

National framework for fishery and conservation management in Norway

Conservation and sustainable use are integrated principles in both the Marine Resources Act and the Nature Diversity Act

On January 1st 2009 the Marine Resources Act¹ entered into force. The previous act relating to fisheries focused mainly on the exploitation of marine resources whereas the new act applies to all living marine resources. The Nature Diversity Act² entered into force half a year later, on July 1st 2009. The previous act relating to nature management focused solely on conservation, whereas the Nature Diversity Act states that its purpose is to conserve biodiversity through conservation and sustainable use. The Marine Resources Act states that its purpose is to ensure sustainable and economically profitable management of the resources and several provisions describes conservation of biodiversity as an integral part of sustainable management. Both acts reflect recent developments in international law with regard to conservation and fisheries. By integrating conservation and sustainable use as basic principles, the two new laws represents a regime shift in the Norwegian regulatory system.

All human activity has an impact on nature and the biodiversity, and both laws acknowledge this. Some impacts may be caused by human activities from several sectors. Impacts from fisheries, oil and gas, extraction of minerals and agriculture may all affect the same ecosystem or components of it. In particular this may be the case in the coastal zone and its adjacent waters. The Marine Resources Act addresses the fisheries sector. The strictest measure available is to close an area for all fishing on a permanent basis by establishing “no take” zones. If all or some of the impacts of human activities stem from other sectors than fishing and the effects threatens biodiversity, measures in the Nature Diversity Act may be applied, limited though to the area inside 12 nautical miles from the base lines. In addition to be applicable to the sector of nature management, which traditionally is dealing with terrestrial issues, this act applies to all sectors if the threats identified are coming from more than one sector. The principle for management of the marine environment is that if measures available for each sector are insufficient to deal with the threat, then stricter measures in the Nature Diversity Act may be applied. Construction work, release of pollutants and fishing in a specified area may thus be regulated simultaneously under the Nature Diversity Act to protect local populations or habitats.

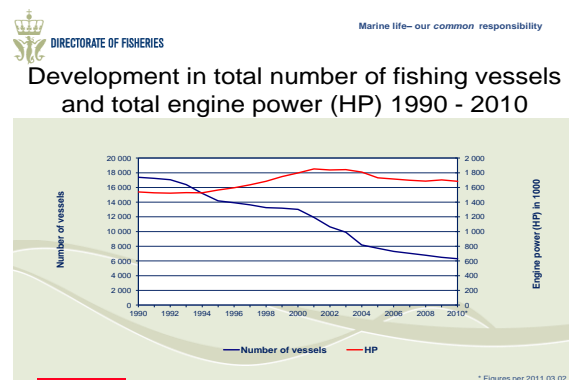
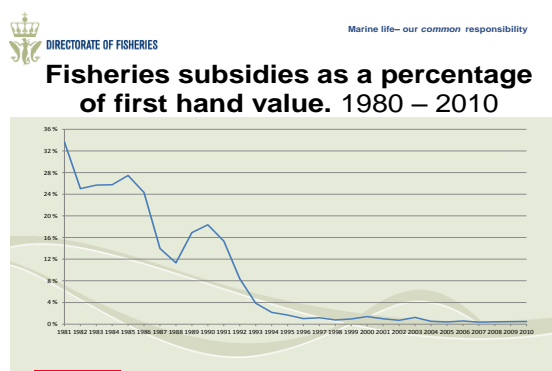
The legal basis for good governance of the marine resources are thus in place. This does not preclude that disagreements may occur between the environmental and the fisheries sector on what acceptable footprints are. If not solved on a lower level, such disagreements will have to be dealt with by the higher levels of the management bodies, and final decisions may eventually be taken by the government.

Management of the economically important marine resources

Over the last 20-30 years there has been a dramatic change in the Norwegian management of the economically most important marine resources.

The management of these resources, counting for approximately 85 % of total Norwegian first hand value, is characterized by international advice from ICES (the International Council for the Exploration of the Sea), based on extensive effort in population monitoring and analytical stock assessments, in addition to comprehensive management and control efforts.

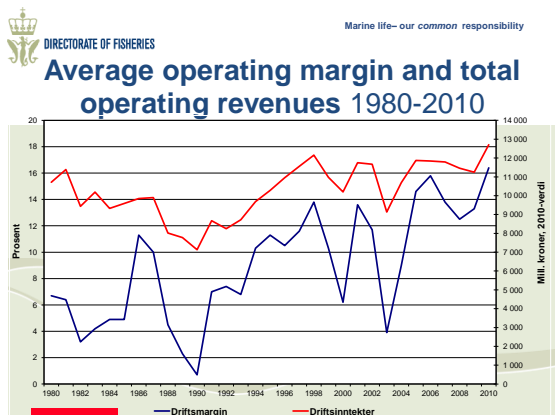
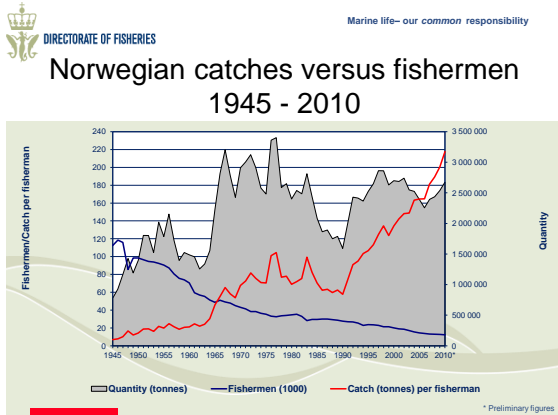
Through the closure of the commons, the termination of subsidies and the introduction of pervasive structural measures, Norway has succeeded in reducing the fishing fleet and halting the growth in fishing capacity.



Source: The Directorate of Fisheries

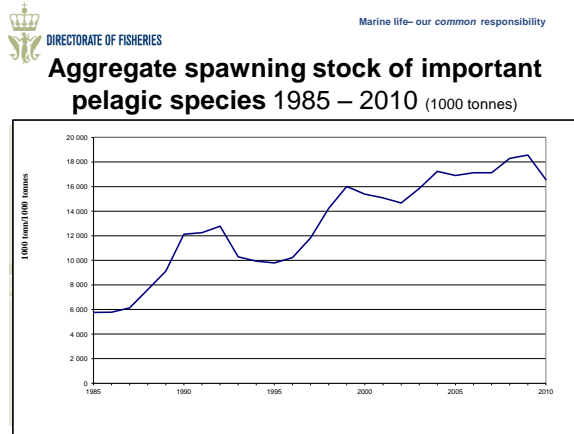
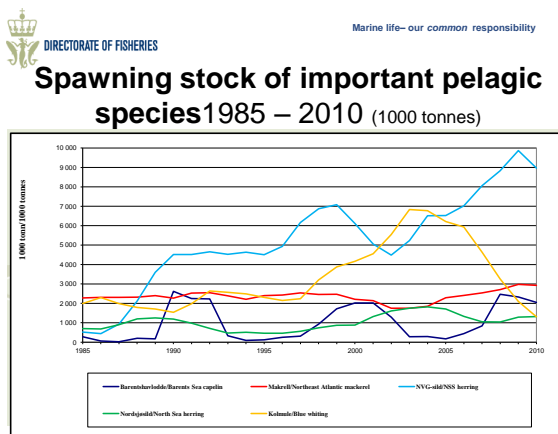
Management strategies and harvest control rules based on the Precautionary Approach, along with improved technical measures and a strict control regime, have contributed to the buildup of depleted stocks and laid the foundation for improved profitability in fishery. The management strategies are so far to a large extent based on single species analyses.

The reduction in number of fishermen and vessels has facilitated increased productivity and profitability for those remaining in the industry. The industry's economic sustainability is thus considerably strengthened. Fewer vessels and fishermen have on the other hand reduced the industry's role in the maintenance of rural settlement and employment. Departure from fishing has however occurred in a period of generally low unemployment and good alternative employment opportunities in Norway.

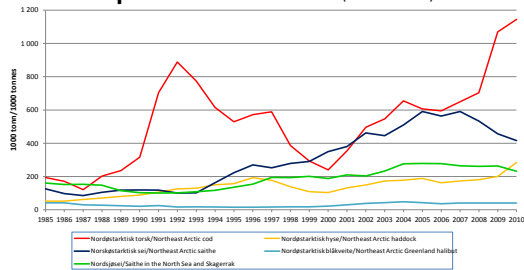


Source: The Directorate of Fisheries

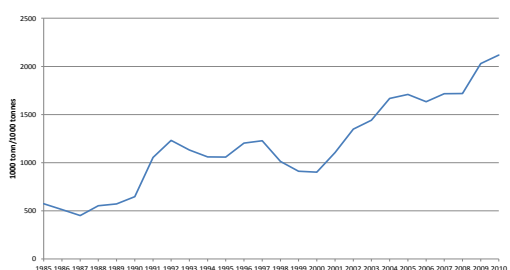
Ecological sustainability is radically improved. Aggregate spawning stock of the ten economically most important stocks for Norwegian fisheries is more than tripled since the late 1980thies.³ Most of these stocks are transboundary, Norway sharing its management responsibilities with neighboring coastal states.



Spawning stock of important groundfish species 1985 - 2010 (1000 tonnes)



Aggregate spawning stock of important groundfish species 1985 - 2010 (1000 tonnes)



Source: ICES, The Institute of Marine Research

The further development to optimize the management of the economically important stocks in an ecosystem based context will go along three parallel tracks:

- Increase the economic output through improvements in exploitation patterns and reduction in all forms of incidental and unwanted mortality from fishing
- Further optimize the long-term economic yield through possible revisions of management strategies and harvest control rules
- As new scientific knowledge becomes available, additional ecosystem considerations are gradually incorporated in management; including multispecies interactions, effects of fishing on benthic habitats, effects of by-catch of fish, seabirds and marine mammals, etc.

These three bullet points summarize the practical approach to an ecosystem based management of the economically most important resources for the Norwegian fishing industry.

What about the economically less important resources?

In the last decades the Norwegian goal and focus has been on the rebuilding of the economically important fish resources. Resources of minor economic significance have not been subject to the same research and management efforts. Some of these resources are in a depleted state. As part of the development of an ecosystem based fisheries management, more attention is now given to resources of less economic significance. This is a trend increasingly experienced through the last decade. But the movement is not towards a management regime for these species identical to that of the resources of greater national economic importance.

This is due to a couple of reasons. The important thing is that it will not pay. The research, monitoring, management and control costs by optimizing yield will very quickly exceed the surplus value which may be obtained from an optimally managed stock.

Furthermore, in contrast to the large oceanic fish stocks, which in essence are exploited by a limited number of registered, professional fishers, these are in many cases coastal resources where a large and unknown number of recreational fishers may contribute significantly to the exploitation. Hence, the management and control tasks are much more challenging and costly.

Different management objectives

Realistically, stocks and species counting for close to 90 % of total Norwegian first hand value may be managed with the objective to optimize long term economic yield. How this objective in future will evolve into revised harvest control rules in each individual case (MEY, MSY, multispecies MEY etc.) remains to be seen.

Stocks with limited information, but still of some economic importance, will be managed with the objective to secure a high, and if possible, stable long term yield. Catches may

however, from time to time be higher, or lower, than what with more knowledge would have been regarded as optimal. Such stocks may account for another 5 % of the total first hand value.

For the many species that constitute the last 5 %, such ambitious objectives are not set. The same applies for non-commercial species, including incidental bycatches of seabirds and marine mammals, for which the term yield is without a meaningful content. However, a general and absolute minimum objective for all species – by the term species it is with the new Marine Resources Act in principle opened up for the inclusion of all kinds of marine life – shall be the protection of biological diversity. More specifically: the objective is to ensure that fishing does not threaten either species or the functioning of ecosystems. Beyond this environment-related minimum obligation, it becomes a political, economic and practical administrative balance in each case how far one is willing to extend in the direction of optimizing long-term yield. The longer one wishes to go, the more it would cost, not only in terms of research and management efforts, but also in terms of demanding regulatory interventions upon commercial and recreational fishing.

On this background, decision on management objectives for the various species and stocks has turned out to be an important and integral part of the development of an ecosystem based fisheries management. When this process started in Norway in 2009, it was revealed unclear management objectives for many species and stocks. This is now rectified, although revision of objectives in some cases may be anticipated.

The need to obtain an overview and to prioritize – the Stock Table and the Fisheries Table

In the further practical development of an ecosystem based fisheries management, it is anticipated that an increasing number of issues, species, contexts and concerns will be relevant to take into consideration. This generates a need to obtain a relatively simple, yet systematic and updated overview of what might be the relevant issues. With limited resources for research and management, it is also a strong need for a tool that can help prioritizing between the various issues regarding the need for developing new or improved management measures.

As a tool to obtain such an overview, and to be able to prioritize, the Directorate of Fisheries has developed two excel spreadsheets – the Stock Table and the Fisheries Table – providing an overview of issues related to all stocks and fisheries relevant for Norwegian management. The tables are structured so that they when needed can be extended with new stocks or fisheries by increasing the number of lines, and with new or emerging issues by adding new columns to the tables. So far 80 species/stocks and 57 fisheries have been included.

The Stock Table includes information on the status of the stock, exploitation level, management objective, priority for action etc. Stakeholders were introduced to this table in

spring 2009 and priorities for next year's development of improved management measures have since then been discussed annually.

Excerpt from the Stock Table

Stock	Status of knowledge	Key role	State of stock	Fishing mortality	Red-listed	Pollution	Catch value	Recreational value	Recreational share	Shared stock	Management objective	Measures implemented	Priority new measures	Comment box
Sprat high seas	2	2	5	5		1	3			2	4	1	1	
Sprat coastal	2	2	0	0			4			3	4	1	2	
Blue whiting	2			5			4			1	1	1	2	
Capelin in I, II	1	1	2	2		1	2		4	1	1	1	2	
Capelin in IIa, Va, XV	2	1	0	0			3			1	1	1	1	
Mackerel	2		1	2			1	1	3	1	1	1	2	
Polarcod	2	2	3	2		1	5	3	4	4	4	1	1	
Herring in IIIa, IVa,b	1	2	6	5		1	3	2		1	1	1	1	
Herring in I, IIa, IVa	1	1	1	2			1	2		1	1	1	1	
Herring Trondheimsfjorden	2		0	0			4			3	4	1	1	
Horse mackerel	2			4			3			2	4	2	2	
Sandeels North	3	1	3				5			3	4	3	1	
Sandeels South	2	1	5	5			3			2	2	1	2	
Argentines	2		3	3			0	3		2	2	1	2	
Norway pout	2	2	5	2			4			2	4	1	2	
Blue ling	3		5	0	3	0	4	3	4	2	4	2	2	
Tusk	2		0	5			0	2	2	4	2	3	2	
Whiting	2		6	4			1	4		1	1	3	2	
Haddock in IV	1		1	5			1	3		1	1	3	2	
Haddock in I, II	1		1	0			1	2	4	1	1	1	1	
Ling	2		0	0			0	2	4	2	3	2	2	
Pollack	3		3	3			0	3	1	2	3	4	3	
Hake	3		3	3			3			3	4	3	2	
Saithe in IIIa, IV	1		1	2			2	1	3	1	1	1	1	
Saithe in I, II	2		1	2			0	1	1	3	3	1	1	
Coastal cod north	2		4	5			2	2	1	2	1	3	3	
Coastal cod south	2		6	5			2	4	1	1	1	3	3	

Similarly, the Fisheries Table was introduced in spring 2011 and priorities discussed with stakeholders. The Fisheries Table includes information for each fishery on species- and size selectivity, discard problems, incidental mortality, effect on bottom habitats, priority for action etc. The elements of the two tables are graded as appropriate according to impact or importance (for example high, medium or low) with traffic lights to ease overview and recognition. The grading is in most cases based on qualitative expert judgment. To secure consistency and objectivity quite an effort was put into harmonizing the grading throughout the tables. Input from science and stakeholders have contributed to this process. By clicking on an element in the table, a short explanation for the grading of that particular element will occur.⁴

Excerpt from the Fishery Table

FISHERY				SPECIES SELECTIVITY									
Gear	Target specie(s)	Catch area	Nationality	Gear specifications	Endangered marine species	Other marine species	Sea mammal	Sea bird	Size selectivity	Discarding	Incidental mortality	Effect on seabed	Comment box
Demersal trawl	Cod, haddock, saithe etc.	I, II	Both	130 mm nord 64°N, 120 mm sør 64°N.	2	1	1	1	2	3	2	4	
Demersal trawl	Saithe	IIIa, IV	Norwegian	120 mm	2	2	1	1	2	2	2	3	
Demersal trawl	Mixed fisheries	IIIa, IV	Norwegian	120 mm. Tillatt med 70 mm i IIIa dersom kvadratmaske.	4	3	1	1	4	3	2	3	
Demersal trawl	Mixed fisheries	IIIa, IV	Foreign	120 mm	4	5	1	1	4	5	2	3	
Demersal trawl	Norway pout	IIIa, IV	Both	40 mm (gjeldende fra 01052010)	2	3	1	1	4	1	2	3	
Demersal trawl	Blue whiting	IIIa, IV	Both	40 mm (gjeldende fra 01052010)	2	2	1	1	2	1	2	3	
Demersal trawl	Sandeel	IVa,b	Both	<16 mm	2	2	1	1	3	1	2	2	
Demersal trawl	Flatfishes	IIIa, IV	Foreign	120 mm	0	0	1	1	0	5	2	3	
Demersal trawl	Argentines	IIIa	Norwegian	16 mm	1	0	1	1	0	0	2	4	
Demersal trawl	Shrimp	I, II	Both	35 mm Splavst. 19mm	3	3	1	1	3	3	2	4	
Demersal trawl	Shrimp	IIIa, IV	Both	35 mm ikke rist	3	5	1	1	5	4	2	4	
Demersal trawl	Reke	NAFO, ICES XIV		35 mm. Splavst. 22 mm	3	3	1	1	3	3	2	4	
Midwater trawl	Mackerel	IVa,b, VIa	Both	16 mm	1	3	1	1	2	1	2	1	
Midwater trawl	Horse mackerel	IIIa, IVa, VIa	Both	16 mm	1	3	1	1	2	1	2	1	

The intention is that both tables will be updated each spring and priorities for next year discussed with stakeholders. The outcome of these discussions will feed into the Ministry of Fisheries and Coastal Affairs' preparation of next year's budget proposal to the Parliament, and eventually materialize in the Ministry's annual Letter of Expectations in December to the Directorate of Fisheries and/or the Institute of Marine Research as the case may be.

The prioritized issues will then enter next year's work plan of the Directorate of Fisheries and/or the Institute of Marine Research, and stay on the work plan until appropriate measures have been developed and put into operation. The nature of an appropriate measure will depend on the issue, from improved technical regulations to catch limitations to closed areas etc.

There may be reasons to emphasize what the two tables are not. The tables are not intended to meet development needs related to fleet capacity and structure, resource allocation between user groups, or control issues. Nor do they cover the annual operational adjustments of already established regulatory measures and quota schemes. All these issues are of course vital elements in an ecosystem based fisheries management.

It may also be due to emphasize that the two tables do not constitute any form of ecosystem model describing ecosystem relationships. Findings and results from such models may, however, be the reason why a given issue is given priority in one of the two tables with respect to the development of new management measures. Furthermore, the tables are not designed to cover cross-sector issues related to competing use or impact on fishing from other industries like oil, shipping, offshore wind energy, aquaculture, etc. The tool is indeed limited to the further development of an ecosystem based fisheries management.

Note that the two tables do not require detailed information about the ecosystem in order to constitute a useful tool to obtain overview and to prioritize. This type of tables can thus be relevant for many countries in their efforts to develop an ecosystem based fisheries management.

In principle conservation and prudent long term fisheries management go hand in hand. What is good for nature is good for fisheries. There is however issues where conservation and fisheries are not in agreement, fisheries do after all set an environmental footprint. In the end it is a political question to decide what is, and what is not an acceptable footprint. The two tables do not solve that problem, but they do contribute to clarify what are the issues and concerns, and give stakeholders and government an annual opportunity to prioritize where solutions is most needed.

¹ Link to an English version of the Marine Resources Act:

<http://www.regjeringen.no/upload/FKD/Vedlegg/Diverse/2010/MarineResourcesAct.pdf>

² Link to an English version of the Nature Diversity Act:

<http://www.regjeringen.no/en/doc/laws/Acts/nature-diversity-act.html?id=570549>

³ Link to ICES assessments and advice: <http://www.ices.dk/advice/icesadvice.asp>

⁴ For complete tables with explanation (in Norwegian) see link to sak 04/2011 til Reguleringsmøtet 7. juni 2011: <http://www.fiskeridir.no/fiske-og-fangst/sakspapirer-referater/reguleringsmoetet-7.-juni-2011>