

Integrated Management Plan for the Barents Sea: Assessment of overall pressures and impacts today and in 2020

Gunnar Sander, August 2011

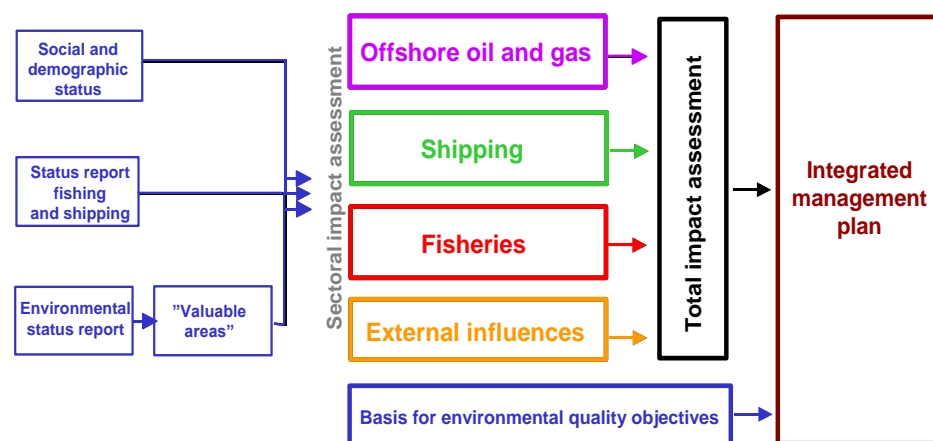
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| <p>1. Project / publication</p> | <p>Project: Integrated Management Plan for the Barents Sea: Assessment of overall pressures and impacts today (2005) and in 2020</p> <p>The results were presented in a technical report from Faggruppa (2005) called “<i>Konsekvenser av samlet påvirkning på Lofoten-Barentshavet med dagens aktiviteter og i 2020</i>” (“Impacts of total pressures on the Lofoten-Barents Sea with today’s activities and in 2020”). The report has not been translated. Direct link: http://www.npolar.no/npcms/export/sites/np/no/arktis/barentshavet/forvaltningsplan/filer/Sa_mlpaaavirkning.pdf</p> <p>The results of this and other technical reports were used as a part of the document containing the management plan, a “white paper” from the government called Report No. 8 to the Storting (2005–2006): <i>Integrated Management of the Marine Environment of the Barents Sea and the Sea Areas off the Lofoten Islands</i>. Link to English translation: http://www.regjeringen.no/nb/dep/md/dok/regpubl/stmeld/20052006/Report-No-8-to-the-Storting-20052006.html?id=456957 For the mentioning of the project reported here, see particularly pages 75 – 80.</p> <p>The most general questions in the beginning and end of this review are addressed for the wider Barents Sea process, whereas the most detailed ones focus on the individual report with scenarios.</p> |
| <p>2. Initiator</p> | <p>The overall mandate for the process that started in 2002 came from the government.</p> <p>The work was led by a steering committee with representatives from four ministries under the leadership of the Ministry of the Environment. This steering committee gave mandates to each report they commissioned in 2002-2005, including the one in focus for this review. Different mechanisms and working groups were established to coordinate and undertake the actual work.</p> |
| <p>3. Objective</p> | <p>Background and context: The Barents Sea management plan</p> <p>The expansion of the oil industry in the northern seas of Norway has been an on-going political controversy since the 1970s. A part of the southern Barents Sea (Tromsøflaket) was opened for exploratory drilling in 1980. Following a strategic environmental assessment (SEA), most of the remaining area was opened in 1989, with restrictions in time and space on drilling. From the late 1990s, there were strong initiatives from the oil industry to get access to new areas as production in the southern parts of the Norwegian shelf declined. With the formation of the Bondevik II government in 2001, a political compromise was reached in the formative declaration of the political coalition: It endorsed the first field development in the Barents Sea (“Snowwhite” with LNG terminal), but also put a moratorium on further explorative drilling in the Barents Sea until a thorough assessment and plan for the management of the Barents Sea had been elaborated.</p> <p>In parallel, initiatives had been taken to implement the international recommendations on the application of the ecosystem approach. The Bondevik II government proposed this as a bearing principle for Norwegian marine policy in its white paper from 2002, “<i>Clean and rich seas</i>”. Integrated management plans for all Norwegian seas should be the major tool.</p> <p>The Barents Sea was selected as the first area. Between 2002 and 2005, a process with assessments and technical studies resulted in 32 reports – among these, the one reported here. The subsequent Stoltenberg government draw the political conclusions in its white paper “<i>Integrated management of the marine environment of the Barents Sea and the areas off the Lofoten Islands</i>” from March 2006.</p> |

Since then, systematic monitoring and follow-up of the plan has been institutionalized with annual reporting. New studies on selected issues were undertaken as an input to an up-date of the plan in a new white paper from March 2011. However, none of these made the same exploration of future developments as in the 2002-05 process.

A web site with most reports from the whole process described above:
<http://www.npolar.no/no/arktis/barentshavet/forvaltningsplan/forvaltningsplan-barentshavet.html> (Norwegian text)

Context and mandate for the project

The figure below gives an overview of the studies undertaken in 2002-05:



After some initial status reports, four sectoral strategic impact assessments were made of petroleum activities, shipping, fisheries and external pressures originating outside the Barents Sea (climate change, long range transport of pollutants, introduced species, petroleum activities in neighboring sea areas etc.). Each of these had developed scenarios or descriptions of future activities in 2020 as a part of their discussion of the activity and its impacts.

The mandate for the integrated study was to collate the previous sectoral studies into one joint assessment of the overall pressures and impacts from all activities under current conditions. Similarly, it was called for relevant and representative scenarios that should build upon the previous scenarios in order to assess overall pressures and impacts in 2020.

Assessing all pressures on the marine environment is needed in integrated management in order to understand the total human burden on the environment, and in attributing responsibilities to different activities as a basis for assigning measures across sectors.

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| <p>4. Geographical delimitation</p> | <p>The Norwegian parts of the Barents Sea, including areas south to Lofoten and the fisheries protection zone around Svalbard, as defined in the mandate for the work. In addition, external pressures from outside this area should be taken into account when the Barents Sea was affected.</p> |
| <p>5. Time horizon</p> | <p>In assessing the current situation in 2005, most data were from 2002-2003, or older. The time horizon for the scenarios was 2020.</p> |
| <p>6. Thematic focus</p> | <p>The assessment should cover all human pressures on the marine environment, most notably petroleum, shipping, fisheries and long-range transport of pollutants. Impacts on different parts of the ecosystem were assessed. Impacts on society were restricted to economy, employment and demographic effects.</p> |
| <p>7. Images for the future</p> | <p>Three scenarios for future activities were made. They represented normal situations, while larger accidents were presented separately as “wildcards”. Climate change was not included since a previous study made for the report on “external pressures” had indicated that</p> |

pronounced climatic changes to the region most likely would occur after mid-century. It was therefore anticipated that up till 2020, it would not be possible to differentiate natural climate variability from actual climate change.

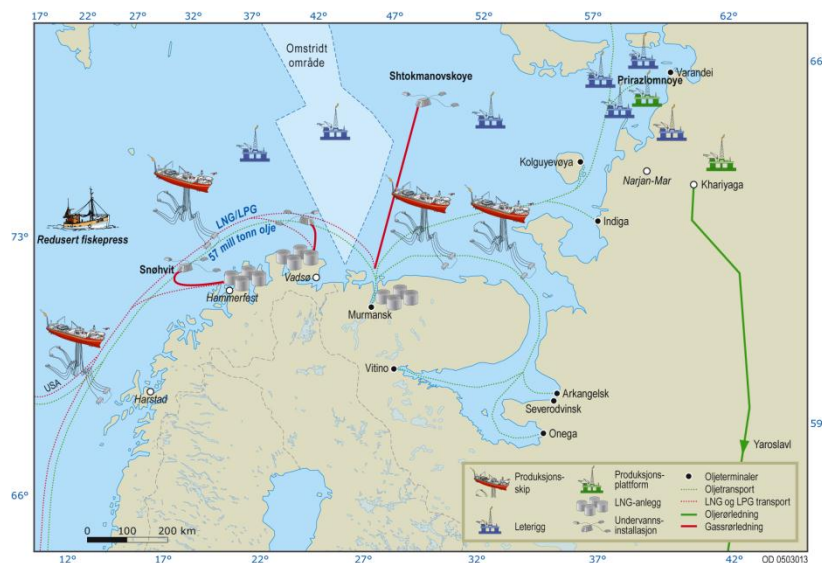
The scenarios were made according to a structured approach where identification and analysis of driving forces is the basis for making a framework for the scenarios (ref question 11). The two most structuring uncertainties defining the framework were the pressures for petroleum development crossed with the collaborative climate in international relations, in particular Norwegian-Russian relations. Four scenarios were thus developed at the conceptual stage and to a certain degree refined with storylines. Before they were finished, it was agreed to merge two of them.

The final three scenarios were not named, but called “A, B and C”. An overview of their content:

| Scenario A | Scenario B | Scenario C |
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| High petroleum activity | Low petroleum activity | High petroleum activity in Norwegian part of the Barents Sea |
| Sustainable management of the fisheries | Sustainable management of the fisheries | Not sustainable management of fisheries |
| Partly effective international treaties on pollution. | Effective international treaties on pollution. | Less effective international treaties on pollution |
| High shipping activity in well established sea lanes | Moderate shipping activity and a PSSA established | Highest shipping activity with no routing measures. |

Reading the storylines, “A” is an optimistic scenario for activity level combined with well-functioning technology and management regimes. “B” is an environmentally oriented alternative due to low level of activities and well-functioning regulations. “C” is the alternative where environmental problems arise due to high activities and problems with management of fisheries and other activities.

In the report from the project, each of the scenarios was presented with a summary of their main characteristics and a map indicating the level of activities (example inserted below). Then followed a structured description of future activities (2-3 pages) and an assessment of anticipated impacts on different parts of the ecosystem and on society, including an overview table of scores compared with today’s situation.



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| <p>8. Key driving forces</p> | <p>At the workshop, a long range of driving forces was discussed. These can be found in an internal report from the consultant. Driving forces underpinning each of the scenarios were listed systematically in an appendix in the final report from the project. Among them were:</p> <ul style="list-style-type: none"> • Petroleum: Middle East developments, geology, Kyoto protocol, role of petroleum vs. other CO₂-friendly energy sources, increased energy efficiency in Russia • Shipping of oil: Where will Russia develop its resources? (off-shore vs. on-shore, regions). Export to which markets? How to transport the export products? Pipeline to Murmansk? • Fisheries: Norwegian – Russian collaboration, efficiency of control systems, catch capacity, • Pollutants: International treaties: Implementation and further development, support on regulations and technology <p>There was no further presentation or discussion of the driving forces in the report apart from this listing.</p> |
| <p>9. Uncertainties/wildcards</p> | <p>“Wildcards” – in particular catastrophic accidents – were considered separate from the analysis of driving forces. Several “wildcards” and accident scenarios already had been introduced and analyzed in the sectoral assessments. The project built on and further elaborated some of these, finally presenting:</p> <ul style="list-style-type: none"> • A blow out of oil at “Nordland VI” south-east of Lofoten • A shipwreck with an oil tanker containing 300 000 tons of crude oil at Store Kamøy close to Hammerfest • An invasion of a new species of jelly fish changing the structure of the ecosystem • A nuclear accident in one of the reactors of the Kola Power plant in Russia <p>Regarding major petroleum-related accidents, it was also pointed out that leakages from oil pipes and an accident/shipwreck of a production and storage unit could lead to large scale oil spills.</p> <p>The impacts of these events on the ecosystem were assessed. No attempts were made to assess socio-economic impacts due to even wider knowledge gaps.</p> |
| <p>10. Accomplishment and collaboration</p> | <p>The work was expert-based and was done without any public consultation. Written comments to previous SEA’s though were available and could be used as a source of information on public views.</p> <p>The work was done by a project group consisting of members from different government directorates. Two consultants on scenario methodology were engaged. A few other consultants also were hired. The project group reported to a coordination group (“Faggrupper”), which was responsible for the final product and reported to the ministerial Steering group.</p> |
| <p>11. Method</p> | <p>The approach both in the sectoral assessments and the overall assessment can be categorized as Strategic Environmental Assessments (SEAs). It should be noted that in a Norwegian context, the impacts that are taken into account should include impacts on nature, resources and society. The Norwegian tradition of Environmental Impact Assessment (EIA) and SEA therefore is relatively integrative compared to other systems with a narrow understanding of “environment”.</p> <p>In developing the future activity scenarios, a common scenario methodology was used. The project group, guided by the consultants, brainstormed about the driving forces. Drivers were then categorized according to their decisive impact on future developments and their predictability. Causal diagrams illustrating perceived cause-effect chains were also used as a tool in the discussions. Based on this, alternative scenario frameworks were made by crossing different driving forces that were both influential and unpredictable. Through</p> |

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| | <p>discussions at the workshop, the nature of the selected axes were refined and key words for four scenarios were produced. Later refinement of the scenarios was done by the project group with less involvement from the consultants. The scenarios were controversial, and several compromises were made. In the end, the final version was approved by consensus in the coordination group (“Faggrupper”).</p> <p>In assessing the impacts of the strategic futures, the approach used was similar to what can be found in many SEAs and EIAs. “Valuable ecosystem components”, including some socioeconomic aspects, had been identified in a separate scoping exercise. In order to make assessments of very different types of impacts comparable, criteria for scoring along an interval scale with three levels (high, medium, low) were identified. Knowledge gaps making assessment impossible were addressed by indicating “?” in summary tables. This is a more elaborated and thorough approach than what is usual in scenario studies, where future developments and their related impacts may be treated more freely and intuitively.</p> <p>Combining the sectoral SEAs was challenging since they varied a lot:</p> <ul style="list-style-type: none"> • No common understanding or approach to use of scenarios • Assessment of impacts varied: Not compliance with results from joint scoping, both qualitative and quantitative methods occur, different methods to characterize impacts etc. • Very detailed EIA approaches particularly in petroleum SEA (relevance and efficiency?) versus more general discussions particularly in fisheries SEA • Often fragmented picture of impacts from sub-activities • Treatment of uncertainty: ”We know sufficiently about what will happen” (petroleum) versus emphasizing uncertainty and just describing selected 1-2 order impacts (fisheries) |
| 12. Sources of information | <p>The overall assessment used the sectoral SEAs and their sub reports as its data source; no new data were collected. The need for better coordination of data sources was addressed in a separate chapter of the report.</p> |
| 13. Strengths | <p>The systematic exploration of <i>alternative</i> futures for the Barents Sea was a strength of this study. Many of the views on the future that have been presented in public debate over the years have been very optimistic, particularly on the petroleum industry, but also for Arctic shipping including traffic from Russia. In reality, developments in these sectors have been much slower than anticipated in the more optimistic studies. The scenarios opened up for possibilities, not only wish-thinking about the most prosperous futures.</p> <p>The cross-sectoral nature of the scenarios also was important. Representatives for the different sectors thought about future developments according to common assumptions, and efforts were made to make a coherent view where developments in one sector were adjusted to others. Considering the scenarios, they can be seen as relatively consistent, given the underlying scenario logic.</p> <p>The approaches to analyzing the future in the initial sectoral SEAs were very different. The project developed its own systematic approach from what had evolved rather uncoordinated from the beginning. The combination of scenario and SEA methodology was interesting. Particularly the ways of assessing impacts has stood the test of time and been refined in the subsequent management plans (see question 15).</p> <p>As for the whole process with the Barents Sea management plan, learning across sectoral and scientific borders can be seen as an important outcome. This is illustrated by the adjustments and further developments in the management plans for the Norwegian Sea and North Sea.</p> |
| 14. Weaknesses | <p><i>Assumptions on climate change:</i> Actual developments and later scientific studies have demonstrated that climate change has been faster than anticipated. In hindsight, it was a mistake to exclude climate change from the scenarios. On the other hand, the decision was based on current knowledge when the report was made. It should also be noted that climate change effects on longer time perspec-</p> |

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| | <p>tive than 2020 was reported in the white paper, based on their anticipated slower development.</p> <p><i>Content of the scenarios:</i> Reading the storylines and assessments, several critical objections can be raised. It is not easy to distinguish the scenarios from each other. Most apparent is the lack of clear names signaling their content. The storylines are also rather uniform with many technical details distinguishing the scenarios.</p> <p>The analysis of impacts concluded with small changes from today’s situation in all of them (largest in C). A rather short time horizon (approximate 15 years) may be one reason. Another reason may be that in anticipating impacts, the approach was conservative in the sense that only known impacts were taken into account. Looking at scientific developments since 2005, new knowledge has for example emerged on biological effects of petroleum hydrocarbons and on ocean acidification due to CO₂-emissions.</p> <p>Whereas the avoidance of wish-thinking is a reason for applying scenarios, it can also be argued that the scenarios presented here represent wish-thinking for the different sectors that were involved. Those most positive particularly to petroleum developments, could “choose” scenario A, whereas environmental interests easily would be attracted by scenario B.</p> <p>In sum, such objections may result in the scenarios not challenging traditional ideas. They seem well founded in analyses, but weaker in intuition and fantasy.</p> <p><i>Use of scenarios and future studies:</i> A common rationale for applying scenarios is to apply them as “wind tunnels” for testing the robustness of different strategies: under which alternative futures will they fly? Are we prepared to tackle alternative developments? The report from the project does analyze different impacts between the scenarios, like an SEA, but it has no discussion of their strategic implications.</p> <p>One explanation for this can be the organization of the process; it was the task of the ministries to develop the responses in the final plan. But even with such a division of responsibilities, discussing implications rather than strategic responses and measures could have been a part of the mandate on scenarios. The missing presentation of the scenarios in the white paper may indicate that neither the government machinery used the scenarios in this fashion. Further interviews with central government officials engaged in the process are needed to eventually confirm this anticipation.</p> <p>More generally, future developments seem to play a minor role in the management plans (ref question 15). At least for the first version of the Barents Sea plan, it can be explained by the need for understanding the dynamics of current developments and establishing an organization and approach to ecosystem-based management. For the subsequent plans, this observation raises a lot of questions.</p> <p><i>Other issues:</i> Whereas the assessment of environmental impacts along an interval scale functioned rather well, the assessment of socio-economic factors resulted in almost no differences between the scenarios – partly because of the methodology applied.</p> <p>Inefficient and lacking public participation was a general criticism of the first phase of the Barents Sea management plan. Also the scenario process could have been more inclusive and transparent.</p> |
| <p>15. Attention and significance</p> | <p>The assessment of overall environmental impacts was reported in the white paper to Stortinget. This also included paragraphs about anticipated changes in impacts up till 2020. However, the activity scenarios as such were not presented. Neither is there a chapter in the white paper where future perspectives on the development of activities in the Barents Sea are broadly presented and discussed. Future prospects on some issues can be found</p> |

piecemeal in the text. In general, today's situation received much more attention than future developments in the white paper.

The fact that the mandate for the process described in question 3 came from the government, the direct commissioning of studies from the ministries and the subsequent use of the results in a white paper from the government, ensured that the reports in general had a high influence; they were relevant answers to issues under political deliberation and obviously stimulated a range of political initiatives and measures. In evaluating the origin of these, it can be hard to distinguish the influence of the report discussed here from other studies since it had an integrative function. Routing of shipping for example was an issue in the scenarios, as it was in other reports where it also was discussed more in detail. The result in any case was an application to IMO for a more distant sea lane along the coast of Northern Norway.

Since the fate of the petroleum activities in the Barents-Lofoten area was one of the most contested issues in Norwegian politics in that period, this topic received much attention in the press. However, the public debate often seemed to be independent of the results from the technical and scientific studies. Other aspects of the studies received comparatively much less attention.

The scenarios have not been used in other contexts, apart from lectures.

Treatment of the future in later Norwegian management plans:

Some brief findings of how future activities and their impacts have been treated in the later Norwegian management plans are provided here. More thorough work should be done to draw clear conclusions:

The management plan for the Norwegian Sea:

I have not read systematically through the sectoral assessments from the Norwegian Sea to see their treatment of the future, but have registered that a separate report on the future of the petroleum activities in the Norwegian Sea has been made, and that prognoses made for the National Transport Plan was used for shipping.

In the study of overall impacts, the methodology applied in the Barents Sea was used and developed further. Better coordination of methodology across sectoral assessments was also achieved. When it comes to describing the future, less effort was spent on exploring different possible outcomes than in the Barents Sea study; only one scenario for 2025 was presented (page 113-115), even though the mandate was open regarding the number of scenarios. See

http://www.regjeringen.no/upload/MD/Vedlegg/Forurensing/Forvaltningsplan%20Norskehavet/Konsekvenser_samlet_pavirkning_Norskehavet_081031.pdf

In the white paper with the plan for the Norwegian Sea (St.meld. 8, 2005-06), the assessment of overall impacts seem to have a prominent place. Future perspectives also here seem to receive little attention.

The update of the Barents Sea plan

The management plan for the Barents Sea was updated in a new white paper to the Parliament in 2010 (Meld. St.10, 2010-11). Perspectives on future developments seem to be limited. No new studies exploring future developments seem to have been undertaken. Some future perspectives can be found in reports on the socio-economics of petroleum and fisheries. Small sections with outlooks for 2025 (called "prognoses") are included in a chapter on overall pressures and state of the ecosystems (ch. 6.4 in report from the Management forum (Faglig forum)).

The management plan for the North Sea

This is under elaboration. A joint document describing developments for 2030 for all the relevant activities has been made. Mostly, two scenarios are presented for each sector. See http://www.klif.no/nyheter/dokumenter/nordsjoen_forvaltningsplan_framtidsbilder.pdf . Also the methodology for assessing impacts is brought further, see

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| | http://www.klif.no/publikasjoner/2782/ta2782.pdf |
| 16. Relevance for the Fram Centre | <p>The analysis of drivers for future development in the Barents Sea can be useful for the Fram Centre. Also the methods for assessing impacts at a strategic level should be considered, with the further developments from the subsequent management plans. The scenarios as such have a certain historical interest, first of all since they are among the relatively few cross-sectorial scenarios for the Barents Sea. Like many scenario studies, they can be revisited and updated according to new insights and perspectives.</p> <p>The approach for studying future developments in the management plan in the North Sea seems promising and should be followed.</p> <p>There is interesting learning about the processes around scenario studies in this case.</p> |
| 17 Additional comments | The author of this review was project leader for the report described. Drafts of the review have been circulated to three individuals that participated in the process, and input from them have been incorporated (CQ, BB, BFJ). |