For Official Use

AGR/FI(2004)5/PART2

Organisation de Coopération et de Développement Economiques Organisation for Economic Co-operation and Development

14-Apr-2004

English - Or. English

DIRECTORATE FOR FOOD, AGRICULTURE AND FISHERIES FISHERIES COMMITTEE

AGR/FI(2004)5/PART2 For Official Use

FURTHER EXAMINATION OF ECONOMIC ASPECTS RELATING TO THE TRANSITION TO SUSTAINABLE FISHERIES: A CASE STUDY OF NORWAY

This document is submitted by the Norwegian authorities for INFORMATION to the 93rd Session of the Committee for Fisheries, 21-23 April 2004, under item 7 iii).

For further information, please contact: Bertrand LE GALLIC (E-mail: bertrand.legallic@oecd.org) or Jan Frederik DANIELSEN (E-mail: janfrederik.danielsen@oecd.org)

JT00162086

Document complet disponible sur OLIS dans son format d'origine Complete document available on OLIS in its original format

TABLE OF CONTENTS

Key H	lighlights of the Document	4
1.	Introduction	6
2.	Introduction to Norwegian fisheries policies	7
2.1	Fisheries in the national economy	8
2.2	Employment, structure and main fisheries	8
2.3	Value of fisheries1	0
2.4	Status of fish stocks 1	0
2.5	Resource management 1	1
2.6	Fisheries co-operation with other countries in the North Atlantic 1	2
3.	Norwegian management regime 1	3
3.1	Regulatory instruments to maintaining stock productivity1	4
3.2	Regulatory instruments to manage overcapacity 1	9
4.	Market-based incentives systems implemented	4
4.1	Experiences with the Unit Quota System (UQS) 2	4
4.2	Experiences with Structural Quota System (SQS) 2	6
4.3	Experiences with Quota Exchange System (QES) 3	2
4.4	Effects of market-based incentives systems implemented	2
5.	The Reform Process Towards Using Market-like Instruments	3
5.1	The debate on establishing an ITQ system in Norway	3
5.2	The establishment of the Individual Vessel Quota (IVQ) system	5
5.3	The establishment of long-term allocation keys	6
5.4	The establishment of quota-transfer systems in the coastal fleet	6
5.5	From open to closed access	8
BIBLI	OGRAPHY	9

Tables

Table 1. Contribution from Fisheries as Percentage of Gross Domestic Product (GDP)	8
Table 2. Export Value of Fish Products as Percentage of Total Exports	8
Table 3. Number of Fishers in Norwegian Fisheries	9
Table 4. Registered Fishing Vessels in Norwegian Fisheries	9
Table 5. Classification of the Fleet with Income more than NOK 26 000 by Length (2002)	9
Table 6. Fishing Licenses in Norway in 2002	. 15
Table 7. Annual Permits in Norway in 2002	. 15
Table 8. Decommission Scheme Designed for the Offshore Fishing Fleet (nominal price index)	. 23
Table 9. Decommission Scheme Designed for the Coastal Fleet (nominal price index)	24
Table 10. Purse Seiners 1998-2003	25
Table 11. Cod Trawlers 1998-2003	. 26

Table 12. Long-liners 1998-2003.	26
Table 13. Coastal Vessels Between 15 and 28 Meters in Group I, 1998-2003	30
Table 14. Estimated Number of Scrapped and Remaining Vessels with a 10 to 40% Effect of SQS	30
Table 15. Increased Quotas (%) for the Remaining Vessels with a 10 to 40% Effects of SQS	31
Table 16. Increased Quotas of Atlantic Cod for Remining Vessels with a 10 to 40% Effect of SQS	31
Table 17. SQS's Effect on Employment	32

Figures

Figure 1. Illustration of a Coastal Vessel	5
Figure 2. Norwegian Fishing Zones	7
Figure 3. Fishers : Age Distribution (1992-2001).	. 10
Figure 4. The Regulatory Chain	. 12
Figure 5. Regulations and Distribution of the Norwegian Atlantic Cod Quota in 2004	. 17

Boxes

18
20
21
22
28

FURTHER EXAMINATION OF ECONOMIC ASPECTS RELATING TO THE TRANSITION TO SUSTAINABLE FISHERIES: A CASE STUDY OF NORWAY

Key Highlights of the Document

The main purpose of this paper is to show how market based instruments have been introduced in Norway. The paper will analyse how stakeholders have dealt with the changes and cooperated in the introduction of these instruments.

<u>The first section</u> gives some main characteristics of the fishing industry in Norway. Based on local exploitation of the fish resources, as well as the common policy that the fisheries sector is an important contributor to the settlement in the coastal areas, a strong coastal culture has developed. The main objective of the fisheries policy is to maximise profits through an economically efficient use of the resources, but also to ensure socio-economic optimisation with respect to the total gain for the communities, within the limits of sustainable use of the resources.

<u>The second section</u> gives an introduction to the fisheries policies. According to catch volume, Norway is the 10th largest fishing nation in the world, with 9 700 registered vessels and more than 13 000 fishers. The Norwegian model for sustainable marine resource management is based on certain key principles: sustainable harvesting, multi-species approach, adequate regulations and an extensive control and enforcement system. It is vital that these principles are accepted as legitimate by the fishers themselves, and stakeholders are therefore involved in the regulation development process. Efforts to improve the management of marine recourses are given a high priority by both the authorities and the fishing industry itself.

<u>The third section</u> focuses on the Norwegian management regime and describes the input and output regulations and the measures made to deal with overcapacity problems in the fishing fleet. Two basic models, licences and annual permits, are implemented for regulating the number of vessels that can join the various fisheries, and only marginal fisheries are presently not regulated by either licences or annual permits. Regulations are implemented for every stock of economic importance.

The technical development of Norwegian vessels, gear and equipment has contributed to a fishing fleet capable of depleting most of the Norwegian fish stocks. To meet the challenge of overcapacity, various control systems, with the purpose of reducing the number of vessels, have been introduced. Today, a quota-transfer system called the Unit Quota System (UQS) has been implemented to the offshore fishing fleet; the larges coastal vessels have a Structural Quota System (SQS), and the smaller coastal vessel have a partly user-paid decommissioning scheme.

The fourth section focuses on Norway's experiences with these market-like instruments through a description of how the systems has fared. The UQS has led to a 27% reduction in the cod trawler fleet since 2000, and a 12% reduction in the purse seiner fleet in the same period. UQS has decreased the number of long liners more than 28 meters (long liners) by 52% over the last four years. The SQS was introduced in 2004, and it is at present too early to say anything about the effects. However, an analysis of

the coastal fleet indicates overcapacity also in this segment, and the SQS is expected to have a positive effect on this situation.

<u>The fifth section</u> focuses on the reform process towards the current situation and how stakeholders have dealt with the changes and cooperated in introducing these instruments.

A fleet composed of a variety of sizes has created challenges in designing efficient instruments to manage fleet overcapacity. For Norway, the key to overcome these challenges has been continuous and efficient cooperation between the authorities and the stakeholders.

Figure 1. Illustration of a Coastal Vessel

FURTHER EXAMINATION OF ECONOMIC ASPECTS RELATING TO THE TRANSITION TO SUSTAINABLE FISHERIES: A CASE STUDY OF NORWAY

1. Introduction

1. The waters of the Norwegian coast benefits from an up-welling system that makes the banks one of the most productive coastal marine areas in the world. This has provided Norway with rich fisheries, which throughout history have been of great importance both as a source of livelihood to the coastal population, as well as a major source of export revenue to the nation. The fishing sector is still a strong contributor to settlement and income for the people living along the western and northern coasts of Norway; even though the Norwegian oil production during the last 20 years have been the main contributor to the Norwegian economy.

2. The fisheries sector has played a major role in the development of the Norwegian society, and has consequently also played a major role in national politics. A strong coastal culture has developed based on local exploitation of the fish resources, as well as the nationally agreed policy that the fisheries sector shall contribute to the settlement in the coastal areas.

3. The regulatory choices Norway has made have to be viewed against this background, taking into account that the main objective of the Norwegian Government fisheries policy is to maximise profits through an economically efficient use of the resources by seeking the highest possible rate of return from the fisheries sector. Consequently, the policy shall also ensure socio-economic optimisation with respect to the total gain for the communities along the Norwegian coast. The Norwegian fisheries sector still plays an important role in the Norwegian government's overall policy to maintain the settlement structure in the coastal communities, and especially in the northern part of Norway.

4. The Norwegian fleet structure is twofold, with the coastal and offshore sectors existing side by side. In addition to differences in technology, operational patterns and ownership structure, the two fleet segments were historically subject to very different regulatory regimes. While the coastal fisheries remained an open access fishery, the trawler fleet was subject to strict access control from the start. The coastal fleet had no access limitations before the Atlantic Cod crisis of 1989/90.

5. Today, about 95% of the Norwegian fisheries have closed access; structural measures to reduce the fleet capacity are implemented to both the coastal and the offshore fleet. However, it has been a rough and slow process and required a step-by-step approach.

6. The main purpose of this paper is to show how market-based instruments have been introduced in Norway. In this regard the paper will analyse how stakeholders have dealt with the changes and cooperated to the introduction of these instruments.

2. Introduction to Norwegian fisheries policies

7. According to FAO statistics, Norway is the 10th largest fishing nation in the world, with catch volumes of about 2.5 million metric tons per year. Norway's position as a fishing nation is mainly due to the fact that the area along the coast belongs to a central up-welling system (the Gulf Stream) and further that this area has been reserved for Norwegian fishers. Most of the fish is therefore caught in the Norwegian Exclusive Economic Zone (EEZ), an area encompassing more than 1.2 million km². In addition, Norway is responsible for two fishing zones of approximately 1 million km² around Spitzbergen and Jan Mayen. However, 80% of the total catches are based on shared stocks, where the management responsibility is shared with Russia, the EU, Iceland, the Faroe Islands and Greenland.

Figure 2. Norwegian Mainland Zone, the Fishery Zone around Jan Mayen, the Fishery Protection Zone around Spitzbergen, the "Loophole"in the Barents Sea, the "Loop Sea"in the Norwegian Sea, and the Grey Zone in the Barents Sea



8. The most important species exploited by Norwegian fishers are cod, herring, saithe and haddock. In recent times, harvesting of mackerel and capelin has also become very important. Furthermore, aquaculture, mainly of salmon, has grown to become an important industry.

2.1 Fisheries in the national economy

9. The role of fisheries in Norway's national economy over the years may be described in different ways. One option is to look at the contribution to GDP, as in Table 1.

Table 1. Contribution from Fisheries as Percentage of Gross Domestic Product (GDP)

	5 1960 1990 2002
Per cent 2.3 3.7 2.2 1.6	0.8 0.5 0.7

Source: Directorate of Fisheries, 2003.

10. These figures are influenced by the fact that whaling, which in earlier times was an important industry, is classified together with fisheries. In the years after 1970 the oil and gas industry is another major reason for the decrease. However, an important fact is that fisheries at all times has been the basic industry in most of the coastal communities.

11. Since fish products for centuries have been a major export item, the share of total exports may illustrate the importance of the industry. This is shown in Table 2.

Table 2. Export Value of Fish Products as Percentage of Total Exports

Year	1940	1950	1960	1970	1980	1990	2002
Per cent	14.7	6.2	12.6	7.7	4.5	6.0	5.6

Source: Directorate of Fisheries, 2003.

12. These figures take into account the extensive development of the oil and gas sector in Norway during the last 20 years. From being non-existent prior to 1970, the oil and gas sector now has the greatest share of the value of Norwegian exports. The spillover effects to other industries like food processing, shipbuilding etc. is also considerable. Since 1970 aquaculture of salmon has grown to be an important supplement to traditional fisheries and a major export commodity.

2.2 Employment, structure and main fisheries

13. The Norwegian fishing industry was initially a coastal activity. Vessels were small, and fishing activity was based on grounds near the coast in addition to the seasonal migration of fish, e.g. to the Lofoten area in January to April. In 1950, Norway had about 34 000 registered fishing vessels and 68 000 fishers with fishing as the sole or principal occupation. Since then vessels have increased in size, the area of operation has expanded from coastal areas to include offshore areas. The efficiency of fishing gear has increased and the industry has become more capitalised.

14. The technical development of boats, gear and equipment during the last 50 years has contributed to a fishing fleet capable of overexploiting most of the fish stocks in Norwegian waters. With the general economic development of Norwegian society in this period, this has led to a strong reduction of fishing vessels and fishers, while technical catch capacity has been maintained and even increased in many fisheries. In 2003 the figures were 9 700 registered vessels and less than 13 300 fishers with fishing as principal occupation.

Year	1940	1950	1960	1970	1980	1990	2003
Principal	80 300	68 100	49 700	31 900	25 100	20 400	13 300
occupation:							
Total:	121 900	98 300	70 300	43 000	34 700	27 500	18 650

Table 3. Number of Fishers in Norwegian Fisheries

Source: Ministry of Fisheries, 2004.

Table 4. Registered Fishing Vessels in Norwegian Fisheries

Year	1940	1950	1960	1970	1980	1990	2003
Number of	n.a.	34 500	41 500	36 200	26 500	17 400	9 700
vessels							

Source: Ministry of Fisheries, 2004.

Table 5. Classification of the Fleet with Income more than NOK 26 000 by Length (2002)

Classification		Coasta	al fleet		Offshor	e fleet	Total
Length in m	0-10	10-15	15-21	21-28	28-45	45 -	
Total	2 940	1 960	430	240	140	160	5870
Per cent	50.1	33.4	7.3	4.1	2.4	2.7	100

Source: Directorate of Fisheries, 2003.

15. Yet having developed a modern and highly efficient fleet and modern processing plants, elements of the "old" fishing industry has been kept alive. There still exist small-scale fisheries and small processing plants with very simple technology.

16. The location of the industry is regionally concentrated. Four of Norway's 19 counties had 72% of the registered single-occupation fishers in 2002; and of these, 48% lived in the three northern-most counties. These figures have been stable for several years, which indicate that fisheries plays a significant role, especially on the West Coast and in Northern Norway, where entire municipalities are based on fishing, processing, aquaculture and related activities. Also in many communities, the traditional combination of one single buyer/processor supplied by a number of small local vessels can still be found.





Source: Ministry of Fisheries, 2003.

17. Even if the total number of fishers has decreased considerably as shown in Table 3, the number of fishers aged between 50 and 59 years has increased in the period from 1992 to 2001 (Figure 2). However, the number of fishers between 20 and 29 years of age has decreased by nearly 60% in the same period, indicating an industry having problems attracting young people.

2.3 Value of fisheries

18. The fisheries are commonly divided into two broad categories - cod fisheries (demersal) and herring fisheries (pelagic). The first category includes cod, haddock and saithe. These are used directly for consumption. Some of the pelagic catches have traditionally been processed into oil and animal feed. Today capelin, sandeel, norway pout and blue whiting are the most important species in the oil and meal production, while herring and mackerel supplies the production for human consumption.

19. The first-hand value (the value of the sale from the fishers) of the cod fisheries was NOK 4.7 billion in 2002, while the value of the herring was NOK 2 billion, capelin NOK 0.6 billion and mackerel NOK 1.4 billion. Together these fisheries amounted to NOK 8.7 billion in 2002, of a total first hand value of NOK 11.1 billion of capture fisheries in 2002 (including seaweed).

20. The first-hand value of farmed salmon was NOK 7.7 billion in 2002. Thus, farmed salmon has grown to be an important industry as far as first-hand value is concerned.

2.4 Status of fish stocks

21. Stock sizes have also shown extensive variation over the years. The stock of Norwegian Spring Spawning herring collapsed after strong fishing pressure in the 1960s. The fishery was stopped in 1970, in an effort to build up the stock again. That effort was successful, and fishing was resumed in the 1970s. At the moment the stock supports an annual yield of 700 000 to 1 000 000 metric tons, which must be considered a high yield from a historical perspective. Capelin in the Barents Sea and blue whiting has to a great extent replaced herring as the basis of the fish oil production. The stock of capelin in the Barents Sea shows great short-term variations, collapsing in 1986 and then again in 1993. It is believed that the

fluctuations in the capelin stock in the Barents Sea are caused by interactions between sea mammals, cod and herring.

22. The stock of Atlantic Cod has also shown extensive variations, but less than for herring and capelin. There has been a long-term decline in the stock, but according to the latest stock assessments, the attempts in recent years to increase the stock by regulations seem to have achieved positive results.

23. At present, the resource situation for two of the most important species, Atlantic Cod and Norwegian Spring Spawning herring are better than it has been for a long time. For further information on the status of stocks, see Appendix 1, or statistics provided by the Institute of Marine Research (www.imr.com).

2.5 Resource management

24. The Norwegian model for sustainable marine resource management is based on certain key principles: sustainable harvesting, multi-species approach, adequate regulations and an efficient control and enforcement scheme. It is vital that these principles are accepted as legitimate by the fishers themselves, and the stakeholders are therefore involved in the regulation process.

25. The regulation processes start with quota recommendations given by the International Council for Exploration of the Sea (ICES). Before the negotiations between Norway and other states take place, scientists from different countries perform their research and studies, and the results are discussed in Working Groups inside the ICES system. After ICES has given its quota recommendations, the quota negotiations between Norway and other states take place.

26. During the negotiations, the Parties agree upon the Total Allowable Catch (TAC) separately for each fish stock for the coming year. The Parties also agree upon how the TAC should be shared between the Parties. When setting the TAC, the Parties have to take into account the objectives of economic sustainability, stable conditions for the industry and other social and economic aspects, in addition to biological sustainability.

27. The Parties also discuss and agree upon other common issues related to the management of the different fish stocks, thereby monitoring the fisheries to make sure that the industry follows the rules of how the fishing is supposed to be undertaken.

28. In the national regulation process, the Directorate of Fisheries first makes a proposal regarding how the Norwegian part of the TAC should be shared. Experiences gathered throughout the year are taken into account, and proposals are then made and given to an "Advisory Board for Fisheries Regulations". This Advisory Board includes twelve participants:

- Norwegian Fishermen's Association (5 members)
- Norwegian Coastal Fishermen's Association (1 member)
- Federation of Norwegian Fisheries and Aquaculture Industries (2 members)
- The Norwegian Seamen's Union (1 member)
- The Norwegian Food and Allied Worker's Union (1 member)
- The Sami Parliament (1 member)
- The Director of the Directorate of Fisheries (1 member)

The Director of the Directorate of Fisheries is the Chair of the Advisory Board. The Ministry of Fisheries participates in the meetings as observers.

29. At these meetings, the participants discuss different solutions as to how the fishing should be carried out for each commercial species. The participants discuss possible solutions beforehand within their own organisations, and during the meetings they give their opinions to the Advisory Board. Advantages and disadvantages of different ways of regulating the different kinds of species are discussed. As a result of these discussions and after voting, the Advisory Board submits its proposals to the Ministry of Fisheries. In a parallel process, the Directorate of Fisheries gives its separate recommendations to the Ministry.

30. As a next step in this process, the Ministry of Fisheries evaluates all these recommendations, and looks at the different species from various aspects. Finally, the Minister of Fisheries decides how the quotas should be shared between the vessels and how the fishing is supposed to be carried out the following year.



31. Efforts to improve the management of marine resources are highly prioritised both by the authorities and by the fishing industry itself. During the process, great emphasis has been put on cooperation between the Norwegian Fishermen's Association and the authorities. This cooperation, and also the cooperation between the authorities and other affected institutions, is of great importance both in quota negotiations with other states and in managing the Norwegian quota allocation system.

2.6 Fisheries co-operation with other countries in the North Atlantic

32. The marine ecosystem has to be seen as a comprehensive whole, and the utilisation of the different species must reflect the interrelationship between species. The aim of the Norwegian management policy encompasses both the commercial harvesting of a large variety of species, and at the same time the objective to maintain them at safe biological levels. As more than 80 percent of the Norwegian fisheries derive from shared stocks, the Norwegian management objectives can only be achieved in close co-operation with the other North Atlantic fisheries nations.

33. The establishment of the EEZ of 200 nautical miles in the late 1970s required new forms of international fisheries co-operation, since most important fish stocks were shared between two or more coastal states. Thus, fisheries agreements were concluded with Norway's two main collaborators in the management of the resources in the Barents Sea and the North Sea; Russia and the European Union, respectively. In addition, agreements were concluded with the Faroe Islands and Greenland to enable a balanced exchange of fish quotas to help maintain traditional fishing patterns. An agreement regulating the fishery on the joint capelin stock in the Iceland/Greenland/Jan Mayen area has later been concluded with Iceland and Greenland.

34. Following the development in joint regional management of high seas resources, based on the UN-agreement on straddling fish stocks and highly migratory fish stocks, a coastal state agreement between Norway, Russia, EU, Iceland and the Faroe Islands has been concluded on the management of the Norwegian Spring Spawning Herring. Included in this agreement is a regime for the fishing on this stock in international waters, negotiated within the framework of the North East Atlantic Fisheries Commission (NEAFC). A similar regime on the North Atlantic Mackerel stock, between Norway, EU and Faroe Islands has also been adopted. In addition, Norway and Russia have recently adopted long-term management plans for the stocks of Atlantic Cod and North Atlantic Haddock.

35. Norway and Russia have over the past decades developed an extensive co-operation to ensure rational and responsible management based on joint measures. Importantly, the management of joint resources requires the same routines and efforts regarding monitoring and control. In this respect, close co-operation has been developed between the Norwegian and Russian control authorities, and a system of continuous exchange of data on catches and landings in Norwegian ports has been established. Close contact has also been established at sea between the two countries' Coast Guards. A joint effort made by Norway and Russia in the management of the resources in the Barents Sea has proved fruitful, providing for an extensive and practical common approach to resolve new problems.

36. The major challenge in the fisheries cooperation with the European Union is to rebuild major stocks in the North Sea to sustainable levels. Norway and the European Union have both adopted comprehensive regulations and measures to control fishing activities and to promote rational exploitation of fish resources. However, the principle of sustainable management and exploitation is applied differently in some important areas. For instance, Norway has introduced a ban on discards, based on the notion that all catches should be accounted for and deducted from the quotas in order to control the outtake of each particular fish stock. The European Union on the other hand, has mandatory discard of fish outside the quotas as a central element of their management regime.

3. Norwegian management regime

37. The technological development of the Norwegian fishing fleet proved early on that imposing regulations to the fishing fleet was necessary. Already in 1908, the first restriction on fishing activities was established. This was the so-called "trawler act", which encompassed a prohibition against fishing with trawl within the Norwegian territorial zone. The first law regulating access to the fisheries came in 1932 when a licence system for the trawler fleet was implemented. Since these first regulations, directed at restricting the development of trawling in the demersal sector of the Norwegian fisheries, a number of different regulations have been enacted aiming at protecting the fish stocks from overexploitation and sustaining the right to exploit these resources with the fishers.

38. Commercial fisheries in Norway are restricted through regulatory and legal instruments, with the aim to keep the stock productivity high and to control the individual access to the resource. To manage catch capacity to a level that is commensurate with the resource's natural productivity, there has been established a number of regulations with the purpose of reducing catch capacity.

39. The first part of this section will address the regulatory instruments, categorising the measures as input and output control systems. To illustrate the combination of regulatory instruments applied, the Atlantic Cod fishery is used as an example. To meet the challenge of finding a balance between resource productivity and fleet capacity various set of management systems have been developed and implemented. This is addressed in the second part of the chapter.

3.1 Regulatory instruments to maintaining stock productivity

40. In general, management instruments aim to maintain the productivity and reproductive capacity of stocks, and allocate the limited productive potential of the stock to the various fishing firms that can exploit it. The instruments needed to manage a fishery have been divided into input controls, output controls and technical measures. Input controls constrain the inputs used to produce catch e.g. licenses, gear and vessels restrictions. Output controls constrain the catch of the fleet e.g. catch limits. Technical measures constrain the output that can be obtained by a given amount of inputs e.g. selectivity, and time-and area closure. Technical measures will not be addressed in this study.

3.1.1 Input control systems

41. The Norwegian input control system relates to vessels allowed to join the various fisheries and to who is allowed to own fishing vessels.

42. A person must fulfil a number of criteria to be registered as a fisher. These criteria have been established to achieve the political objective that the ownership of fishing vessels and thus the right to exploit Norwegian fisheries resources shall be exclusively given to active fishers. The law states that only active fishers can own the majority of the assets of a vessel. An example of a criterion is that fishers must have been participating in active fishing for more than three of the last five years in Norwegian fisheries in order to be entitled vessel ownership.

43. When the criteria are met, the individual will be registered in The Fishers Register (established in 1941). The right to obtain ownership of a Norwegian fishing vessel are based on the register.

44. Two basic models, licences and annual permits are implemented for regulating the number of vessels that can join the various fisheries. The difference is basically that licences are granted for an unlimited time-span, while the fishing permits are limited to one year at a time. Both by law and in theoretical terms these are two different conditions. In reality however, annual permits are renewed indefinitely, if the objective criterion are fulfilled each year.

45. Today all commercial fishing by trawlers or purse seiners requires a license. Long-liners longer than 28 meter and coastal vessels are regulated through annual permits.

46. Table 6 lists the number of vessels with license and the type of license for these vessels. Table 7 lists number of vessels with annual permits and the type of permits they hold.

Table 6. Type of Fishing License, the Number of Licenses and fishing Vessels with License in Norwegian Fisheries in 2002

Type of license	2002
Purse seine	94
Blue whiting	47
No. Spring Spawning herring (trawl)	62
Industrial/North Sea trawl	116
Capelin trawl	130
Mackerel trawl	49
Cod trawl	83
Saithe trawl	11
Shrimp trawl	99
Other licenses	36
Total number of licenses	727
Number of vessels	388
Average per vessel	1.9

Table 7. Type of Annual Permits, the Numberof Permits and Fishing Vessels with Permits in
Norwegian Fisheries in 2002

Type of annual permits	2002
Cod/saithe/haddock	2 704
Mackerel	555
Shrimp	167
No. Spring Spawning herring	553
Saithe seine	204
Total number of permits	4 183
Number of vessels	3 2 3 2
Average per vessel	1,3

Source: Ministry of Fisheries, 2003.

Source: Directorate of Fisheries, 2003.

47. As indicated in Tables 6 and 7, a particular vessel may hold several different types of licenses or annual permits.

48. As of to day, only minor fisheries are not regulated by either licences or annual permits. Closed access prevails for all important economic fisheries, and approximately 95% of the catch value comes from access-regulated fisheries.

3.1.2 Output control systems

49. The overall objectives are to provide for sustainable development and long-term optimal use of the living marine resources. This implies that catch of any TAC-regulated species is not to exceed the agreed quotas based on the best biological advice available.

50. Norwegian conservation philosophy stipulates that all regulations and corresponding enforcement should be directed towards the fishing activities themselves. To catch fish below the required minimum size is prohibited, and a ban on discarding fish is established for all economically valuable species. In addition, to protect fishing grounds with too high intermixture of undersized fish, it is a requirement that vessels change fishing grounds if the mixtures of undersized fish exceed permitted levels. Another measure is the use of catch sorting devices, i.e. grids and mesh size.

51. In order to manage the different fisheries, an extensive system to control fishing activity and the fishing fleet has been established. There are three cornerstones in the control and enforcement system: the Coast Guard, the Directorate of Fisheries and the Sales Organisations. These ensure that every catch of individual specie is registered and settled against the quota for that particular stock.

52. Regulations are implemented on every stock of economic importance. In addition to regulating the fisheries inside the Norwegian Economic Zone, the Norwegian fisheries authorities also regulates the fishing activity of Norwegian vessels outside own EEZ, as a part of the fisheries agreements with other States. Foreign vessels fishing activity in Norwegian waters are regulated correspondingly.

53. The Norwegian part of the Total Allowable Catch (TAC) is divided into group-quotas. Each group quotas are then shared between vessels within the group. Each group are regulated either with Individual Vessel Quotas (IVQs) or maximum quotas. IVQs mainly regulate vessels holding a licence or an annual permit, and maximum quotas mainly regulate coastal vessels in the open access fisheries.

54. Within the system of IVQs, the group quota is shared among the participating vessels in fixed and – more or less – guaranteed portions. The sum of the allocated Individual Vessel Quotas equals the group quota.

55. Within the system of maximum quotas, an upper limit is set for the annual catches. Each maximum quota is "over-regulated", as the sum of the allocated maximum quotas is higher than the group quota. The Directorate of Fisheries gets subsequent information about the landings, and closes the fishery for a certain species when the total group quota is estimated to have been caught. In this case, the participating vessels have no guarantee for how much they may catch of their quota share. On the other side, in situations where the participation in the fishery has been lower than expected, the over-regulation might be increased during the year to make sure that fishing persists until the group quota is caught.

56. The system with "over-regulation" is applied to vessel groups consisting of a large variety of vessels with different activity levels. Because of lower total quotas and an increase in vessel efficiency, the degree of the over-regulation has been lowered considerably during the recent years.

57. The various regulations provide specific rules on the implementation of the fisheries, and as a part of this, as mentioned, the division of the annual quota amongst the different vessel- and gear-groups. In addition there are rules pertaining to periodic regulations of outtake, by-catchrules, start- and stop-dates, and sanctions in the case of violations.

58. The industry has to comply with the regulations, even if they do not always agree with the decisions. This may lead to meetings and discussions with the Ministry in order to find alternative solutions. This consultation process has a long tradition in Norway. The cooperation between the authorities and different stakeholders has proved to be an important way to ensure legitimacy both in the industry and in the community at large.

3.1.3 The Atlantic Cod fisheries

59. The regulations implemented in the Atlantic Cod fisheries in 2004 can illustrate the combination of quota models applied in the Norwegian fisheries regulations.

60. As illustrated in Figure 5, the Norwegian Atlantic Cod quota is shared between two groups of vessels depending on their use of fishing gear: vessels fishing with traditional gear; and the trawler fleet. This corresponds fairly well to a division by length groups - the offshore fleet consisting vessels longer than 28 meters (trawlers and large long-liners) and the coastal fleet consisting of vessels less than 28 meters.

61. The coastal vessels are divided into to main groups: priority Group I, which are vessels bound with closed access and an annual permit; and Group II, which is an open access group. The Group I vessels are further divided into four length groups¹, which each have a given share of the Group I quota.

62. Trawlers, long-liners and coastal vessels have Individual Vessel Quotas, while the open access group have maximum quotas.

1

The so called "Finnmark model", the implementation process is described in section 5.

63. As most fish stocks in Norwegian fisheries covered by the regulation system are migrating and intermingling, the application of the single species regulations has to be carefully designed. The large variation in the availability of the different fish species throughout the year and along the coast also has bearings on both the details of the regulations as well as on the fishing pattern and fishing opportunities for all vessel groups.

64. The regulation also has to take the processing industry's need for a stable supply throughout the year into considerations. As value-adding and maximum sustainable market output is the overall economic objective (within sustainable limits), regulations are aimed at contributing to that objective.



Figure 5. Regulations and Distribution of the Norwegian Atlantic Cod Quota in 2004



Box 1. Atlantic Cod: Distribution of National Quota 2004

The figure illustrates that trawlers receive about 30% of the Norwegian TAC of Atlantic cod; the rest is allocated to large long-liners, coastal vessels and the open access group of vessels less than 28 meters. As earlier mentioned, the coastal fleet is very important for the coastal communities, especially in the northern part of Norway. In 2004, coastal vessels in Group I have a 54.2% share of the TAC. This quota has a first hand market value of about NOK 1.8 billion at an estimated price of NOK 15 per kilo.

Less than 7% share of the TAC is allocated to the open access group of vessels less than 28 meters, fishing with traditional gear.

3.2 Regulatory instruments to manage overcapacity

65. Overcapacity has until recently been contained by redirecting surplus capacity towards new resources and new fishing grounds. Such expansion is today not possible. It is generally recognised that current fishing capacity in the Norwegian fishing fleet exceeds the available fisheries resources. The technical development of vessels, gear and equipment has contributed to a fishing fleet with a far too large capacity compared to most of the fish stocks. To meet the challenge of overcapacity, various control systems with the purpose of reducing the number of vessels, have been introduced in a step-by-step process throughout the last 15 to 20 years.

66. The main instruments used to reduce the number of vessels have been decommissioning schemes and a quota-transfer system implemented in the offshore fishing fleet. A new quota-transfer system has been developed and implemented to the coastal fleet from 2004, together with a partly user-paid decommissioning scheme for the smaller coastal vessels.

3.2.1 Quota-transfer systems implemented in the offshore fishing fleet

67. A quota-transfer system, of which the main purpose is to reduce the number of vessels and thus increase the income for each vessel, was first introduced in Norway in 1984 in part of the cod trawler fleet. The scheme was reintroduced in 1990 to include other groups, and then on a permanent basis from 1996. The scheme, called the Unit Quota System (UQS), is today implemented in all offshore fishing groups.

68. Initially, when the UQS was introduced, the number of vessel quotas was equal to the number of fishing vessels. The idea with the UQS is to make the members of a vessel group, where such a system has been applied, responsible for adjusting the fishing capacity to the available resources and thus secure higher profitability.

69. The system allows the owner of two vessels to transfer the quota of one vessel to another. The owner of a vessel will then control more than one quota for a period of 13 years, if the surplus vessel withdrawn from the fishing fleet is sold, and for 18 years if the surplus vessel is scrapped— the latter to contribute to the reduction of worldwide overcapacity.

3.2.2 Quota-transfer systems implemented to the coastal fishing fleet

70. A quota-transfer system designed for the coastal fleet was introduced in 2004. This new scheme enables vessels between 15 and 21 meters and between 21 and 28 meters to transfer quota from one vessel to another if one vessel is scrapped. A 20% part of the quota (held by the scrapped vessel) remains in the regulation group the vessel was withdrawn from. This scheme is named the Structural Quota System (SQS). To avoid geographical concentration of annual permits, SQS is subject to certain limitations.

71. The UQS scheme gives a vessel owner who has bought another vessel the possibility to fish both quotas with the remaining vessel for a period of 13 or 18 years. After this period, the additional quota goes back to the regulation group where the vessel once was withdrawn from 13 or 18 years earlier. The SQS system is quite similar, but differs since 80% of the additional quota is held in perpetuity. The 20% reduction goes back to the regulation group the scrapped vessel once belonged to. SQS is also subject to more limitations than UQS.



Box 2. Illustration of the Unit Quota System (UQS)

• Vessel B fish vessels A's quota for 18 years (13 years if vessel A is not scrapped)



Box 3. Illustration of the Structural Quota System (SQS)

72. A third quota-transfer system has been developed and implemented as a temporary arrangement for the coastal fleet for 2004. Vessels in selected coastal counties are currently testing a new system called Quota Exchange System (QES). The QES allows two vessel owners within one vessel group to team-up, fishing both quotas on one vessel for three out of five years. If the arrangement is regarded as successful, it may be introduced nationwide from 2005. The purpose of these arrangements is to improve vessel profitability and in that sense enhance incentives to reduce fleet capacity.



Box 4. Illustration of the Quota Exchange System (QES)

22

Restrictions:

- Vessels A and B (C and D) have to be located in the same county.
- Vessels A and B (C and D) have to be in the same length group.
- Transfers of quota (s) have to be approved by the fisheries authorities.
- QES can only be used three out of five years.

3.2.3 Decommissioning schemes in the offshore fishing fleet

73. Norway also uses decommissioning schemes as an instrument to reduce the number of vessels in the offshore fleet. Various schemes have been in effect during 1960 to 1993. Approximately 400 vessels have been removed with decommissioning grants of approximately NOK 600 million.

Years	1960 - 1968	1969 – 1978	1978 – 1988	1990 - 1993	Total
Scrapped	115	55	190	33	393
NOK (million)	15	11	470	96	592
C Mining CELL	2004				

Table 8. Decommission Scheme Designed for the Offshore Fishing Fleet (nominal price index)

Source: Ministry of Fisheries 2004

74. Decommissioning schemes in the offshore fishing fleet was most instrumental in reducing the number of purse seiners and trawlers. Between 1978 and 1988, 83 vessels were withdrawn from fisheries on the condition that the vessel was scrapped, reducing the group to 105 vessels in 1990.

3.2.4 Decommissioning schemes in the coastal fishing fleet

75. The first decommissioning scheme designed for the coastal fleet was established in 1960, and by 1988 about 2 800 vessels had been scrapped as a result of various schemes. From 1990 access to the coastal Atlantic Cod fishery was limited, and a decommissioning scheme (1990 to 1993) was directed at coastal vessels holding an annual permit. Owners of scrapped vessels had to give up the permits to fish. From 1998 to 2002, a new decommissioning scheme was established. The aim of this scheme was partly to reduce capacity, and partly to provide for modernisation of the coastal fleet without increasing the number of vessels. Two different components of the scheme were offered: a traditional decommissioning scheme; and a combined decommissioning scheme. In the first scheme, the annual permit(s) were withdrawn, and the vessel was scrapped. In the second scheme, when the vessel was scrapped and the annual permit(s) were withdrawn, new annual permit(s) were issued on a replacement-vessel (new-built or newer used vessel).

76. The Norwegian Government has spent approximately NOK 500 million over the years on decommissioning schemes designed for the coastal fleet, and about 3 000 vessels have been scrapped.

Years	1960 - 1968	1969 - 1978	1978 - 1988	1990 - 1993	1998 - 2002	Total
Scrapped	1 760	540	490		53	2 843
+ permits redrawn				143	44	187
NOK (million)	21	13	130	150	200	514

Table 9. Decommission Scheme Designed for the Coastal Fleet (nominal price index)

Source: Ministry of Fisheries, 2004.

77. Initially, the decommissioning scheme designed for the coastal fleet was both a modernisation and capacity reducing scheme. Today the aim is solely capacity reduction. Grants for constructing new vessels are no longer given.

78. A new fund for decommissioning of home-based fishing vessels up to 15 meters holding annual permit(s) was established on 1 July 2003. The scheme is funded through a fee on the value of first-hand landings of every Norwegian fishing vessel. The public sector gave a start capital to the fund, estimated to about 50% of the contribution from the industry. For 2004 the Government transferred NOK 35 million, which is just under 50% of the estimated contribution from the fishery sector in 2004. Further contribution from the Government is not guaranteed.

79. The statutory authority given by the Norwegian Parliament to impose a fee on the value of firsthand landings lasts for five years. The statutory authority thereafter disappears (sunset law). The aim is, within these five yeas, to collect about NOK 350 million for the fund, which would enable the scrapping of approximately 15% of the coastal fishing vessels less than 15 meters holding annual permit(s). With a 50% financial contribution from the Government, this will give a fee on the value of first-hand landing of 0.35% per NOK.

4. Market-based incentives systems implemented

80. Market-based instruments have been used over the last 15 to 20 years as part of the Norwegian management system to reduce the number of vessels in a certain vessel group where fishing capacity is considered to exceed current and future TACs. The Unit Quota System (UQS) has been introduced in the ocean-going part of the Norwegian fishing fleet and the Structural Quota System (SQS) is now covering the coastal fleet. Norway is also testing another market-based instrument in the Quota Exchange System (QES) for the coastal fleet. The following provides a description of the development of the schemes and examples of how the three systems have fared.

4.1 Experiences with the Unit Quota System (UQS)

81. The offshore fleet can roughly be divided into four groups.

- i. Cod, saithe and shrimp trawlers,
- ii. the industrial trawlers,
- iii. purse seiners; and
- iv. large long-liners.

All of these four groups now have access to UQS.

82. Each vessel group has custom made-schemes. The cod trawlers got their first unit quota system in 1990, the Greenland shrimp trawler fleet in 1994, purse seiners in 1996, long-liners in 2000, saithe trawlers in 2001 and industrial trawlers in 2002. The following will provide data for the purse seine fleet, the cod trawler fleet and the long-liners. These three groups should be reasonable representative of the effect of the UQS as they represent about 75% of the numbers of vessels fishing in the offshore fleet.

4.1.1 UQS in the purse seine fleet

83. The purse seine fleet has gone through a remarkable development during the last decade. With the main activity pointed at the herring and capelin fisheries, great variations in stock sizes and hence quotas, affect their economic performance considerably.

84. The purse seine fleet harvesting herring, capelin, mackerel and other inputs to the fish oil and fish meal industry experienced a significant reduction in the number of vessels during 1970 to 1990. This development was a result of the total disappearance of Norwegian Spring Spawning herring in Norwegian waters during this period. The number of purse seiners was reduced from 279 to 105. Of these, 68 were sold abroad. Between 1975 and 1990, 83 vessels were scrapped under a government program financing withdrawal from the fisheries on the condition that the vessel was scrapped.

85. In 1992, the capacity of this fleet segment was still estimated as being too high compared to the available resources and a capacity reduction of about 25% seemed necessary to balance capacity to the long term resource situation. As of 2003, 88 vessels hold a license for purse seining (Table 10). Further, their recent economic performance shows the highest operating profit among all Norwegian vessel groups indicating a vessel group fairly well adapted to the current resource base.

86. In that sense it is appropriate to draw attention to the very positive stock and hence quota development as well as increased prices the purse seine fleet has experienced during the last five years. During this period the fleet had a combination of high quotas on herring, mackerel, capelin and blue whiting as well as favourable prices.

	1998	1999	2000	2001	2002	2003
Vessels/licenses	99	100	97	94	94	88
All year run vessels	91	95	95	91	93	
Operating profit (%) ¹	18.1	20.5	15.7	28.0	26.6	
Average age (all)	24.8	21.9	19.8	17.2	17.4	15.8
Group quota No. Spring Spawn. Herring	421 200	421 200	400 600	246 200	244 900	208 433
Group quota Capelin in Barents sea	0	36 700	201 290	283 810	294 910	183 000
Group quota Capelin at Iceland,	159 150	129 600	107 000	98 570	119 556	115 556
Greenland and Jan Mayen						
Group quota Mackerel	123 700	123 700	138 270	142 490	143 005	124 932

Table 10. Purse Seiners 1998-2003

Average operating profit is the economic result of activities of the firm; defined as average operating revenues over average operating expenses. Average profit on ordinary activities before taxation is defined as the sum of average operating profit and net financial items. The operating margin express how much is earned on every NOK 100 in sale.

Source: Directorate of Fisheries 2004

4.1.2 UQS in the cod trawl fleet

87. As mentioned above, some cod trawlers got access to buy quotas in 1984. Since then the fleet segment has had access to limited unit quota arrangements several times, the present one dating back to

2000. According to Table 11, there were 104 cod trawlers in 1998; at the end of 2003 the number was down to 77. This indicates that the scheme has contributed to a reduction in fleet capacity, but due to relatively low prices for groundfish species, there has not been any improved economic performance. Also the quota situation for this vessel group improved from 2000, which contributed to improved operating profit in 2001.

	1998	1999	2000	2001	2002	2003
Vessels/licenses	104	105	101	94	83	77
All year run vessels	91	90	83	76	73	
Operating profit (%) ¹	15.5	11.5	3.3	9.6	6.5	
Average age (all)	18,1	18.9	18.4	17.4	18.3	18.1
Group quota of Arctic Cod	101 975	72 510	57 250	57 878	57 878	57 919
Group quota of Arctic Haddock	27 690	17 940	15 000	19 826	19 317	21 850
Group quota of Arctic Saithe	48 400	48 538	41 830	44 120	52 540	56 980

Table 11. Cod Trawlers 1998-2003

¹ Definition in Table 10

Source: Directorate of Fisheries 2004

4.1.3 UQS in the long liner fleet

88. The long-liners were covered by the unit quota system from mid 2000. The number of vessels has since then dropped from 98 to 47 and almost all the remaining vessels in this vessel group are now considered as "all year run", which indicates a fleet well adapted to the current resource base, as outlined in Table 12. The average vessel age has also declined considerably since introducing the UQS. This is regarded as positive both in the sense of safety, maintaining quality of caches, and possibilities of recruiting young fishers. Though it is still too early to say anything about improved profitability, a larger share of the total quota per vessel should imply better profitability for the future.

Table 12. Long-liners 1998-2003

	1998	1999	2000	2001	2002	2003
Vessels	90	90	79	58	51	47
All year run vessels	69	65	57	57	49	
Operating profit (%) ¹	10.5	9.0	3.6	5.9	-0.7	
Average age (all)	23.2	23.1	25.0	18.9	16.9	16.9
Group quota of Arctic Cod	25 115	21 320	17 440	17 608	17 608	17 616
Group quota of Arctic Haddock	$43 \ 310^2$	$28\ 060^2$	4 200	5 582	5 673	6 417
Group quota of Arctic Saithe	5 100	5 418	4 670	4 930	5 936	6 437

¹ Definition in Table 10

² Group quotas for all vessels fishing with traditional gear

Source: Directorate of Fisheries 2004

4.2 Experiences with Structural Quota System (SQS)

89. The coastal vessels less than 28 meters hold a 61% share of the quota of Arctic Cod and, as described earlier, these vessels play an important role in coastal communities. However, market-based management systems like the Unit Quota System may have a negative effect on settlement and can lead to a concentration of licenses. The fear of these negative effects is the main reason for the hesitation to introduce this type of instrument to the coastal fleet.

90. A reform process started in 2000 in order to analyse and develop measures to meet the growing capacity within the coastal fleet. After the closure of the open access of the most important fisheries for the coastal fleet, the Atlantic Cod fisheries, in 1990, the TAC rose by 350% to a peak in 1997. During that period the increase in capacity in the coastal fleet was over-shadowed by the increase of stock. From 1998 and onwards, the decline in the TAC of the Atlantic Cod stock did not lead to an immediate decline in income for the coastal fleet due to higher market prices for Atlantic Cod as well as other fish species important for the coastal fleet. However, from the beginning of this decade, it became evident that the coastal fleet also had to reduce its fishing capacity to meet the new century, where an aging fishing fleet and lower income leading to labour shortages amongst new recruited fishers, would be the main challenges. The reform process led to the development of the Structural Quota System (SQS) and the Quota Exchange System (QES).

Box 5. The Development of Capacity in the Coastal Fleet

From 1990 to 2002 the number of fishing vessels in the priority group I decreased 24%. However, a decrease in the number of fishing vessels does not necessarily mean a decrease in fishing capability. By analysing the Norwegian coastal fleet further, a different picture is revealed.

Vessel length	1990	2002	Change
Less than 10 meters	1 867	655	- 65 %
10 - 15 meters	900	1 254	+ 39 %
15 - 21 meters	326	336	+ 3 %
21 - 28 meters	96	183	+ 91 %
Total	3 189	2 428	- 24 %

Vessels Less than 28 Meters in Group I

Source: Directorate of Fisheries, 2003.

The table above shows that the number of vessels less than 10 meters has decreased by 65%, while all other groups have increased, some significantly. The decrease of smaller vessels can be explained mainly as a consequence of a requirement of having fished a certain part of the quota to be able to keep the permits the next year (about 870 vessels lost their permits because of low activity) and decommissioning (50 vessels). The increase number of larger vessels can partly be explained by rebuilding or changing to a larger vessel and a recruitment program for young fishers.

Average Age, Coastal Vessels in Group I, 1990 - 2002

Vessel length	1990	2002	Change
Less than 10 meters	15.3	23.7	8.4
10 - 15 meters	18.2	22.0	3.8
15 - 21 meters	24.3	33.1	8.8
21 - 28 meters	21.1	22.0	0.9
Average (all)	17.3	24.0	6.8

Source: Directorate of Fisheries, 2003.

The renewal of the coastal fleet has been too low to maintain the average age of the fleet from 1990 to 2002. The average age increased by 7 years in the 12 year period to an average of 24 years. Especially the smallest vessels and vessels between 15 and 21 meters show a weak ability for renewal.



As an indicator of the capacity of the fleet, a technical parameters such as gross tons (GT) is used as a measurement of the volume of a vessel, giving a good indication on the ability to store fish. Another indicator is engine power. Both of these indicators show a considerable increase over the period, especially for the smallest and the longest vessels.



Calculated technical capacity development, 1990 - 2002

Source: Standal et.al. 2003

A calculated measure of the technical capacity has been done by Standal et.al. (2003). According to these calculations, made by comparing the average length of vessels, Kw and GT in 1990 to these parameters in 2002, the capacity of the coastal fleet has increased by 30% in the period. The calculations indicate a decrease of 51% for the smallest group, increase of 61 per cent for vessels between 10 and 15 meters, an increase of 14% for vessels between 15 and 21 meters and an increase of 149% for vessels between 21 and 28 meters.

91. The SQS has been introduced for coastal vessels between 15 and 28 meters from 2004. As described in section 3.2.2, the SQS is designed for the coastal fleet, and may be seen as a customised version of the UQS, however with more restrictions. The restrictions ensure a long-term regional stability to avoid regional concentration of permits.

92. Table 13 indicates a fleet segment with a current average age about twice the one of the offshore fleet (cf. section 4.1).

	1998	1999	2000	2001	2002	2003
Vessels	539	550	546	515	519	532
All year run vessels	418	388	365	340	400	
Operating profit (%) ¹	13.2	10.5	9.4	13.6	8.2	
Average age (all)	29.8	30.1	30.2	30.6	29.2	29.8
Group quota of Arctic Cod	$160\ 910^2$	$122\ 170^3$	$100 \ 810^3$	$101\ 729^3$	51 816	54 052
Group quota of Arctic Haddock	$43 \ 310^2$	$28\ 060^3$	$19\ 200^3$	25 427 ³	14 173	12 848
Group quota of Arctic Saithe	$36\ 550^2$	42 995 ²	39 610 ²	$45 510^2$	28 829	16 986

Table 13. Coastal Vessels Between 15 and 28 Meters in Group I, 1998-2003

¹ Definition in Table 10

² Group quota for all vessels fishing with traditional gear

³ Group quota for all vessels less than 28 meters in Group I

Source: Directorate of Fisheries 2004

93. It is at present (March 2004) too early to say anything about the effect of the SQS on the number of vessels in the coastal fleet between 15 and 28 meters. However, we know something about the effect the UQS has had. The SQS may be considered to be a little more favourable than the UQS because it gives the additional quota indefinitely. On the other hand, the restrictions of the system (cf. Box 3) may decrease the attractiveness of the SQS.

Table 14. Estimated	Number of Scrapped	and Remaining	Vessels with a 10	to 40% Effect of SQS
		0		

	Vessels	10 % effect		20 % effect		30 % effect		40 % effect	
Vessel groups	2003								
		Scrapped	Remaining	Scrapped	Remaining	Scrapped	Remaining	Scrapped	Remaining
21 to 28 meters	185	19	166	37	148	56	129	74	111
15 to 21 meters	340	34	306	68	272	102	238	136	204
Total	525	53	475	105	420	158	367	210	315

Source: Ministry of Fisheries 2003

94. According to Table 14, if SQS reaches a 30% effect the fleet will be reduced by 158 vessels, leaving each of the remaining 367 vessels in the group with an increased share of the TAC of cod, haddock and saithe per vessel.

95. If it is assumed that vessels using SQS will increase their quotas by 80%, and that the remaining 20% of the scrapped vessels' quotas are shared between the remaining vessels, then it is possible to estimate the increase in quotas with a 10 to 40% effect of SQS. This is illustrated in Table 15.

Effect	SQS Vessels	Others
10 %	82.2	2.2
20 %	85.0	5.0
30 %	88.6	8.6
40 %	93.3	13.3

Table 15. Increased Quotas (%) for the Remaining Vessels with a 10 to 40% Effects of SQS

Source: Ministry of Fisheries 2003.

96. According to Table 15, an estimated effect with 30% use of SQS will increase the quota by 88.6% for those vessels having used SQS and 8.6% for those that have not.

97. In Table 16 the figures from Table 15 are translated into the amount of additional fish each vessel may catch based on the 2003 Atlantic Cod quota. The table shows how many extra tons of cod that vessels having used SQS and those that have not may catch the next year.

Table 16. Increased Quotas of Atlantic Cod for Remining Vessels with a 10 to 40% Effect of SQS

Vessel groups	21 – 28 me	eters	15 – 21 meters (Quota: 105 tons)			
	(Quota: 137	tons)				
	SQS Vessels	Others	SQS Vessels	Others		
10 %	99.5	2.7	71.5	1.9		
20 %	102.9	6.0	74.0	4.4		
30 %	107.2	10.4	77.1	7.5		
40 %	112.9	16.1	81.2	11.6		

Source: Ministry of Fisheries 2003.

98. With the example of a 30% use of SQS, 56 vessels in the 21 to 28 meters group will be scrapped leaving 129 vessels left in the group (Table 14.). In other words, if 56 vessel owners have used SQS, then these vessels will have increased their quota by 88.6%, and the remaining 73 vessels have increased their quota by 8.6% (Table 15). In terms of cod, they have respectively increased their quota by 107.2 tons and 10.4 tons respectively (Table 16).

99. As a consequence of the introduction of SQS, the decreased number of vessels will have an effect on the employment of fishers in Norway. Vessels between 15 and 28 meters normally employ between three to eight people. By assuming that vessels between 15 and 21 meters employ three fishers each, and vessels between 21 and 28 meters employ six fishers each, an effect of 30% use of SQS will decrease the employment by 630 fishers (Table 17).

	Employed					· · · ·			
Vessel groups	2003	10 % effect		20 % effect		30 % effect		40 % effect	
		Less	Left	Less	Left	Less	Left	Less	Left
21 to 28 meters	1 100	110	990	220	880	330	770	440	660
15 to 21 meters	1 000	100	900	200	800	300	700	400	600
Total	2 100	210	1 890	420	1 680	630	1 470	840	1 260

Table 17. SQS's Effect on Employment

Source: Ministry of Fisheries 2003.

100. Considering the vessels 'origin along the Norwegian coast, there are not likely to be systematic geographical differences in the use of SQS. As a consequence of restrictions (as elaborated in section 3.2.2), the market of buying or selling is limited to vessels within the same county. More permits in fewer hands may be the situation within counties, but concentration on the distribution of permits between the different counties will be fairly limited.

4.3 Experiences with Quota Exchange System (QES)

101. The Quota Exchange System is not designed to reduce capacity, but to enable the fishers to make different quota arrangements in accordance with their special needs. As described in section 3.2.1, fishers can use the QES as a temporary arrangement in situations where it is more profitable or convenient to cooperate with other vessel owners in fishing more than one quota, or to specialise in certain fisheries.

102. QES has been implemented as a temporary arrangement for the coastal fleet for 2004. It is at present (March 2004) too early to say anything about the effect of the QES. Based on an evaluation to be done in 2004, a recommendation will be forwarded to the Norwegian Parliament on the future of the QES.

103. QES may be quite similar to an ITQ system. However, the limitations in the QES, such as only being able to use the system for three out of five years, decrease the transferability. The overall idea behind the QES is to provide a more flexible and economically efficient system than today's regulation regime, to enable the small-scale coastal fleet to fish more in accordance with seasonal variations and geographical differences. Even if the system does not reduce capacity, it is expected to increase the effectiveness and decrease the cost of fishing.

104. Since QES only allows temporary arrangements, the system will have no permanent effect on employment or concentration of permits.

4.4 *Effects of market-based incentives systems implemented*

105. The Unit Quota System has led to a reduction of 34% of the cod trawler fleet during the 8 years it has been in effect. That may be considered as moderate, bearing in mind that the overcapacity in this fleet is still considerable. However, since the last adjustment of the UQS in 2000, the fleet has been reduced by 27% and will probably be reduced further in the coming years.

106. For the purse seine fleet, the UQS led to a 15% decrease over the last 8 years, whereas 12% relates to the present regime. The recent economic performance of the purse seine fleet shows the highest operating profit among all Norwegian vessel groups, which should indicate a vessel group fairly well adapted to the current resource base. However, decommissioning schemes reduced the number of purse seiners by more than 60% before the UQS was introduced to the fleet. The favourable resource situation for this fleet must also be considered before judging how the UQS has fared.

107. The long liner fleet has since been reduced by 52% the introduction of UQS in 2000, and has in the same period reduced the average vessel age from 25 to about 18 years.

108. The last example shows that the UQS has effects on the capacity situation in the fleet.

109. It is too early to draw any conclusions on the effect of the SQS. The analysis of the fleet done in the chapter indicates a coastal fleet with overcapacity, and the SQS is designed to change this. The introduction of the SQS will not change the number of annual permits of groundfish species held by the coastal fleet located in the northern counties. There will probably be a centralisation within the county, as some communities have competitive advantages towards others when meeting new market demands, and the implementation of SQS will probably speed up that process. But increased income will in the long run benefit the coastal communities.

5. The Reform Process Towards Using Market-like Instruments

110. The fishery sector is an important political issue, and the government has to consider this in its fishery policy decisions. Moreover, the fact that the fishery sector is so concentrated regionally strengthens this importance. The opposition from the fishery industry was a decisive factor behind Norway's decision not to join the European Community in 1972 as well as in 1994. Fisheries will probably continue to be one of the main issues in the discussions on a possible membership to the European Union in the future as well.

111. The fishers early on understood that political influence depended on cooperation. Already in 1926, the Norwegian Fishermen's Association (NFA) was established. NFA organises vessel owners as well as crew members and has traditionally a strong political influence and takes part in discussions and decisions on fishery management, e.g. quota decisions. Norway has a long tradition of user-participation, and the fishery policy is formed in accordance with the views of the fishers, represented by the NFA.

112. The process towards the implementation of market-based management systems to constrain the participation in fisheries started with a collapse in the herring fisheries in the 1960s, followed by an agreement on economic transfers to the industry in 1964, pay-back programs and licensing systems for the offshore fleet. A new resource crisis in the Atlantic Cod fishery in 1990 opened a debate on an Individual Transferable Quota system, and ended with an Individual Vessel Quota system, a closure of the access to coastal fishery, a process towards the long term allocation keys between different fleet groups and a massive reduction in subsidies. The recent years have been dominated by the development of systems to manage overcapacity, ending up with a Unit Quota System for the offshore fleet and Structural Quota System for the coastal fleet.

113. This section will describe part of this reform, focusing on how stakeholders have dealt with the changes and cooperated to the introduction of these instruments. Previous OECD papers² have described economic transfers to the Norwegian fishing industry, which is almost absent in 2004. Hence, this chapter will cover neither the establishment nor the abolishment of these transfers.

5.1 The debate on establishing an ITQ system in Norway

2

114. In the mid 1960s, Norwegian fishers experienced a total collapse in the herring fisheries. The resources were not inexhaustible and the economic consequences of overcapacity became evident, especially through a system where the fishers could claim subsidies to compensate for lack of profitability. The fleet had to be reduced. At that time "limited entry" was the internationally accepted remedy and,

[.]e. AGR/FI(2000)10/FINAL, Government financial transfers and resource sustainability, Case study Norway

through a new law regulating participation in fisheries in 1972 (Act on the Regulation and Participation in Fisheries), the principle was introduced in Norwegian fisheries.

115. There were four different objectives attached to the implementation of the law:

- Fishing capacity had to be adjusted to the carrying capacity of the resources.
- Profitability had to be achieved by the fleet as well as the individual operator.
- The license regime should contribute to a "reasonable (geographical) distribution of the fleet".
- The exclusive access rights of bona fide fishers should be protected.

116. The geographical distribution objective clearly indicated that the fisheries policy was part of a regional policy, which in a Norwegian setting meant that the fisheries should contribute to maintaining the settlement pattern.

117. In 1988/89, it was evident that a "cod crisis" was looming. Consequently, the issue of overcapacity was again put on the agenda, and this time it affected the coastal fleet. The issue of an Individual Transferable Quota system (ITQ) was introduced through a report from a working group on the structure of the harvesting sector. The group comprised representatives from the Norwegian Ministry of Fisheries, the Directorate of Fisheries, and the Norwegian Fishermen's Association (NFA). The original idea was to introduce enterprise allocations to the offshore fleet, thereby making it possible for companies with two or more vessels to rationalize the actual catching and then, make it possible for two or more companies to cooperate in reducing effort. This was, by most fishers and politicians, considered to be more or less similar to ITQs. The proposal created a heated debate, with strong opposition from the coastal fishers and politicians. The proposal was not acceptable to the fishers because the fisheries policy was perceived as a regional policy contributing to the settlement pattern.

118. Faced with opposition to the proposal, the Ministry of Fisheries decided to introduce a white paper to the Parliament. Four officials from the Ministry of Fisheries were assigned to draft the first discussion paper, in co-operation with biologists from the Norwegian Institute of Marine Research, and economists and social scientists from Norwegian universities. The report described the existing ITQ-schemes in Australia, New Zealand, Iceland and Canada, and the group presented an overview of different forms of ITQ. The group ended up by recommending different forms of ITQ-systems with strong geographical limitations on transferability. The report discussed various forms of "transferability", including:

- The traditional trading of quotas
- Transfer of vessels with quota
- Enterprise allocations to be "traded" within the company
- Renting quotas on an annual basis
- Co-operative fishing where several owners may decide to use one boat to catch several quotas

119. The Ministry's preferred version (pertaining to vessels more than 8 meters) was based on TAC allocation to various groups (vessels and regions) based on historical catch. Individual quotas, given as a share of TAC, would be allocated for a limited period of time (five years) and be subject to an annual resource fee, paid to the government. Quotas should be tradable within groups and regions, while transfers across vessel groups and regions would require permission from the Ministry.

120. By taking the demand for larger flexibility and the need for regional stability into consideration, the Ministry thought the proposal would meet acceptance, not only by the fishers, but by regional politicians as well. However, "the overwhelming majority of those consulted were strongly against ITQs, even in the modified version suggested in the draft" (Apostle et al. 1998). The main reason for the

skepticism was the fear of privatization of the commons. The Labor Party (at the time in Cabinet) and a task force within the party found that the question of ITQs was a non-issue on the political agenda. In the revised and final version of the white paper presented to the Parliament, the question of transferability was considerably watered down. In the report from the Standing Committee on Fisheries, the majority rejected an ITQ option.

5.2 The establishment of the Individual Vessel Quota (IVQ) system

121. The question of Individual Transferable Quotas (ITQs) has, since the debate in the Parliament in 1992, not been on the political agenda. However, an alternative to the ITQ-system, the Individual Vessel Quota system (IVQ), was established and implemented to most of the Norwegian fishing fleet.

122. As mentioned, the Atlantic Cod stock was in a serious state in the late 1980s. Due to a sudden and unexpected decline in the size of the Atlantic Cod stock, the TAC was set at 340 000 tons in 1989, down from 630 000 tons the previous year. In 1989, the coastal fisheries were closed after only three and a half months. Because of this, an individual quota system was established during the fall of 1989 and implemented for the 1990 season in the coastal fleet.

123. The fishers, represented through the Norwegian Fishermen's association, had a relatively strong position in the process. The key policy arena for negotiating the IVQ regime was the Advisory Board for Fisheries Regulations³, established in 1983 as the meeting place between the industry representatives and the fisheries authorities on resource management issues (Hoel et al. 1996). While the Council formally only had a role vis-à-vis the Minister of Fisheries, the Council's decision would usually, and particularly if it was unanimous, be very influential (Hershoug, 2003). In this case, the government decision was made during the fall of 1989, based on the recommendation of the Advisory Board for Fisheries Regulations.

124. The IVQ system was a two-tiered system. The most active vessels, as measured by the quantity of Atlantic Cod landed in the 1987-89 period, were put under a vessel quota regime (the priority Group I vessels). These quotas were exclusive, so that the vessel owner had full discretion to decide when or where fish. On the other hand, the less active vessels were allowed to fish competitively under a group quota (Group II vessels). There were no restrictions on participation to this fishery, as long as the fisher fulfilled the requirements of being a registered fisher. However, the allocation to this group was about 10% of the quota given to the coastal vessels in Group I.

125. When the IVQ system was implemented, the dramatic condition of the Atlantic Cod stock made it inevitable to take steps to improve the situation for the full-time fishers. However, the IVQ regime was initiated as a response to the resource crisis, and initially the idea was to abolish the system once the situation returned to normal. This may have been the main reason why the IVQ system was adopted so quickly, with relatively few objections.

126. Even if both the fisheries authorities and the Fisherman's Association regarded the IVQ system as transitional, the IVQ system became permanent. When the crisis passed, the established regime remained. During the 1980s, the annual landings from the coastal fleet averaged about 180 000 tons. Assuming this represents a "normal" situation in the fishery, the crisis was over in 1993 when landings returned to about this level. Despite this, with reference to the over-capacity in the coastal fleet, the Ministry of Fisheries argued that the quota was still not large enough to allow all vessels to have a normal level of operation. In spite of its earlier position, the Fisherman's Association supported this view. One reason for the change of view is suggested by Holm et al. (1996) explaining that the owners of vessels in

³ See section 2.5

priority Group I, discovered the benefit of being inside a closed group. It allowed them to fish their quota when it suited them, or to sell the vessel with the additional quota value.

5.3 The establishment of long-term allocation keys

127. While TACs in the important Atlantic Cod fisheries were already introduced before the establishment of the Norwegian EEZ, there was no effective allocation to different fleet groups. All cod trawlers got IVQ's from 1976 and onwards, but the coastal fleet could fish with only minor restrictions until 1986, due to an agreement between Norway and the former Soviet Union. However, following the 1989 Atlantic Cod stock crisis, a fixed allocation key was required. Overcapacity was considered the main problem, but representatives from the offshore fleet were reluctant to start restructuring as long as there was open access in the coastal fleet. They feared that new entrants to the coastal fleet would immediately consume any effect of their restructuring. Hence, a fixed allocation key was needed. This was also acknowledged by the NFA. After intense debate, the so-called "trawler ladder", an allocation key providing the sharing formula between the offshore fleet and the coastal fleet, was finally decided in 1989. Based on the five-year allocation key, imposed and followed up by the Ministry of Fisheries, the task of scaling down the trawler fleet could start. The "Unit Quota System" was introduced in 1990.

128. Overcapacity proved also to be a problem in the pelagic fleet as technical improvements increases efficiency. In 1994, a new long-term allocation key was proposed, this time comprising of more species (including herring, mackerel, capelin as well as saithe and haddock). Within the NFA this caused a dramatic conflict, especially on the allocation of Atlantic Cod. On one side, there were owners of offshore vessels, demanding a larger quota share and on the other, coastal fishers, demanding what they considered to be the fair share based on historical catches. However, a compromise was reached, leaving the Ministry of Fisheries with a solution that was easy to adapt. At the same time the solution was difficult to counter, as it was already a negotiated solution by the industry itself of a politically very sensitive question. To move even a single per cent of quota from one group to another in only one fishery, would probably break the fragile agreement. The allocation keys were implemented in the industry in 1994 and lasted for 7 years.

129. In 2001, the allocation keys were up for new discussion. This time the threats of breaking up and leaving the organization was clearly pronounced by the subordinate organization of the offshore fleet, centering on even minimal changes to the previous allocation keys. The case had been thoroughly prepared through a large committee, consisting of fishers from most fleet segments. The committee managed to obtain a compromise and after days of negotiation, a similar compromise was reached in the NFA, now binding the allocation for the next six years.

130. As a part of the agreement, the Ministry was requested to close access to a number of fisheries, that is, to limit the participation according to certain criteria. It was also a request that led to the so-called "Finnmark model", whereby the coastal fleet is divided into four length-groups, each group being allocated a quota according to a historical share. These requests did go very well along the lines of the Ministry of Fisheries work to take further steps to reduce capacity in the coastal fleet. The "Finnmark-model"⁴ was implemented from 2002, as well as the new allocation keys.

5.4 The establishment of quota-transfer systems in the coastal fleet

131. During 2002, the Ministry of Fisheries introduced three important changes to the Norwegian access regime.

4

Named after the northernmost county of Norway, where the system was invented.

132. The <u>first</u> was a hearing document presented in the spring of 2002, proposing to close the remaining open access fisheries. In the northern part of the country, the saithe and haddock fisheries had remained open, even if the most important demersal fishery, the Atlantic Cod fishery, was closed in 1990. The Ministry argued that no further restructuring in the coastal fleet could take place before there was a de facto closed access to all the fisheries.

133. The proposal suggested a dual structure, as already implemented in the Atlantic Cod fisheries, giving the priority Group I vessels of the cod fisheries an individual vessel quota on saithe and haddock according to vessel size. Vessels not holding a permit in the Atlantic Cod fisheries had to qualify according to their historical catch of saithe or/and haddock or/and cod to be given a permit to the new Group I, now enlarged to include cod, saithe and haddock. Vessels not qualified were given access in the open fisheries of Atlantic Cod, saithe and haddock in the so-called Group II.

134. The proposal was supported by the NFA, and the protesting groups were weak, being represented by the Norwegian Coastal Fishermen's Union (NCFU) and various local politicians (Hershoug 2003). It is also claimed that the concern of the NCFU had to be considered, as these fisheries have constituted the backbone of many small-scale and part time fishers in marginal regions (Hershoug 2003). During 2002, the last open fishery of mackerel was closed, as well as the coastal fisheries of Norwegian Spring Spawning herring.

135. The <u>second</u> proposal concerned a decommissioning scheme for the coastal fleet partly financed by a fee on first hand sales of fish. The idea is to build up a so-called Structural Fund over a five year period aimed at buying out and scrapping coastal vessels less than 15 meters. This is contrary to tradition in Norway, where the Government has financed all decommissioning schemes up until now. The principle "All pay, some receive" was chosen to establish a fund big enough to have an effect, however keeping the fee as low as possible.

136. This proposal was also supported by the NFA, on the condition that the government had to contribute to the fund at least as much as the industry themselves. The government has so far done that (for the year 2003 and 2004), but has given no guarantee for further contributions to the fund.

137. The <u>third</u> proposal concerned the actual restructuring of the coastal fleet, considered having substantial overcapacity (see Box 5). From the Ministry's point of view, it was important to offer the coastal fleet an option that they would choose to use, depending on each vessel owner's individual situation.

138. In the summer of 2002, after a period with some consultation with stakeholders, the Ministry send out a hearing document suggesting two main directions of policy: either co-operation through the exchange of quotas between various vessels (the Quota Exchange System), or a more permanent restructuring through the merging of vessels that each holds a fishing permit (the Structural Quota System) (cf. section 3.2.2). The hearing document, together with the hearing document on the Structural Fund, quickly became the main topic discussed in the fisheries media. It was especially three groups who opposed the proposals - the Norwegian Coastal Fishermen's Union, various local politicians and some representatives from different academic institutions. They argued that these systems were too close to an ITQ system, that there was no overcapacity in the smaller coastal vessels (a number of small-scale fishers have a technical capacity which they choose not to apply), and that it would not go along with the policy on employment and settlement in remote areas. Finally, there were arguments that the consequences of this new proposal was not discussed thoroughly enough in the hearing document. Nevertheless, the NFA asked for some extra time to be able to have a thorough discussion on the proposals within the organization, ending up with supporting all the proposals with some minor suggestions for change.

139. To come to terms with the criticism, the Ministry of Fisheries decided in December 2002 to present the proposals to the Parliament. In May 2003, the government presented the white paper "Structural measures towards the coastal fishing fleet". In the white paper the Ministry of Fisheries gave a review on the policy towards the coastal fleet, trough a description of the different proposals, arguing why it was necessary to reduce the capacity in the coastal fleet, and the expected long-term effect these new instruments would have on employment and settlement in the coastal areas. The Parliament did not immediately embrace the proposals; however the position taken by the NFA was given a great emphasis. After thorough consideration, the majority went along with all the proposals with only one minor change during the spring of 2003.

140. This led to the implementation of the jointly funded decommissioning scheme from the summer of 2003, the SQS and a trial period for the QES from 2004. All together, these new regimes are considered important reforms, affecting about 3,200 vessels.

5.5 From open to closed access

141. As described in section 5.1, the Norwegian Government presented a white paper to the Parliament discussing ITQs in 1992. The outcome of the discussion at that time made it evident that it is necessary to have TACs and closed access, and that the exclusive right to fish is distributed to a limited number of fishers based on tradition. However, it was not considered legitimate that someone should be given an exclusive right to trade and make profit from the fisheries resource, without actually fishing. The pure forms of an ITQ system have therefore not been implemented in Norwegian fisheries.

142. As of today, the focus is on profitability within each vessel group. Approximately 95% of the catch value comes from access-regulated fisheries. The TACs are distributed to the various vessel groups through fixed allocation keys, and are further allocated as IVQs. Different quota-transfer systems such as the UQS, the SQS and the QES have been developed to meet the challenge of an increasing overcapacity due to technical development of vessels, gear and equipment. The management instruments implemented leave the responsibility for adjusting the fishing capacity to the available resources to the industry, and thus secure higher profitability. However, it has been a rough and slow process and required a step-by-step approach.

143. Norway has a varied and technologically advanced fishing fleet, encompassing both small coastal vessels and large off-shore trawlers and purse seiners. A fleet composed of a variety of sizes has been seen to be vitally important to keep up both employment and livelihood in many coastal communities, but also because a varied fleet of smaller and larger vessels has the advantage of being able to exploit all parts of the fish-stocks, inshore as well as offshore, in a rational fuel- and cost- efficient way.

144. However, the varied fishing fleet has created challenges in designing efficient instruments to managing overcapacity. For Norway, the key to overcome these challenges has been continuous and efficient cooperation between the authorities and the stakeholders in the fishing industry and other affected organisations/institutions.

BIBLIOGRAPHY

- Apostle, R., G. Barret, P. Holm, S. Jentoft, L. Manzany, B. McCay, and K. Mikalsen (1998): *Community, State, and Market on the North Atlantic Rim.* Toronto, University of Toronto Press.
- Hershoug, B., (2002): "The closing of the Norwegian commons". Paper presented at the 11th biennial conference of the IIEFET, august 19-22, Wellington, New Zealand.
- Hoel, A. H., S. Jentoft, K. Mikalsen (1996). User-Groups Participation in Norwegian Fisheries Management. In M. Chang Zhang, M. L. Windsor, B. McClay, L. Husak and R. Muth (Ed.) Fisheries Utilization and Policy. Theme 2. Proceedings from the World Fisheries Congress. In press. New Dehli: Oxford and IBH Publishing Co.
- Holm P., S. A. Raanes and B. Hershog (1996): "Political Attributes of Right-Based Management Systems: The case of Individual Vessel Quotas in the Norwegian Coastal Cod Fishery" in Symes, D. (Ed.) *Property rights and Regulatory Systems in fisheries*, Oxford, Fishing News Books.
- Norwegian Ministry of Fisheries, St.meld. nr. 58 (1991-92), "On structure- and regulation politics towards the fishing fleet.".
- Norwegian Ministry of Fisheries, St.meld. nr. 20 (2002-03), "Structural measures towards the coastal fishing fleet".
- Standal D., H Aasjord, B. Enerhaug 2003. Appendiks 8 in, St.meld. nr. 20 (2002-03), "Structural measures to the coastal fishing fleet", Norwegian Ministry of Fisheries.