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**The Tragedy of Soft Choices:  
capacity accumulation and lopsided allocation  
in the Norwegian coastal cod fishery**

by

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## **ABSTRACT**

Following years of reduced stocks and catch quotas, 1989 became the "great divide" in Norwegian cod fisheries management as the open-access regime was abandoned. The government implemented a new regime for the coastal cod fishery based on "access closure" and "vessel quotas" even for the smallest boats, in accordance with the dogma that postulated closing of the marine commons as the unavoidable prerequisite for adjusting fleet capacity to available resources. However, the next ten years revealed that despite acknowledgement of the capacity problem and the use of powerful policy tools, the capacity of the coastal fleet continued to expand. This paper discuss the processes that have led to a significant increase in the capture capacity of the coastal cod fleet – opposite the intention of the public policy – and a build up of vessels in the large size segments of the coastal fleet. Processes that in particular have involved vessel renewal, technological development, and institutional changes.

## **Introduction and approach**

Following years of reduced stocks and catch quotas, 1989 became the "great divide" in the Norwegian cod fisheries management as the open access regime was abandoned. The government implemented a new regime for the coastal cod fishery based on "access closure" and "vessel quotas" even for the smallest boats, in accordance with the dogma that postulated closing of the marine commons as the unavoidable prerequisite for adjusting the capacity of the coastal fleet to available resources. However, the next ten years revealed that despite acknowledgement of the capacity problem and the use of strong policy tools, the capacity of the coastal fleet continued to expand. How has this come about?

Modern fisheries policy in Norway – and abroad – has wrestled for many years with the problem of how to limit fleet capacity and how to adjust it to the available fish resources. In Norway, post-war development of the fisheries was subsidised by the government through a programme that found its permanent form in the so-called Main Agreement in 1964. During the following 20 years subsidies expanded the capacity of both the fish capture and processing sectors of the industry. Towards the end of the 1980s the subsidies were almost eliminated, but cod stocks had fallen to a historically low level. As resources continued to decline it became obvious that fleet adjustments and other capacity-reduction measures were required. With the introduction of the "trawl ladder" – a 30/70 division of the cod resources between the high seas (trawler) fleet and the coastal fleet in 1989, a long-term solution to a basic conflict regarding the relative dimensions of the coastal and high seas fleets was believed to have been found. At the same time, a temporary vessel-quota regime was introduced in the coastal cod fleet. The objective of this regime was to adjust capture capacity to the available resources and to increase capture profitability by structural changes (Ministry of Fisheries, 1991). However, the fishing fleet was ageing and the need for a fleet renewal programme added to the difficulties of capacity reduction. Hence, the new policy needed to mandate exchange of capacity in addition to removal of capacity. The government's response was to implement a dual and somewhat contradictory policy that attempted to phase out selected types of vessel in order to reduce total catch capacity while marketing the bright future of the fisheries to other groups in order to attract investors to pay for the exchange of capacity and ensure fleet renewal. The Ministry of Fisheries instructed the State Investment Bank<sup>1</sup> to

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<sup>1</sup> In Norwegian: Statens nærings- og distriktsutviklingsfond.

prioritise vessels between 15 and 34 metres in their allocation of funds to the fleet renewal programme. Statistics have demonstrated the success of this policy, as the number of smaller coastal vessels has fallen while larger vessels have increased in number during the 1990s (Directorate of Fisheries, 2001).

Despite the extensive modernisation of the coastal fleet during the past ten years, such issues as the transitional internal structure of the fleet and resource allocation have been paid little attention. Closure of the marine commons and introduction of vessel quotas may not be sufficient to adjust catch capacity to the resource base. The coastal fleet is also subject to modernisation processes whereby technological changes drive catch capacity, which will increase even when the fleet structure and number of vessel are fixed. In this paper we study the results of the policy goals of "capacity reduction" and "fleet renewal" in the coastal cod fleet. Our case object is the coastal cod fisheries, which comprise the largest group of vessels in the potentially most profitable sector of the Norwegian fisheries.

Colleagues in Tromsø have analysed the institutional and political transitions within the coastal cod fisheries in a series of articles (e.g. Hersoug et al. (2000), Holm et al. (1998), and Holm and Rånes (1996)). They have shown how fishermen act as economic actors in pursuing their self-interest within existing institutions, but also, when the situation permits, as political actors who try to change these institutions. In this context the authors present the evolution of the vessel quota regime in the coastal cod fishery. The transition accelerated when, as a result of an unexpected cut in the cod TAC, the coastal fleet's quota was reduced by almost 50% (from 200 000 to 116 000 tonnes) from 1988 to 1989. Under the then current regime of open access the situation soon became difficult. In addition, untypically, the cod were easy to catch on the coast in 1989 ("good availability"). In short, this led to a situation in which the fishery was closed as early as April 18<sup>th</sup>. The short-term political solution was to implement an individual vessel quota system in the 1990 season. The management regime was "dual", with an 80/20 division between two groups; I and II. Group I comprised the vessels that were able to document a certain level of activity during the previous three years. Hence, activity decided membership of Group I, while the vessel's quota was decided by the size-group the vessel belonged to – each vessel in a size-group was assigned the same quota. These quotas were initially made exclusive. Group II vessels fished in a competitive fishery within a maximum group quota. There were no prerequisites regarding previous activity in Group II, of which all registered fishermen could be members. The number of vessels fell from 3534 and 4172 in Groups I and II respectively, in 1990 to 2766 and 3536 in 1999. From 1994, continued

membership in Group I required a level of activity defined by the documented capture of at least 40% of the previous year's catch quota. The implementation of the individual vessel quotas (IVQ) regime rested on a common perception (though for highly different reasons) among interest groups of the regime as an appropriate temporary solution to the crisis. However, the system became permanent. Assuming that the average landings of the 1980s indicate the "normal" level, the situation had been normalised by 1993; nevertheless, the system remained. Excess fleet capacity was the argument used to prevent the removal of the regime. In 1994, 33% of the quota within Group I was made competitive. In 1995 the system was extended and the whole quota made competitive. However, the division into Groups I and II was left in place. Today, the system produces exclusive vessel quotas when the availability of cod is high and maximum vessel quotas when availability is low and, according to the Tromsø school of thought, thus adds a healthy dose of flexibility to the regime.

Our contribution to this line of research is to study in more detail the process of capacity expansion within this rather rigid regime. In particular we focus on technological development, which has transformed capacity from a fixed into a dynamic measure. Capacity cannot be measured solely by vessel length, as one vessel-metre represents higher capacity today than it did a decade ago. This study thus analyses how this expansion of capacity has taken place within the rigid "closed access" and "vessel quota" regime of Group I, and the secondary effects of this expansion.

The paper is a desk study based on statistics obtained from various public sources as well as reports and scientific articles.

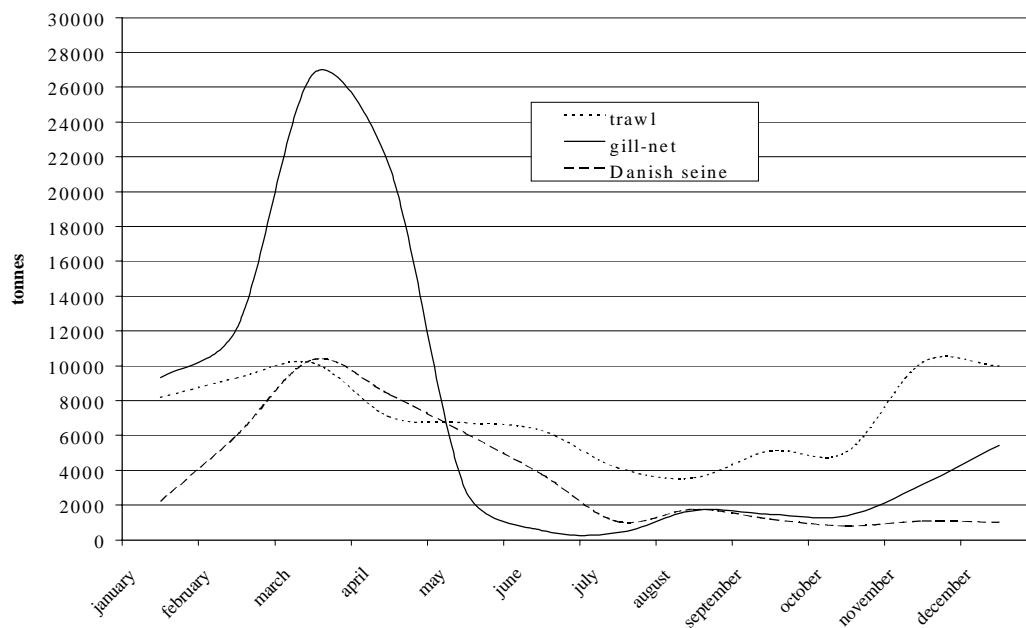
The core problem dealt with by this article – the problem of capacity expansion – is presented in the following section. Global and national external trends grouped together as "market orientation" heavily affect this process. Technological development in a dynamic perspective is one side of market orientation. In sum, as explained here, this development hampers traditional policy implementation. This is followed by a section on how quota transfers take place by the use of correction-dates, followed by a section on real adaptations to the new regime. Finally the modernisation of the coastal fleet is discussed. This discussion centres on the process that took place in the 1990s, with particular emphasis on reciprocities between technological change, resource fluctuation, and capacity expansion.

## **Regulation and the "problem" of increased capture efficiency**

An important characteristic of the fishing industry is the strong mutual reciprocity between the capture and the processing sectors (Jentoft, 1984). The nationalisation of fisheries resources via the introduction of the 200 mile EEZ in the 1970s and the liberalisation of the fish trade in the early 1990s contributed to a growing market orientation in the fishing industry (Friis, 1994; Olsen et al., 1997). Demands for better quality and a wider range of products resulted in a call for greater predictability and stability in the supply of raw fish; these have combined to increase the demand for more flexible industrial structures throughout the value chain (Nordic Council of Ministers, 1998). The decision of the Norwegian Ministry of Fisheries to prioritise large coastal vessels as part of the modernisation of the capture sector, for example, was anchored in this value chain perspective.

The Norwegian coastal cod fishery is characterised by a high degree of seasonality and a large number of vessels (Figure 1) (Norges Råfisklag, 2000). The operation of many of these vessels is sensitive to the availability of fish. In addition, several vessels have poor range of operation and thus low mobility and are vulnerable to the growing use of market transactions in first-hand sales. This in turn makes it difficult for the fish-processing industry to carry out long-term planning. The significant fluctuations in the TAC for cod, combined with the coastal fleets' large share of the quota, generate problems for the land-based processing industry (Dreyer, 1999). A stable flow of raw material is required for optimal cost control and effective utilisation of processing equipment. However, the catch sector of the Norwegian industry is in essence still highly regulated (Jakobsen, 1998). Given that fishing is a highly regulated sector, public policy has a strong impact on how the industry is conducted throughout the year (Hernes, 1999). Another characteristic of the coastal cod fleet is that several smaller vessels do not utilise their quota, while larger vessels have the capacity to fish more than their allocated quota. Even in seasons when the Norwegian TAC was at its peak (350 000 tonnes in 1994-95), the profitability of the smallest vessels was not sufficient to sustain a minimum level of reinvestment in vessels (Landsdelsutvalget for Nord-Norge og Namdalen, 1996).

**Figure 1: Average landings for vessels equipped with the most common types of gear used in the cod fishery, 1995-99.**



Source: Norges Råfisklag (2000).

This situation initiated two somewhat parallel processes in the Norwegian coastal cod fishery that both affected the capture capacity of the fleet. First, the total capture capacity of the fleet was expanded. Secondly, a technological refinement of vessels and on-board equipment took place within all size groups as a response to the demand for efficiency and flexibility. In the following, the details of the capacity expansion at fleet level are outlined first, then process of technical refinement.

#### *Increased fleet capacity*

The overall aim of the fleet renewal programme under the current regulations, where the quota was determined by vessel length, was to avoid an increase in total capture capacity. As we shall see, this has not been successful. In order to improve our understanding of reinvestment in the coastal fleet, a presentation of the framework for these investments is useful. Various rationales for the reinvestment programme have been offered, including:

- Increased capture efficiency in individual fisheries
- Increased security and comfort for the crew



- Improved efficiency in processing, catch and end-product quality
- Obtaining larger cod quotas

In what follows we concentrate on the last "rationale" mentioned above; vessel renewal as a strategy for obtaining larger cod quotas. In the 1990s the government decided that a fisherman who increased the length of his vessel or exchanged it for a bigger one would receive a larger quota. This practice was established with the introduction of the so-called "correction date". The logic of the correction date is as follows. The length of a vessel on a particular date determines its quota. However, as the term correction date indicates, the date for determining the vessel length, and thus the quota, was changed retrospectively, and fishermen that had invested in vessel extensions in the mean time benefited in terms of quota shares from the investments. The correction date thus indicates the new date on which the vessel's length is used to determine its quota. An effect of this was that the number of quota factors (QF) of Group I increased. Furthermore, the number of vessels in each size segment of the fleet determines that segment's share of the total quota. The QF determines the size of the individual quota and can be defined as a share of the total group quota. A division of Group I's total quota by the total number of QFs provides the volume in "quota tonnes" by one QF. The individual quota of one vessel is obtained by multiplying the tonnage represented by one QF by the actual number of QF of that particular vessel, which again is determined by the length of the vessel. Thus, a stable number of QFs is important for ensuring a stable framework for the fishermen.

This system of regulation based on vessel quotas (VQ) seems to be a relatively easy system to manage, as each vessel is allocated a quota. However, vessels may be hindered from fishing their quota. In order to ensure that the total Group I quota is caught, a certain degree of "over-booking" was introduced in 1994. "Over-booking" means that the sum of individual quotas is larger than the group quota. Increased over-booking, and maximal quota (MQ) regulation, thus means stronger competition among vessels within the same group. The use of MQs implies that the fishery will be stopped when the group quota has been taken, irrespective of whether or not individual vessels have fished their quotas. However, over-booking is also a flexible way of dealing with the insecurity associated with fish mobility and thus availability (Ministry of Fisheries, 1998).

This system provided fishermen with an opportunity to increase their QFs via the replacement, exchange or extension of their vessels. The new vessel QF occurs when the correction date is moved. As a consequence of the growth in the QF of individual vessels without a corresponding reduction in the number of vessels, Group I's total number of QF increases. An increase in the total QF for a given quota size leads to a situation in which the value of the quotas for one QF decreases (Ministry of Fisheries, 1998).

### *Technological improvement*

According to bioeconomic theory, sub-optimal utility of equipment is a wrong use of the resources of society (Andersen, 1979). This was the rationale for the Ministry of Fisheries' reinvestment programme for vessels between 15 and 34 m in the 1990s (Ministry of Fisheries, 1997). Between 1991 and 1996 the government allocated more than NOK 500 million to loans and investment subsidies, according to Statens Fiskarbank<sup>2</sup>. Reinvestment funding for vessels below 13 m in the same period was NOK 193 million (Statens Fiskarbank, 1992; Statens Fiskarbank, 1993; Statens Fiskarbank, 1994; Statens Fiskarbank, 1995; Statens Fiskarbank, 1996; Statens Fiskarbank, 1997).

Since 1990, the number of vessels below 10 m has been reduced by 58% while all other groups have increased in number (Table 1). The number of vessels in the groups of vessels between 20-25 and 25-28 m has increased particularly strongly, by 67% and 129%, respectively. However, in terms of total number of vessels, Group 1 fell by 24% in the course of this period.

**Table 1: Number of Group 1 vessels, 1990 and 2000.**

Vessel length (m)	1990	2000	Change (%)
<10	1940	818	- 58
10-14.9	1058	1239	+ 17
15-19.9	327	343	+ 5
20-24.9	95	159	+ 67
25-27.9	24	55	+ 129
<b>Total</b>	<b>3444</b>	<b>2614</b>	<b>- 24</b>

Source: Ministry of Fisheries (1997).

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<sup>2</sup> In 1997 'Statens Fiskarbank' was integrated into 'Statens nærings- og distriktsutviklingsfond' (SND).

Changes in the technical parameters that determine the catch efficiency of the vessel indicate a process of modernisation. These changes demonstrate a significant increase in vessel capacity (Table 2). Greater beam, depth, and gross tonnage are results of the regulation of vessel length and other parameters. The growth in tonnage is a result of greater complexity, tractive effort and size, all of which require additional power and thus larger main engines. Additional power is needed for on-deck machinery, thrusters and freeze-storage and RSW equipment. Bigger and heavier equipment adds to the demand for more crane power. All of these requirements lead to hulls and superstructures with greater windage, which again require more powerful thrusters in order to obtain better manoeuvrability in the capture operations. The sum of these adaptations has contributed to a significant growth in the cost of construction as well as vessel efficiency. The overall capture capacity in the long-line fleet, for example, has increased by 500% from the 1970s to today.<sup>3</sup> The adoption of net-handling equipment, improved flotation devices and GPS for gear localisation has also significantly increased the efficiency of the gill-net fishery.

**Table 2: Changes in capacity of vessels limited to 70 feet and 90 feet.**

	70 feet			90 feet		
	1975	1998	Change (%)	1985	1997	Change (%)
total cost (million NOK)	4.6	15.5	237	10.0	37.0	270
width (m)	6.0	7.5	25	7.0	9.0	29
gross tonnage	85 BRT	194 BRT	128	194 BRT	358 TE	85
hold (m <sup>3</sup> )	80	150	88	150	205	37
fuel (m <sup>3</sup> )	12	33	175	40	80	100
main engine (Bhk)	450	730	62	540	1500	178

Source: Farstad and Enerhaug (1999).

Based on the data shown in Table 1 and Table 2, a measure for the relationship between the changes in the number of vessels and their capture capacity can be developed (Table 3). The "Capture Capacity Factor" (CCF) indicates the capture capacity of the vessel, which is determined by the size of its hold. Here we use CCF to illustrate the increase in the technical capture capacity of fishing vessels over time. This is a valid measure, because the greater volume of the hold is closely connected to improvements in other technical parameters that determine capture capacity.

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<sup>3</sup> Nils-Roar Hareide (2000): personal message.

**Table 3: Capacity development in the coastal fleet, 1990-2000.**

	number of vessels		% change in no. of vessels	CCF per vessel		CCF per group		net change in CCF	% change in CCF
	1990	2000		1990	2000	1990	2000		
<10 m	1940	818	- 58	4	5	7760	4090	- 3670	- 47
10-14.9	1058	1239	17	12	15	12696	18585	5889	46
15-19.9	327	343	5	50	60	16350	20580	4230	26
20-24.9	95	159	67	80	100	7600	15900	8300	109
25-27.9	24	55	129	150	200	3600	11000	7400	206
>28 m	87	98	13	250	350	21750	34300	12550	58
<b>Total</b>	<b>3531</b>	<b>2712</b>	<b>- 23</b>			<b>69756</b>	<b>104455</b>	<b>34699</b>	<b>50</b>

Source: Åsjord (2000).

In 1990 the CCF per vessel of the vessels below 10 m was estimated to be 4 and the number of vessels 1940, giving a total CCF of 7760 for the group. During the 1990s the vessel CCF of these vessels rose to 5, but the number of vessels in the group fell to 818. Its CCF in 2000 was thus 4090, or a reduction of 47% compared to 1990. In line with the changes in number of vessels, all other length groups reveal an increase in CCF. The 20–25 m group CCF rose by 109%, which is 24% of the total increase for coastal vessels. Similarly, vessels between 25 and 28 m increased their group CCF by 206%.

#### *Capacity expansion summed up*

The government encouraged QF expansion in order to provide benefits to investors. However, a second effect of these investments is a significant technological improvement of vessel efficiency. Both these effects were covered up by continuous TAC increase through most of the 1990s. A basic problem of the fleet reinvestment programme is the increase in capture capacity, capital investment and running costs. These all require a strong basis for operation per unit invested. Given that the quotas of the various length groups have been fixed (and thus no re-allocation among groups can take place), this could reduce profitability for the fishermen who have made such investments. On the other hand, benefiting in terms of larger QFs by making investments in larger and more efficient vessels puts fishermen that run a more modest operation with a sounder economic profile at a disadvantage. The next section deals with this complex.

## **Towards quota transfers**

Against the backdrop of the structural changes that have taken place in the coastal fleet we now analyse the increase in QFs and the structural adaptations to the regulations between 1990 and 1997 (Ministry of Fisheries, 1998). In 1990, the correction date was moved for the first time from January 15<sup>th</sup> to November 16<sup>th</sup>. This implied, as explained above, that everyone who had exchanged his vessel for a larger one or had extended an existing vessel received a larger quota share based on these investments. This offered a powerful signal to other owners who had not invested in new vessels. The prospect of greater profits was opened up by investment, while losses of quota shares was the prospect for those who did not jump on the bandwagon. The correction date was moved again in 1994, and, compared to previous years, investments increased significantly this year. The correction date routine was repeated in 1995, 1996 and 1997, with the result that fishermen who built new vessels or extended existing ones, or who replaced small vessels with larger second-hand vessels, received a larger quota share corresponding to the new vessel length.

The year 1995 illustrates the effect of a new correction date and the corresponding increase in the number of QFs for the quota situation for each vessel. In that year the value in tonne quota by one QF for vessels below 28 m was reduced from 14.2 to 13.5 tonnes. Transformed into real quota estimates this gave the basis for a tripling of the number of vessels between 27 and 28 m, i.e. an increase from 20 to 61 vessels. According to the MoF (1998) this corresponds to the quota-based costs of the 1995 correction date.

The recruitment of younger fishermen also led to an increase in QFs in the 1990s. In 1991, two "rounds" of recruitment were held. At the same time an old lopsidedness related to the 1990 allocation was corrected, as vessels that had not fulfilled the criteria for the acquisition of quotas before 1989 were now brought into the scheme and contributed to the increase in the number of QFs. The recruitment of 1990 increased the number of QFs by 2290 while the quota arrangements of 1991-1992 increased it by a further 650 QFs (Table 4). In 1994 there was another round of recruitment based on 120 fresh QFs, while the recruitment rounds of 1995, 1996 and 1997 were based on quotas withdrawn from vessels that had not fulfilled the activity requirements.

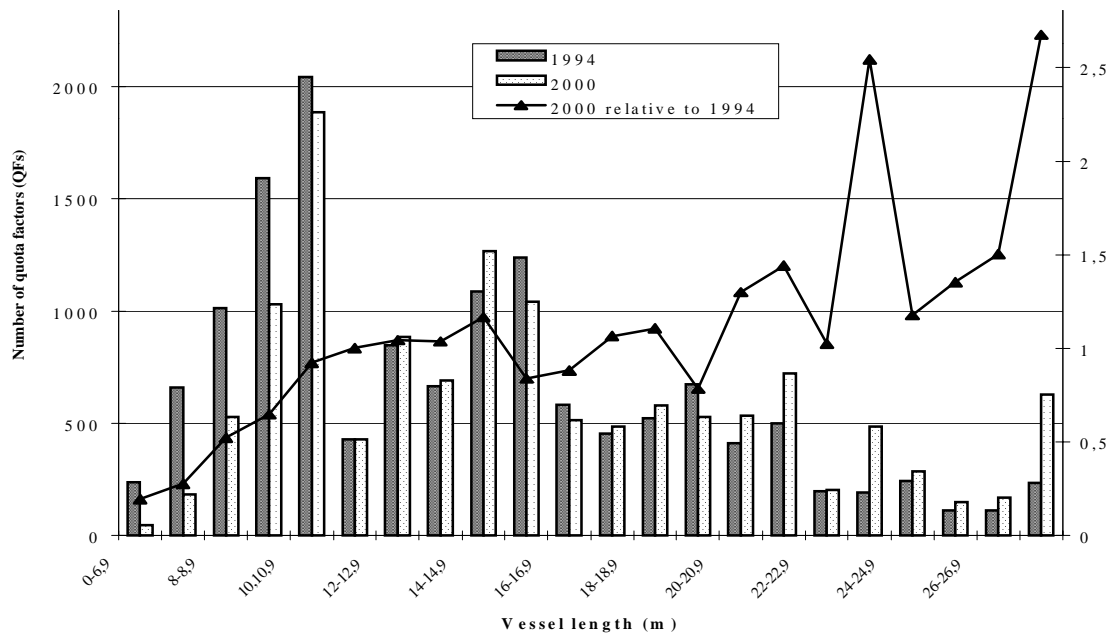
**Table 4: Increase in number of QFs, 1990-97.**

<b>Recruitment</b>	<b>no. QF expansion</b>	<b>move of correction-date</b>	<b>no. QF expansion</b>
1990	2290	1990	60
1991-92	650	1994-95	686
1994	120	1996	250
1997	40	1997	160
<b>Total QF</b>	<b>3100</b>		<b>1156</b>

Source: Ministry of Fisheries (1998).

The increase of 4256 QFs is about one quarter of the total number distributed in 1997. This illustrates clearly that the number of QFs has increased and that the total catch capacity of the Group I fleet has increased significantly (Ministry of Fisheries, 1998). The consequence of the increase in number of QFs, however, is that the disposable group quota must be divided by a larger number of QFs, but one QF in tonnes is smaller than initially was the intention. The fishermen who did not invest in larger vessels subsidised the increase in the number of such vessels. For fishermen that did not contribute to the capacity increase, the use of correction-dates and recruitment thus resulted in a loss of quota shares as these were transferred to fishermen who had replaced smaller vessels with larger ones. If the correction dates and recruitment arrangements had not been implemented, the quotas would have been larger for the fishermen who did not contribute. This is the effect that the MoF (1998) labelled "quota-based costs". Given that the largest length groups increased most in terms of number of vessels (Figure 2), there has been a reallocation of the cod quota from the smallest to the largest vessels.

**Figure 2: Development in number of quota factors, 1994 and 2000.**



Source: Regulation Council (1994; 2000).

The paradox here is that the expansion of the coastal fleet capacity was "paid for" by quota shares taken from fishermen who did not contribute to expansion and the general increase in capacity. The Ministry of Fisheries (1991; 1997) has clearly stated that necessary fleet renewal should not lead to an increase in catch capacity.

### **Adapting to a new regime**

The mid-1990s witnessed a period of continuous expansion of total cod quotas north of 62°N. This explains why minimal attention was paid to the debit side of the restructuring of the coastal fleet. From 1990 to 1996, the Norwegian cod TAC rose from 113 000 tonnes to 340 000 tons, before it peaked at 400 000 tonnes in 1997. At the same time the availability of cod was reduced, contributing to a situation in which smaller vessels found it difficult to take their quotas. The cumulative effects (that is the quota-based costs) of the rise in the number of QFs before 1997 have been almost invisible due to the large TAC increase. The combination of large TAC and poor availability explains the large and rising degree of over-booking in 1994-1997. The fishery was in reality "open" with no quota restrictions for the coastal cod fleet (Director of Fisheries, 1999). However, between 1998 and 2000 the Norwegian TAC fell from 694 000 tonnes to 430 000 tonnes; a 40% reduction. Over-booking has been

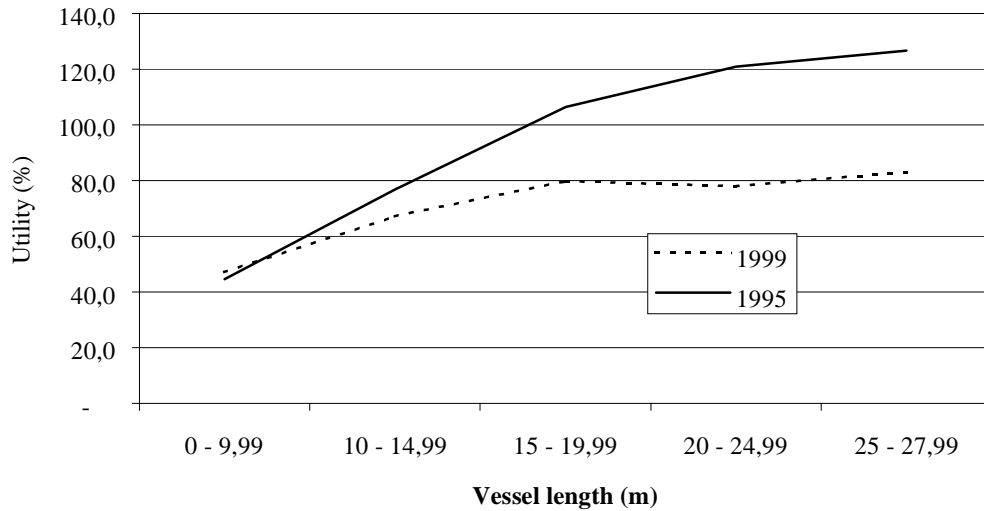
significantly reduced, and for 2000 the Director of Fisheries (1999) suggested the least over-booking since the introduction of the vessel quota regime.

1995 illustrated how the MQ worked in the management of the cod fishery. The group quota for vessels below 28 m in that year was 168 460 tonnes. The regulation was based on a periodisation of the fishery with 158 460 tonnes available for fishing during the first nine months of the year and another 10 000 tonnes after October 1<sup>st</sup>. 1995 started with 25% over-booking at the beginning of the year. As the availability of the cod became less than had been anticipated, over-booking rose by 21.5% on May 1<sup>st</sup> and another 3% on May 24<sup>th</sup>. On July 19<sup>th</sup> the MQ arrangement was cancelled, and on September 19<sup>th</sup> the MQ arrangement that was supposed to start October 1<sup>st</sup> was also removed. The Director of Fisheries (1995) subsequently stated that the degree of over-booking could have been stronger at the beginning of the year and that the first reallocation (May 2<sup>nd</sup> 1995) came too late.

Analysis of the 1995 regulations demonstrates that the coastal fleet has open access to fish most of the year. This situation illustrates how the smallest vessels were unable to fish their share of the total group quota and how this permitted the larger vessels to fish the smaller vessels' share. Over-booking, or the MQ system, can thus be interpreted as reallocation of quotas from smaller vessels to larger vessels that have the capacity to fish more than their allocated share of the quota. While larger vessels utilised up to 130% of their quotas, the vessels in the smallest length groups only fished 40 - 80% of their quotas before the total group quota was fished up (Figure 3).



**Figure 3: Percentage utility by length group, 1995 and 1999.**



In 1999, the situation was different. The group quota for vessels below 28 m was reduced to 122 170 tons, and a strategy of 40% over-booking was planned at the beginning of the year. By October 18<sup>th</sup> the over-booking coefficient was raised to 57%. The 1999 regulation documents the effects of large quota reductions compared to 1995 and the reallocation of QFs. Anecdotally, it may be mentioned that this situation was surpassed this year (2001). At the beginning of the year a management strategy of 40% over-booking was determined. However, the availability of cod was very good throughout the winter, with the result that the cod fishery was stopped on May 13<sup>th</sup>. In order to understand the effects of this regulation process, it is important to separate the quota allocation planned at the beginning of the year from the actual allocation of captured fish at the end of the year. Given the differences in quotas for 1995 and 1999, the degree of over-booking can be presented as a situation in which a growing number of vessels actually fish the assigned quota. This situation reduces the need for and the opportunity to over-book in order to ensure capture of the total group quota. A possible consequence of this is that the vessels in the largest length groups may have to reduce their relative shares of the total group quotas. This in turn may reduce capacity utilisation, further increasing the over-capacity of the largest vessels and increasing pressure on various other fish species. Alternatively, a high degree of over-booking contributes to a situation in which the total group quota is fished before the smaller length groups have fished acceptable shares of the group quota. This effect is the reason why the smallest vessels (below 11 m) have a guaranteed VQ regardless of the group quota situation.

The structural changes in the coastal cod fleet in the 1990s indicate that the regulation system is under severe pressure. As a large proportion of the fleet increases its capture capacity the regulation system loses its intrinsic flexibility based on over-booking, and moves in the direction of a "guaranteed" vessel quota regime. The use of vessel quotas may be an indication of a good match between technical capture capacity and the resource basis, but an adaptation to vessel quotas represents a regulation with reduced flexibility and a more rigid structure. The capacity variations within each length group are evidence that it is no longer possible to achieve satisfactory capacity utility and a just allocation of resources to all vessels and all legitimate actors. This is the reason why the MoF in 2000 proposed to introduce a unity quota system for vessels between 21 and 28 m, which creates an opportunity for one vessel to accumulate quotas and thus a further extension of the fish-rights of the fishermen within the VQ system (Ministry of Fisheries, 2000).

The past 10 years have changed the coastal fishery. Throughout most of the 1990s, public policy legitimised the restructuring of the coastal cod fleet. Now, however, radical proposals for reducing catch capacity in the same fleet segment have been launched. The result is a change from a situation of seemingly open access to a situation in which the government proposes a regulation regime borrowed from the management of the high-seas fleet.

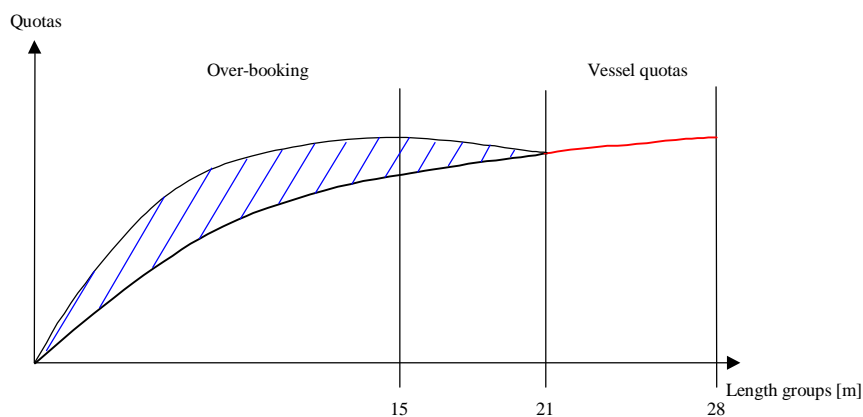
### **Coastal fleet modernisation – new dimensions in the debate on distribution**

With the introduction of the "trawl ladder" in 1989, a difficult allocation conflict was eased out of the way and the modernisation of the coastal fleet could begin. The short-term goal of closing the coastal cod fishery was to prevent damaging pressure on resources. The vessel-quota fishery was a strategy aimed at eliminating sub-optimal fishing practices, ensuring short-term survival of the coastal fleet, and providing room for improved planning and market orientation.

The result of the improvements in efficiency may be that the government rejects the maximal quota regulations and launches unity quota regulations for the larger vessels of the coastal fleet (between 21 and 28 m). However, this option is bound to produce internal allocation conflicts within the coastal fleet, due to the basic difference between the fixed nature of vessel quotas and the use of over-booking in the maximal quota regulations, which have benefited the large coastal vessels. With the presumed reintroduction of "full-blown" vessel quotas in

the coastal fleet, the basic question will be whether the allocation of quotas at the beginning of the year or the real allocation at the end of the year will be used to estimate the size of future fixed vessel quotas. This dilemma can be summarised as follows (Figure 4). First scenario: the quotas for vessels between 21 and 28 m may be based on the quota allocation at the start of the year. This group will lose quotas compared to historical shares of the group quota while vessels below 21 m will have a larger share than they are able to capture. Second scenario: the quota for vessels between 21 and 28 m is based on the actual captured quota at the end of the year. This group will receive a larger share of the quotas than the quotas allocated at the beginning of the year, which in turn results in vessels below 21 meter losing historical quota shares based on allocation at the beginning of the year.

**Figure 4: Schematic illustration of maximal quota and over-booking for length groups 0-15 m and 15-21.35 meter, and vessel quota for vessels between 21 and 28 m.**



Source: Standal (2001).

There are several potential allocation conflicts within the coastal fleet. Internal fragmentation may reduce the fleet's political impact vis-à-vis the high-seas fleet. With the development of modern resource management, the corporate channels between the state and Norwegian Fishermen's Association (NFA) were moved from the Main Agreement to the Regulation Council (Holm et al., 1998). The Regulation Council might split "coastal" from "high seas" within the NFA, with the result that the NFA's impact on fisheries policy will be reduced. Fragmentation of the coastal fleet thus provides NFA with an additional dimension of stress that could affect allocation policy.

Large coastal vessels are very efficient, and coastal vessels between 21-28 m may thus just as well be sorted out and regulated with vessels over 28 m. This points to the fact that developments within the coastal fleet are not merely an internal affair within the group but also involve the established order throughout the fish capture sector.

The modernisation of the coastal cod fishery refers not only to technological improvements. When scarce fish resources are allocated within an increasingly efficient fishing fleet, the complexity and degree of detail of the regulation both increase. The aim of regulation is to achieve a legitimate and "fair" allocation. However, the context of regulation has changed from open and simple to a situation in which the commons has been closed by the introduction of a rights-based quota regime that extends down to the smallest vessels. In addition, the complexity of the system is increased by a more rigid structure that comprises detailed quota regulation, periodisation of the fishery, and by-catch regulations that can be difficult to combine with other quota regimes. The driving force of the development can be summed up as a combination of promising resource forecasts, potential rights-based benefits of investing in technological improvements, and the real rights-based benefits of being one of a decreasing number of fishermen with a complete set of rights.

Soft choices are the small adjustments provided by more or less conscious decisions made by anybody every day. In sum, and by increments, these choices have the potential to counteract grand projects. A system intended to encourage capacity reduction came to expand capacity, even within this rigid regime, and due to the technical improvements, the total capacity expansion is larger than the quota factor build up indicates. Fleet renewal was paid for by the state via investment subsidies and by the non-investing fisherman through the reallocation of quota shares.

The mandate of the NFA's Resource Allocation Delegation (Norges Fiskarlag, 2001) illustrates the significance of negotiated solutions over resource allocation between gear and length groups. The discussion of capacity and allocation in the coastal fleet shows that the traditional division between a coastal and a high seas fleet is outdated. In order to ensure long-term stability in resource allocation, these two concepts need to be paid closer attention.

The MQ regime is based on "collective flexibility" within the fleet. The idea is that the vessels that were native to the area where the cod came close to shore should also be guaranteed quotas to catch the fish. However, as the number of larger vessels increased, the system

became more rigid, not only because of the increase in group capacity, but because these vessels are less dependent on group flexibility – they can "take off" and fish anywhere. The flexibility is internalised. The reinvestment/renewal programme has raised the proportion of larger coastal vessels and improved technology, and thus undermined the concept of collective flexibility and made the situation even more difficult for the smaller coastal vessels that remain in service.

In 1989 the slogan was "never again April 18<sup>th</sup>" – the situation in which an open fishery within a total quota was closed down at the very beginning of the season. In 2001 the fishery was closed down on May 13<sup>th</sup> – but this time within a rigid regulation regime based on a detailed quota allocation scheme. The options embedded in the MQ system have been used up, and the management of the coastal cod fishery is "back to the drawing-board". Fishery managers will have to look elsewhere for models to manage the Norwegian cod fisheries.

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