The explicit criteria by which the judgements undertaken in the planning process refer to the status of various components of the ecosystems. As pointed out above, there are 10 categories of indicators, all of which refers to physical or biological properties of the ecosystem. There are no explicit attempts to address the economic significance of ecosystem services, and such considerations therefore become implicit in the decision-making process. Bringing in economic considerations by assessing the value of ecosystem services is one area where the plan can be improved upon (Armstrong et al 2008). Another area of concern in this regard is the absence of economic considerations relating to the various economic sectors involved. This issue has been raised in particular by local politicians in the North, claiming that the plan is a plan for the marine environment only, and not for the greater marine realm as such.

Ministerial cooperation: Integrated oceans management by necessity requires that government entities with authority over aspects of oceans governance cooperate, because actions in one area will affect another (Underdal 198x). In Norway, cooperation in the plan work has taken place at at least three levels: at the political level between ministers, at the administrative level between ministries and their officials, and at the agency working group level which involves a number of government agencies as research institutions. The core issue of how to reconcile petroleum development with environmental concerns and fisheries is addressed at all levels, but ultimately has to be resolved by ministers, as this requires genuine *political* decisions: a gain to one set of interests can easily be a loss to another. Most of the actual work has taken place at the working group level, where close cooperation over time has served to enhance understanding and cooperation across institutional boundaries. This is an important and unintended spin-off of the plan work, which serves to make public administration work more effectively in oceans governance.

An important aspect of the plan work in Norway is that the plan work is *planning* work, rather than regulation: The actual regulation of economic sectors and the marine environment is executed through sector-based legislation and institutions. This may seem counter-intuitive from the perspective of integrated oceans management. But on closer inspection the approach has considerable merits: Integrated oceans management is achieved by the overall coordination and reconciliation in the planning process and in the implementation of the plan. The actual implementation of a sector policy requires legislation and institutional capacity to apply that, which is provided by the existing legislation and

institutions. It would, for example, be extremely difficult to regulate the petroleum industry without the detailed regulatory framework based on the existing continental shelf legislation and the associated institutions. The same goes for fisheries: the effective regulation of fisheries requires a detailed regulatory framework addressing access to fisheries, the harvesting of fish, as well as various technical aspects of the activity.

Up to now, in concluding a planning cycle, the emphasis has been upon arriving at agreed, consensus texts. The advantage of that has been that the uniform opinion of science and technical agencies carries considerable authority, and is difficult for decision-makers to set aside. On the other hand, such an approach can also lead to the suppression of areas of disagreement which the ensuing policy process could benefit from being more aware of. While the existing consensus approach perhaps was appropriate the early phase of the plan work, one could envision that in a more mature phase the spelling out of areas of disagreement could actually be encouraged. This would be more in line with a scientific ethos, and provide decision-makers with a more explicit foundation for their decisions.

In conclusion, the applicability of the Norwegian case to other countries can be questioned. Norway is a small, homogenous and rich country. Its central administration is competent, highly concentrated and by international standards well coordinated. Its research institutions are well funded and have substantial capacity to carry out the research needed for Integrated oceans management.

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