

COMMISSION OF THE EUROPEAN COMMUNITIES
INTERNAL INFORMATION ON FISCHERIES

5

The regional impact of the EEC fisheries policy

The economic and social situation and outlook for the fisheries sector in certain regions of the Community:

JUTLAND

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COMMISSION OF THE EUROPEAN COMMUNITIES
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JUTLAND

Resumé

Studiet af EF's fiskeripolitiks regionale betydning, den økonomiske og sociale situation og fiskerisektorens fremtidsperspektiver i Jylland, Danmark består af 3 dele.

Studiets del I er en erhvervsøkonomisk/ og -erhvervsgeografisk beskrivelse af det jyske fiskeris udvikling i 1970'erne. Hovedvægten er lagt på en detaljeret beskrivelse af struktur og økonomi i fiskeriets enkelte delsektorer samt på fiskerisektorens samfundsøkonomiske, regionaløkonomiske og lokaløkonomiske betydning og fiskerisektorens organisatoriske og institutionelle forhold.

Studiets del II er en analyse af, hvorledes de senere års ændringer i rammebetingelserne for erhvervsudøvelsen i fiskerisektoren (ressourceforvaltningen, markedsordningerne, erhvervslovgivningen og prisudviklingen) har påvirket fiskeriets delsektorer i Jylland samt en vurdering af tilpasningsmulighederne og -hindringerne for de enkelte delsektorer.

Studiets del III er en vurdering af fremtidsperspektiverne for det jyske fiskerierhverv indenfor de nærmeste 3-5 år under forudsætning af, at de af EF-Kommissionen fremlagte forslag til en helhedspolitik på fiskeriområdet fra 1/1-1981 bliver vedtaget. Vurderingen ender op i en række konkrete forslag til justeringer i Kommissionens oplæg og til initiativer, som bør tages, for at smidiggøre den jyske fiskerisektors tilpasning til EF's fiskeripolitiske målsætning.

Zusammenfassung

Die Studie über die regionale Bedeutung der Fischereipolitik der EG, die wirtschaftliche und soziale Lage und die Zukunftsaussichten der Fischereiwirtschaft in Jütland, Dänemark, besteht aus drei Teilen.

Teil I der Studie enthält eine betriebswirtschaftliche und wirtschaftsgeographische Beschreibung der Entwicklung der jütländischen Fischerei in den siebziger Jahren. Das Hauptgewicht ist dabei auf eine ausführliche Beschreibung der Struktur und der wirtschaftlichen Verhältnisse der einzelnen Teilsektoren der Fischwirtschaft sowie die gesamtwirtschaftliche, regionalwirtschaftliche und lokalwirtschaftliche Bedeutung der Fischerei sowie die organisatorischen und institutionellen Aspekte der Fischerei gelegt worden.

In Teil II der Studie wird analysiert, wie sich die veränderten Rahmenbedingungen für die Ausübung des Fischereigewerbes in den letzten Jahren (Verwaltung der Bestände, Marktordnungen, gesetzliche Regelungen und Preisentwicklung) auf die Teilsektoren der Fischerei in Jütland ausgewirkt haben ; ferner werden die Anpassungsmöglichkeiten und -schwierigkeiten der einzelnen Teilsektoren beurteilt.

In Teil III der Studie werden die Zukunftsaussichten für das jütländische Fischereigewerbe in den nächsten 3-5 Jahren unter der Voraussetzung untersucht, dass die Vorschläge der EG-Kommission für eine umfassende Fischereipolitik ab 1.1.1981 verabschiedet werden. Diese Untersuchung mündet in eine Reihe konkreter Vorschläge für gewisse Anpassungen des Kommissionsvorschlags und für Initiativen ein, die ergriffen werden sollten, um die Anpassung der jütländischen Fischerei an die Zielsetzungen der EG in der Fischereipolitik zu erleichtern.

Summary

The study (Regional effects of the Community fisheries policy : the economic and social situation and the outlook for the fisheries sector in Jutland) consists of three parts.

Part I describes in economic and geographical terms the development of the Jutland fisheries in the 1970s. The main emphasis is placed on a detailed description of the structural and economic aspects of the various sub-sectors, the importance of fisheries in terms of social, regional and local economics, and the organizational and institutional aspects of the sector.

Part II analyses how, in recent years, changed circumstances affecting the fisheries sector (management of resources, market organisations, legislation on employment and price trends) have influenced the various sub-sectors in Jutland ; it also examines how these sub-sectors could adapt and what obstacles need to be overcome.

Part III assesses the prospects for the Jutland fishing industry over the next three to five years, on the assumption that the Commission proposal for a common fisheries policy from 1.1.1981 onwards will be adopted. This assessment concludes with a number of specific proposals for amendments to the Commission proposal and for measures which will be required to facilitate the adaptation of the Jutland fisheries in line with Community policy aims.

Résumé

L'étude consacrée à l'importance régionale de la politique européenne de la pêche, à la situation économique et sociale et aux perspectives d'avenir du secteur de la pêche dans le Jutland comporte trois parties.

La première partie retrace dans une perspective économique et géographique l'évolution de la pêche dans le Jutland au cours des années 1970. Elle est essentiellement consacrée à l'étude de la structure et de l'économie des divers secteurs de la pêche ainsi qu'à l'importance sociale, régionale et locale de cette activité. L'organisation et le cadre institutionnel de ce secteur sont également présentés.

Dans la deuxième partie, on a analysé comment les modifications intervenues ces dernières années dans les conditions d'encadrement du secteur de la pêche (gestion des ressources, régimes de marché, législation économique et professionnelle, évolution des prix) ont influé sur les différentes composantes intrasectorielles de cette activité dans le Jutland et examiné les possibilités d'adaptation et les handicaps propres à chacun de ces secteurs.

La troisième partie est consacrée aux perspectives qui s'offrent d'ici trois à cinq ans aux divers sous-secteurs de la pêche dans cette région dans l'hypothèse où le projet communautaire d'une politique globale de la pêche à compter du 1er janvier 1981 sera accepté.

Elle se termine sur un certain nombre de propositions concrètes destinées à apporter quelques retouches au projet d'ensemble de la Commission et à présenter certaines propositions qui faciliteraient l'adaptation de cette activité régionale aux objectifs communautaires dans le domaine de la pêche.

Sintesi

Lo studio relativo all'incidenza regionale della politica comunitaria della pesca ed alle prospettive economiche e sociali del settore della pesca nello Jutland, Danimarca, è articolato in tre parti.

La prima parte consiste in una descrizione economico-geografica dello sviluppo della pesca nello Jutland negli anni '70. E' dato particolare rilievo ad una descrizione dettagliata delle strutture dell'economica nei singoli rami del settore della pesca, nonché all'importanza socio-economica, regionale e locale e alle condizioni organizzative ed istituzionali del settore della pesca.

La seconda parte dello studio consiste in un'analisi delle conseguenze prodotte sui vari rami della pesca nello Jutland dalle modifiche verificatesi negli ultimi anni nelle condizioni-quadro per l'esercizio dell'attività (gestione delle risorse, regolamentazione del mercato, legislazione del lavoro e andamento dei prezzi), nonché in una valutazione delle possibilità e delle difficoltà di adattamento per i singoli rami del settore.

La terza parte dello studio consiste in una valutazione delle prospettive per l'attività peschereccia nello Jutland nei prossimi 3-5 anni, supponendo che dal 1° gennaio 1981 venga applicata la proposta presentata dalla Commissione CE per un politica globale nel settore della pesca. La valutazione si conclude con una serie di proposte concrete di adattamenti del progetto della Commissione e di iniziative che risulterebbero opportune per agevolare l'adattamento del settore della pesca dello Jutland agli obiettivi della politica comunitaria della pesca.

Samenvatting

De studie van de regionale betekenis van het visserijbeleid van de EG, de economische en sociale situatie en de toekomstvooruitzichten van de visserijsector op Jutland, Denemarken, bestaat uit 3 delen.

Deel I van de studie is een bedrijfseconomische en bedrijfsgeografische beschrijving van de ontwikkeling van de Jutlandse visserij in de 70-er jaren. De meeste nadruk is gelegd op een uitgebreide beschrijving van de structuur en de economie van de afzonderlijke deelsectoren van de visserij en eveneens op de maatschappelijke, regionale en plaatselijke economische betekenis van de visserijsector en de organisatorische en institutionele situatie van de visserijsector.

In deel II wordt beschreven, hoe de wijzigingen van de laatste jaren in de raambepalingen voor de bedrijfsuitoefening in de visserijsector (bestandsbeheer, marktordening, bedrijfswetgeving en prijsontwikkeling) de deelsectoren van de visserij op Jutland hebben beïnvloed ; tevens wordt een overzicht gegeven van de aanpassingsmogelijkheden en -moeilijkheden van de afzonderlijke deelsectoren.

In deel III van de studie wordt een overzicht gegeven van de toekomstverwachtingen voor de Jutlandse visserij-industrie voor de volgende 3-5 jaar, op voorwaarde dat het door de EG-Commissie ingediende voorstel voor een algemeen beleid op visserijgebied op 1.1.1981 wordt aangenomen. Het overzicht eindigt met een aantal concrete voorstellen voor bijstellingen van het voorstel van de Commissie en voor initiatieven die ervoor moeten zorgen dat de Jutlandse visserijsector op soepele wijze wordt aangepast aan de doelstellingen van het visserijbeleid van de EG.

P R E F A C E

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1. INTERNATIONAL BACKGROUND

1.1 Fish stocks and catches in the north-east Atlantic

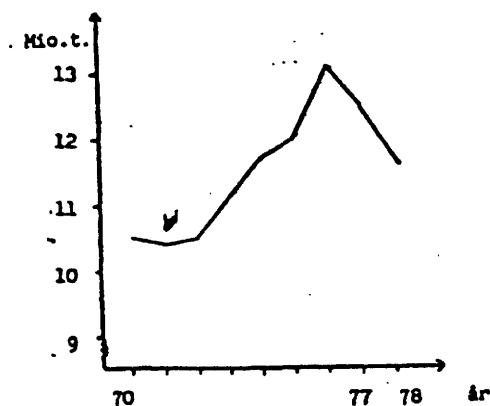
The potential weight of the catch in the north-east Atlantic, in this case identical with the statistical area used by the ICES (cf. map on page 53), was estimated by the FAO in 1971 at 13 million tonnes.¹⁾ The actual catch in that year was 10 million tonnes; the corresponding figures for 1976 and 1978 were 13.2 and 12 million tonnes respectively; cf. Figure 1.1.

FIGURE 1.1

Total catch of fish and shellfish in the north-east Atlantic (statistics published by the ICES), 1970-78.

FIGUR 1.1

Total fangst af fisk og skaldyr i det nordøstlige atlantehav (ICES's statistikområde), 1970-78.



Kilde: Advance Release of Bulletin Statistique vol. 62, 1977.

Source: Advance Release of Bulletin Statistique, Vol.62, 1977.

In the period 1971-77 not all species were fully exploited in accordance with biological principles. Consequently, the high level of catches led to the biological over-fishing of certain species ^{x)}. In the light of this, the FAO considers an annual catch of 10 million tonnes to be the maximum acceptable level in the long term ¹⁾.

x) 'Biological over-fishing' shall be understood to mean that an increase in the actual catch will result if there is a long-term reduction in the intensity of fishing.

The largest catches taken from the north-east Atlantic between 1970-78 were made by Norway, the Soviet Union and Denmark, and lay between 1.2 million tonnes and 3.4 million tonnes. The size of the catch made by these countries developed to a peak in 1976, followed by a noticeable drop in the case of the Soviet Union and Denmark, with the peak in the size of the Norwegian catch not being reached until 1977. Over the period as a whole, the catches made by Denmark and the Soviet Union have shown an increasing trend. The Danish catch in particular has increased steeply; cf. Figure 1.2.

The catches made by Iceland, Great Britain, France and Spain lay somewhere between 0.5 million tonnes and 1.6 million tonnes in the period 1970-78. There was a steep increase in the Icelandic catch in the period 1970-78, but with the other three countries showing a slight fall.

Of the smaller fishing nations with catches of less than 0.5 million tonnes, only the Faroes and Ireland have increased their catches.

In addition to fishing the north-east Atlantic, a number of the countries listed in Figure 1.2 also fish in other waters. This is particularly true of Poland, Portugal, Spain, the Soviet Union, West Germany and East Germany, and to a lesser extent of France and the Faroes; cf. Figure 1.3.

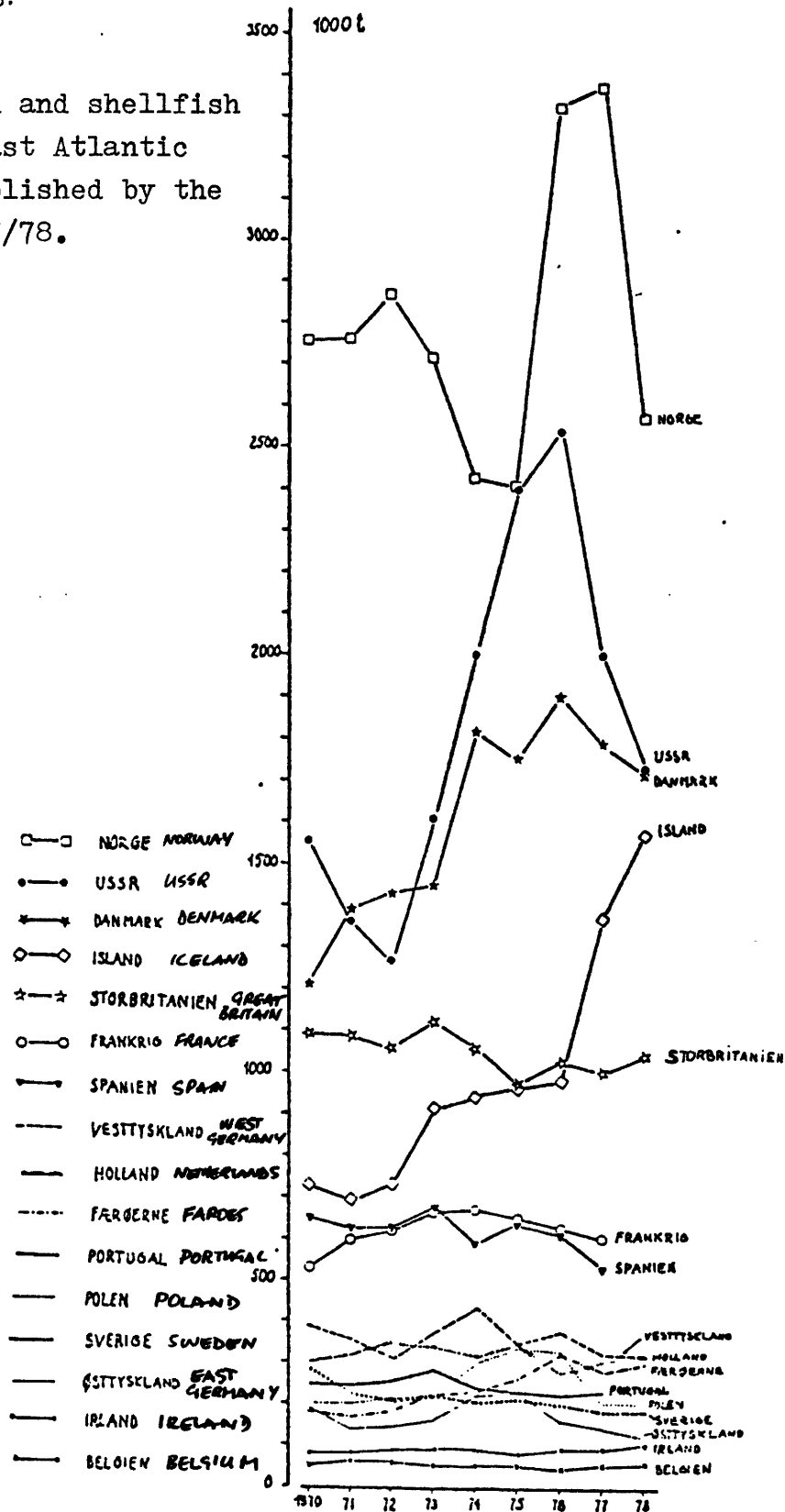
Fishing by Denmark in the north-east Atlantic takes place mainly in the North Sea, the Skagerrak, the Kattegat and the Baltic. Of the Danish catch in 1977, 75% was made in the North Sea, 16% in the Skaggerak and Kattegat, 8% in the Baltic, the Sound and the Great Belt and the Little Belt, and 1% in the waters to the west of Scotland, in the Faroes and in the English Channel. The Jutland fishing industry is centred on the North Sea, with approximately 84% of the total Jutland catch being made in the North Sea, approximately 12% in the Skaggerak and Kattegat, and the remainder in the Baltic, the Sound, the Belt Sea, and in the rest of the north-east Atlantic ²⁾. However, about 6% of the total North Jutland catch for human consumption is made by North Jutland fishermen in the Baltic; cf. Table 2.3.2.

FIGUR 1.2

Fangst af fisk og skaldyr i det nordøstlige Atlanterhav (ICES Statistik-område), 1970 - 77/78.

FIGURE 1.2

Catches of fish and shellfish in the north-east Atlantic (statistics published by the ICES), 1970 - 77/78.

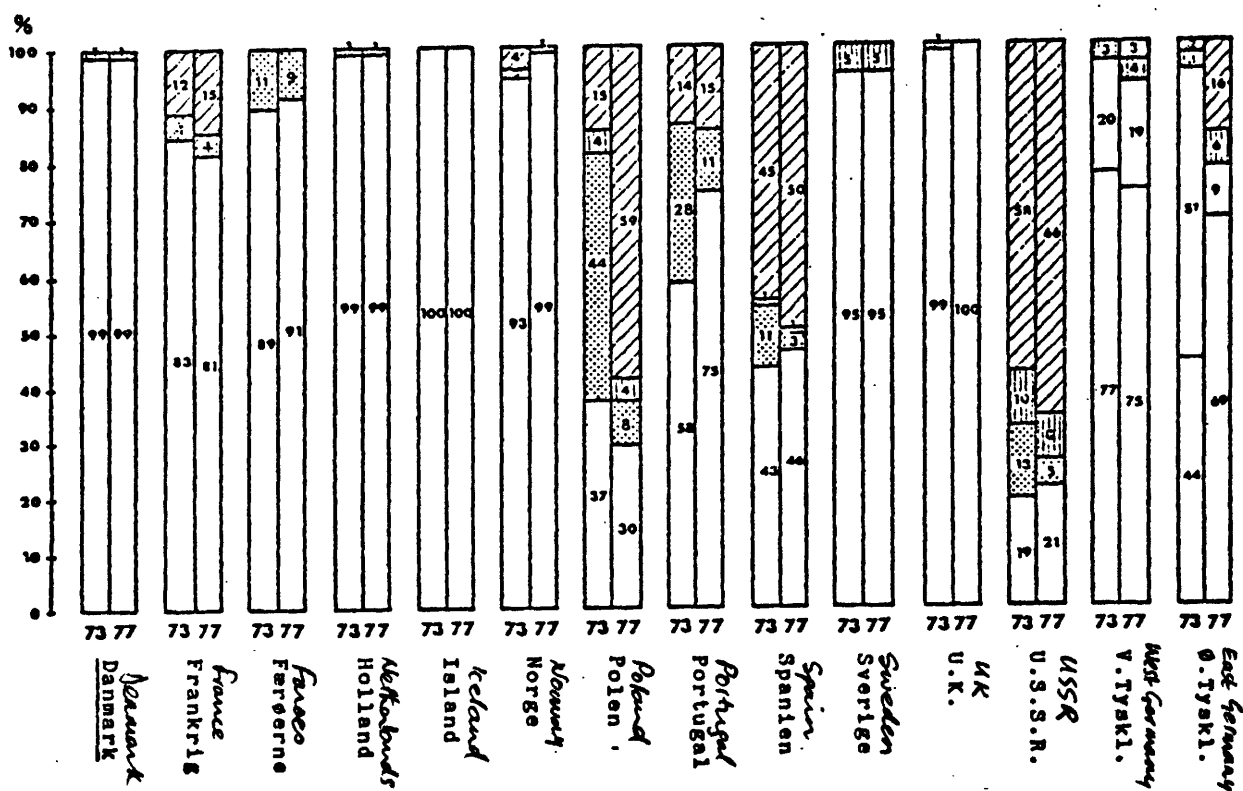
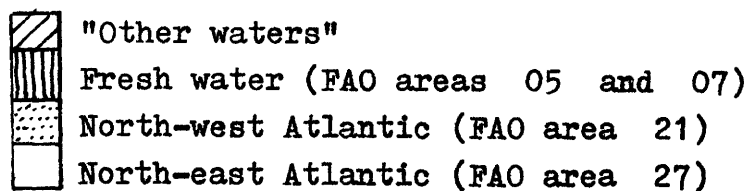


Source :

Kilde: ICES:
Advance Release of
Bulletin Statistique,
vol.63, 1978

FIGURE 1.3

Total quantities caught, by fishing ground. Percentages.
1973 and 1977.



Source: FAO: Yearbook of Fishery Statistics 1973 and 1977.

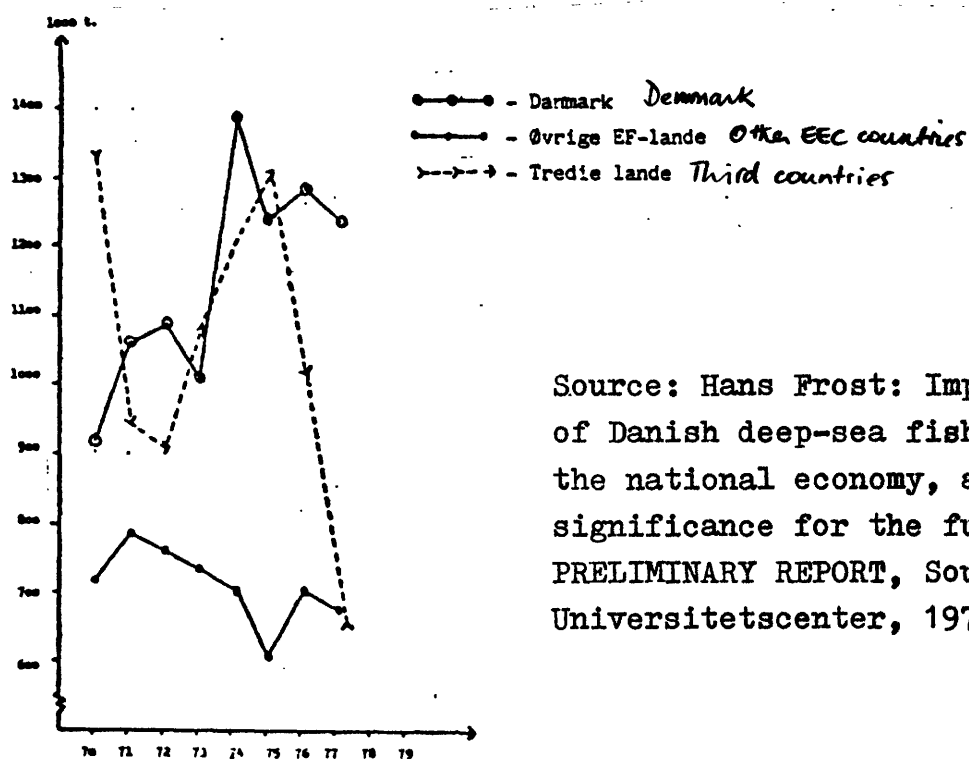
Stocks and catches in the North Sea

Denmark's share of the total catch in the North Sea (ICES area IV) of the following species: cod, haddock, coalfish, pollack, whiting, hake, Norway pout, halibut, Greenland halibut, plaice, sole, herring, sprats, mackerel, horse mackerel, Norway haddock and sand eels (selected species), was 39% in the period 1970-77; third countries accounted for 37% and the remaining EEC countries for 24%.

The development which took place in the annual catches of these species in the period 1970-77 shows that the Danish catch increased from 0.9 million tonnes in 1970 to a maximum of just under 1.4 million tonnes in 1974, after which it fell to 1.25 million tonnes in 1977. Catches made by the other EEC countries, however, showed a gently falling trend, from 724 000 tonnes in 1970 to 676 000 tonnes in 1977. Catches made by third countries ranged from 1 300 000 tonnes to 900 000 tonnes in the period 1970-76, but had fallen to 600 000 tonnes by 1977; cf. Figure 1.4.

FIGURE 1.4

Catches of selected species of fish in the North Sea by Denmark, the other EEC countries and third countries, 1970-77.



Source: Hans Frost: Importance of Danish deep-sea fisheries to the national economy, and its significance for the future - PRELIMINARY REPORT, South Jutland Universitetscenter, 1979.

These species account for more than 90% of the total catch made in the North Sea as far as most of the countries are concerned, although they represent only 40% and 60% respectively of the catches made by France and the Netherlands, since these countries also catch considerable quantities of shellfish and bivalves.

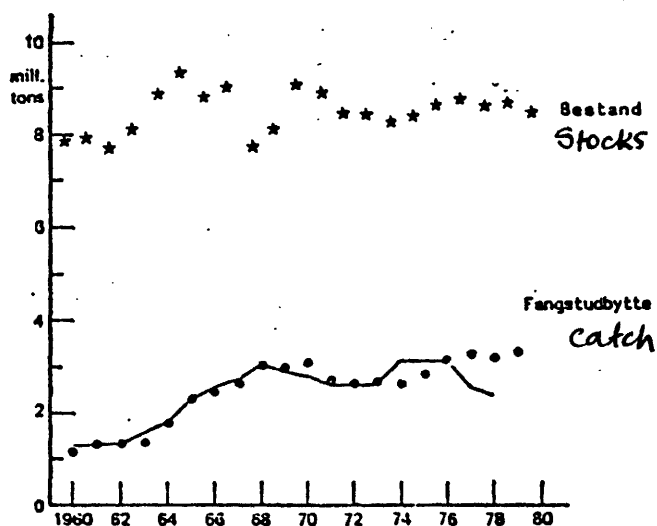
The most important species for the Danish fishing industry are mackerel, herring, cod, coalfish, haddock, whiting, sand eels, Norway pout, sprats and plaice.

Stocks of these species in the North Sea were just under 8 million tonnes in 1960. After fluctuating either side of 8.5 million tonnes in the period 1962-71, stocks finally stabilized at that level; cf. Figure 1.5.

The total catch was 1.5 million tonnes in 1960 and had risen to 3 million tonnes by 1968, remaining at that level until 1976, after which it fell to just under 2.5 million tonnes in 1978; cf. Figure 1.5.

FIGURE 1.5

Stocks and catches of the most important species in the North Sea, 1960-78.



Source: see Note 3.

There now follows a more detailed description of the developments which have taken place in stocks and in the major fishing of those stocks, and of the interplay between the individual stocks.

The description of the interplay between the stocks has been based upon the North Sea model ³⁾ constructed by the Danmarks Fiskeri- og Havundersøgelser (Danish Institute for Fishery and Marine Research). On the basis of the

North Sea model, any changes in the size of the stocks of mackerel and herring will have a critical influence on the stocks of large gadoids such as the cod, coalfish, haddock and whiting, and on the stocks of fish for processing such as sand eels, Norway pout and sprats. Consequently, the developments which have taken place in the stocks and catches of mackerel and herring will be described first.

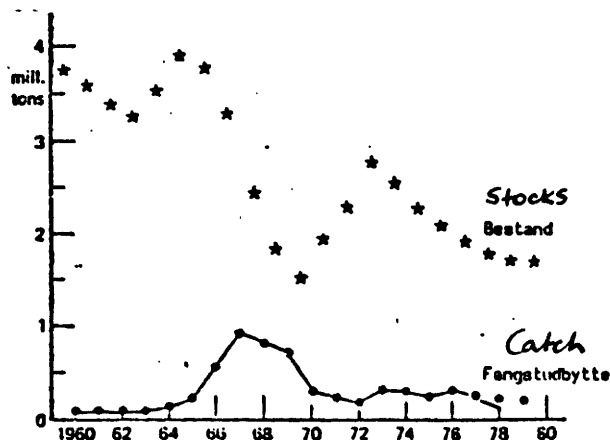
Mackerel

The developments in stocks and catches in the North Sea in the period 1960 - 77 are shown in Figure 1.6. The general picture is one of a steep decline in stocks, from just under 4 million tonnes in 1960 to less than half that figure in 1978 .

Mackerel fishing increased from an insignificant level of catches in the period 1960 - 63 to a maximum of just under 1 million tonnes in 1967 , after which the level fell. The catch stabilized at approximately 250 000 tonnes between 1970 and 1977 , but fell again to about 150 000 tonnes from 1976 - 78 .

FIGURE 1.6

Stocks and catches of mackerel in the North Sea, 1960-78.



Source: see Note 3.

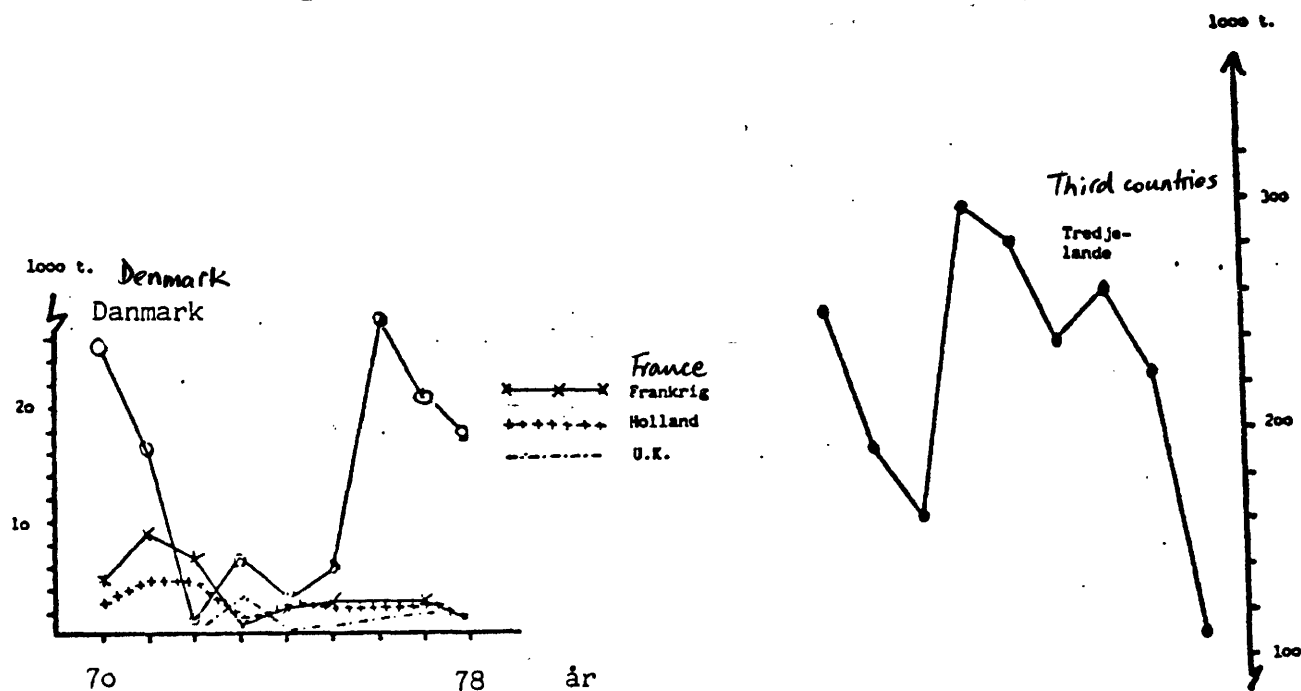
Mackerel fishing, which takes place mainly in the northern part of the North Sea (ICES area IVa; cf. map on page 53), was dominated by third countries between 1970 - 77, whose share of the total catch during the period was 92%. The

most important third countries were Norway and the Faroes. Denmark's share during the period was 5%, with France and the Netherlands each taking 2%.

The most noticeable change in the proportion of the catch made by individual countries from 1970-77 is that between Denmark and the third countries. The Danish catch fell from about 25 000 tonnes in 1970 to 1 000 tonnes in 1972 and then rose again from 6 000 tonnes in 1975 to more than 20 000 tonnes in the following two years; cf. Figure 1.7.

FIGURE 1.7

Catches of mackerel in the North Sea by the most important fishing nations. 1970 - 78.



Sources: EUROSTAT: Fisheries; catches by area, 1968-77
 ICES: Advance Release of Bulletin Statistique,
 Vol.62, 1977. and Vol.63, 1978.
 Danish Ministry of Fisheries.

Catches made by third countries also exhibit similar large fluctuations, with a maximum catch of approximately 300 000 tonnes in 1973 and a minimum of more than 100 000 tonnes in 1978. Mackerel catches made by the other EEC countries ranged from approximately 500 tonnes to approximately 10 000 tonnes.

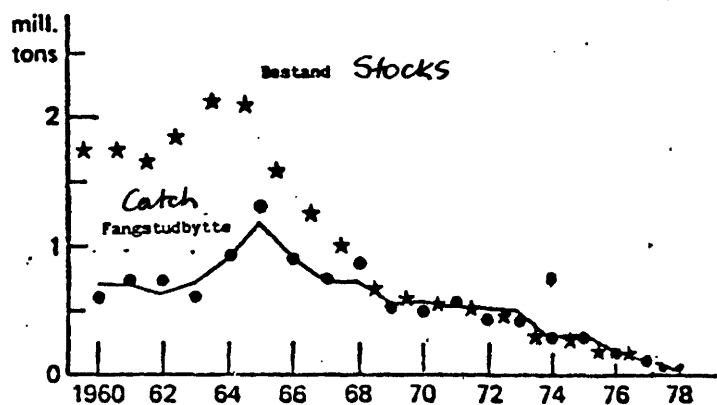
Herring

The developments which have taken place in herring stocks in the North Sea from 1960 - 76 show that a fall has taken place from a maximum of more than 2 million tons in 1965 to less than 100 000 tonnes in 1978; cf. Figure 1.8.

An increase in the catch from 3/4 million tonnes in 1960 to 1.25 million tonnes in 1965 was followed by a fall in the size of the catch. In 1968 the catch was the same size as the stocks, and the catch was on the whole identical with the existing stocks in each year until 1978. In 1978 the catch reached its minimum level of just under 6 500 tonnes.^{x)}

FIGURE 1.8

Stocks and catches of herring in the North Sea. 1960-78.



Source: see Note 3.

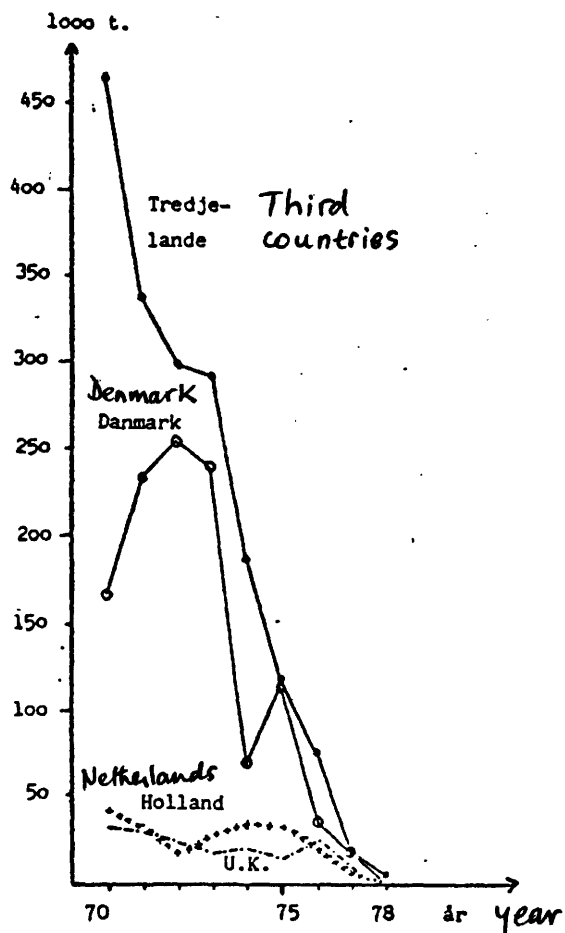
- x) This low level is not, however, unrelated to the introduction of a partial ban on herring fishing in the North Sea with effect from 01.03.1977, and a total ban in 1978.

The total catch taken from the North Sea from 1970 - 77 was divided up between the fishing nations in such a way that the third countries Norway, the Faroes and Sweden together accounted for 54%, Denmark for 34% and Great Britain and the Netherlands for 5% and 6% respectively.

The steep decline in the catch in the 1970s principally affected the catches of the third countries, particularly Norway and the Faroes. There was also a considerable reduction in the Danish catch, with a relative fall of more than 90% , whereas Great Britain, with a fall of about 70% , experienced the smallest relative reduction in catch; cf. Figure 1.9.

FIGURE 1.9

Catches of herring in the North Sea by the most important fishing nations. 1970 - 78.



Source: as for Figure 1.7.

The herring caught by Denmark and the Netherlands was taken mainly in the central North Sea (ICES area IVb), whilst

that caught by Great Britain was taken in the northern part of the North Sea (ICES area IVa).

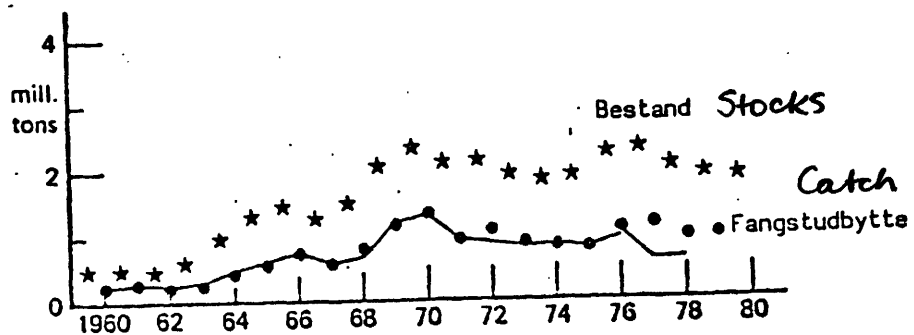
Cod, coalfish, haddock and whiting

As has already been stated above, it is highly likely that any change in the stocks of mackerel and herring will have had a critical influence on the development of the stocks of cod, coalfish, haddock and whiting, for instance. The explanation for this is that any change which takes place in the stocks of mackerel and herring will produce a change in the number of fry, including those of the gadoids, upon which these stocks feed. The steep fall in the stocks of mackerel and herring which took place in particular towards the end of the 1960s thus enabled the increase seen in Figure 1.10 to take place in the stocks and the fishing of the large gadoids between 1960 and 1970. Stocks increased from approximately 1 million tonnes in 1960 to just under 2.5 million tonnes in 1969, whilst catches in the same period rose from 250 000 tonnes to just under 1.5 million tonnes. From 1970 onwards, stocks stabilized at around 2 million tonnes. Nevertheless, this relatively stable development in stocks does conceal an increase in the stocks of cod and whiting and a decrease in the stocks of coalfish and haddock. Catches from 1970 onwards exhibited a falling trend. The noticeable fall in the catch from 1976 - 78 must be viewed against the background of the changes which had taken place with

regard to the Law of the Sea and the improved technical facilities which had become available; cf. Part II, Section 2.1.1.

FIGURE 1.10

Stocks and catches of cod, coalfish, haddock and whiting in the North Sea. 1960 - 78 .



Source: see Note 3.

There now follows a more detailed description of the development in North Sea catches of each of the indicated species in the period 1970 - 77 .

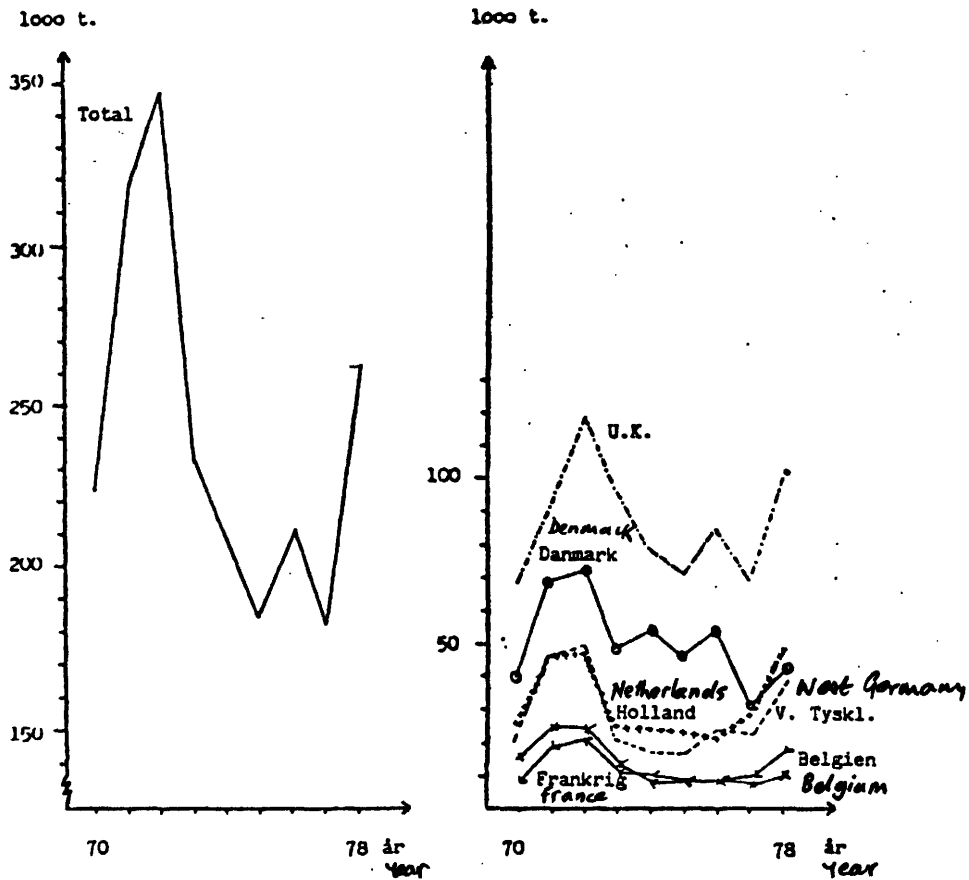
Cod

The total catch in 1977 was in the region of 185 000 tonnes. If one ignores the very large catches made in 1971 - 72, then a fall of about 20% has taken place in the catch compared with the levels at the beginning of the 1970s . Catches increased noticeably, however, in 1978 ; cf. Figure 1.11.

Cod fishing in the North Sea is dominated by the EEC countries, with third countries having taken only 8% of the total catch in the period 1970-77 . The largest share of the total catch was taken by Great Britain (36%), with Denmark taking the next largest share (22%).

FIGURE 1.11

Catches of cod in the North Sea, 1970-78.



Source: as for Figure 1.7.

The development in the catches of cod made by the individual countries shows no significant relative change during the period in question; cf. Figure 1.11.

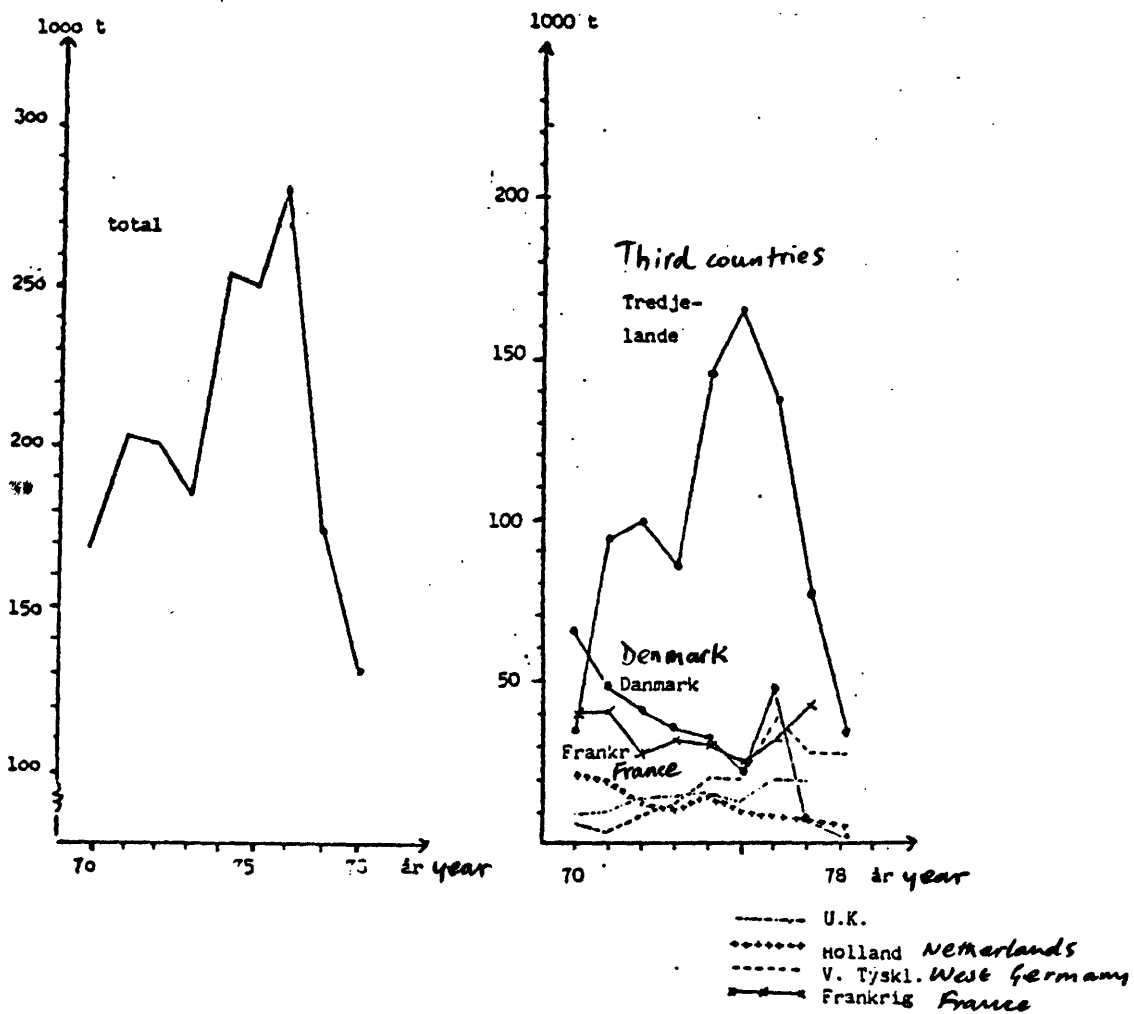
The catches made by Denmark, the Netherlands and West Germany are taken mainly in the central part of the North Sea (ICES area IVb), whereas those made by Great Britain are distributed more evenly over the northern and central parts (IVa and IVb).

Coalfish

The total catch of coalfish in the North Sea rose in the period 1970-76 from 170 000 tonnes to 280 000 tonnes, and then fell to 130 000 tonnes in 1978; cf. Figure 1.12.

FIGURE 1.12

Catches of coalfish in the North Sea, 1970-78.



Source: as for Figure 1.7.

EEC countries took 54% of the total catch in the period 1970-77, with most of the remainder being taken by Norway, Poland and the Soviet Union. Of the EEC countries, France and Denmark took the largest shares, with 16 and 14% respectively.

Compared with those of the other countries, Danish catches have developed differently and show a clear downward trend, which has had the effect of reducing the total Danish catch from 60 000 tonnes in 1970 to approximately 6 000 tonnes in 1977. The catches taken by third countries have also shown a marked decline, from 165 000 tonnes in 1975 to just under 70 000 tonnes in 1976, with a further fall from 75 000 tonnes in 1977 to just over 30 000 tonnes in 1978; cf. Figure 1.12.

The most important fishing grounds for the Danish coalfish fisheries are the central and northern parts of the North Sea (ICES areas IVa and IVb), whereas most of the fishing done by the other countries takes place in the northern part of the North Sea (ICES area IVa).

Haddock

Apart from the very large catch in 1970, the development which has taken place in the total catch of haddock in the North Sea shows a decline from 258 000 tonnes in 1971 to 150 000 tonnes in 1978; cf. Figure 1.13. The catches have been rather underestimated, however, since considerable

quantities of undersized haddock is discarded whilst still at sea and is therefore not included in the catch.

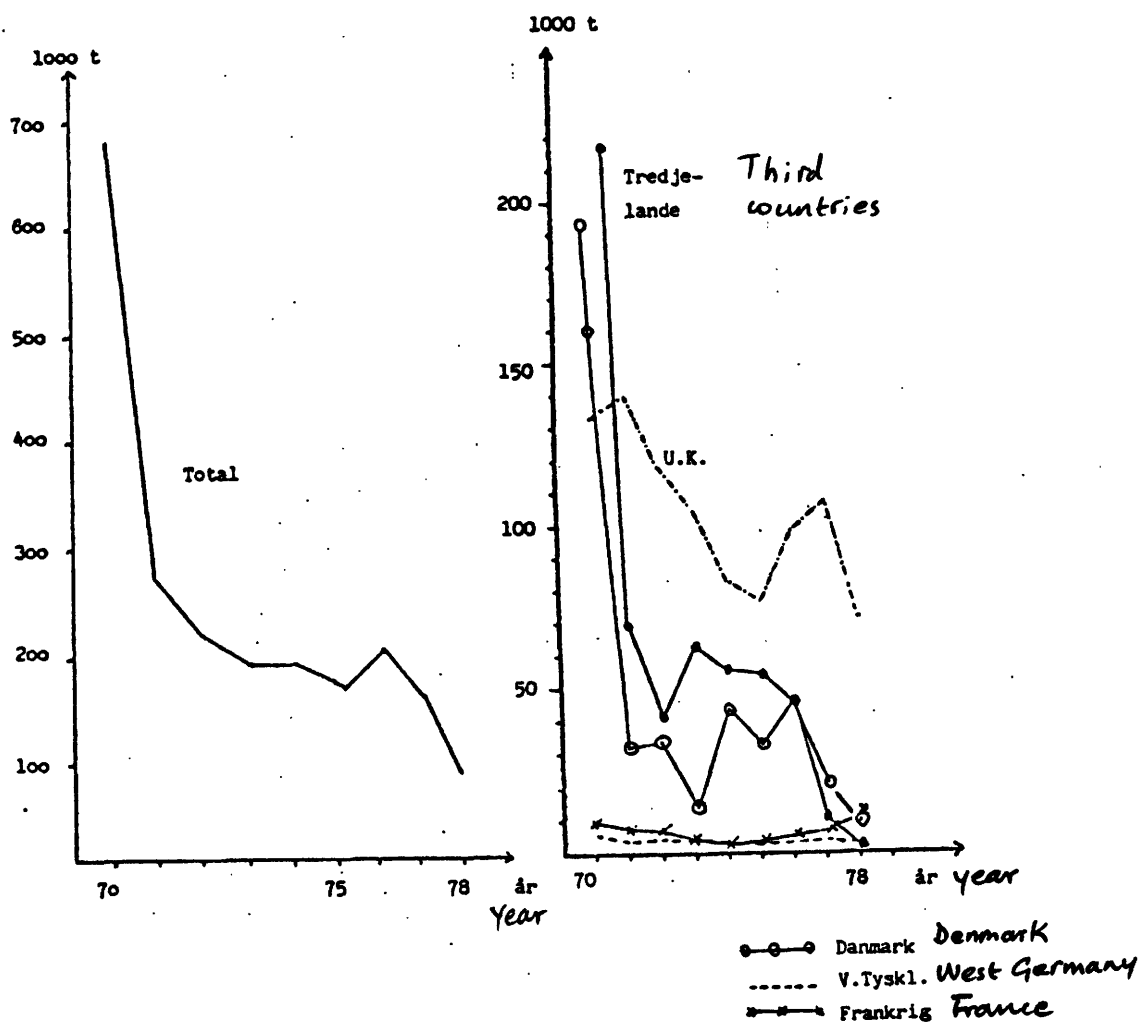
EEC countries took 66% of the total catch in the period 1970-77, with most of the remainder being taken by the Soviet Union. Apart from the Soviet Union, other major haddock fishing nations are Great Britain and Denmark, with shares of the catch of 41 and 18% respectively.

The development which took place between 1975 and 1977 in haddock fishing by individual countries produced a marked increase in the catch taken by Great Britain, with the opposite being the case for the Soviet Union and Denmark; cf. Figure 1.13. Great Britain's share of the total catch had increased to 70% in 1977, whereas the Soviet Union's share had fallen to 7%. The Soviet catch in 1978 fell to only about 50 tonnes, with Norway catching just over 600 tonnes, as against just under 400 tonnes in 1977.

Most of the haddock catch is taken in the northern and central parts of the North Sea (ICES areas IVa and IVb).

FIGURE 1.13

Catches of haddock in the North Sea, 1970-78.



Source: as for Figure 1.7.

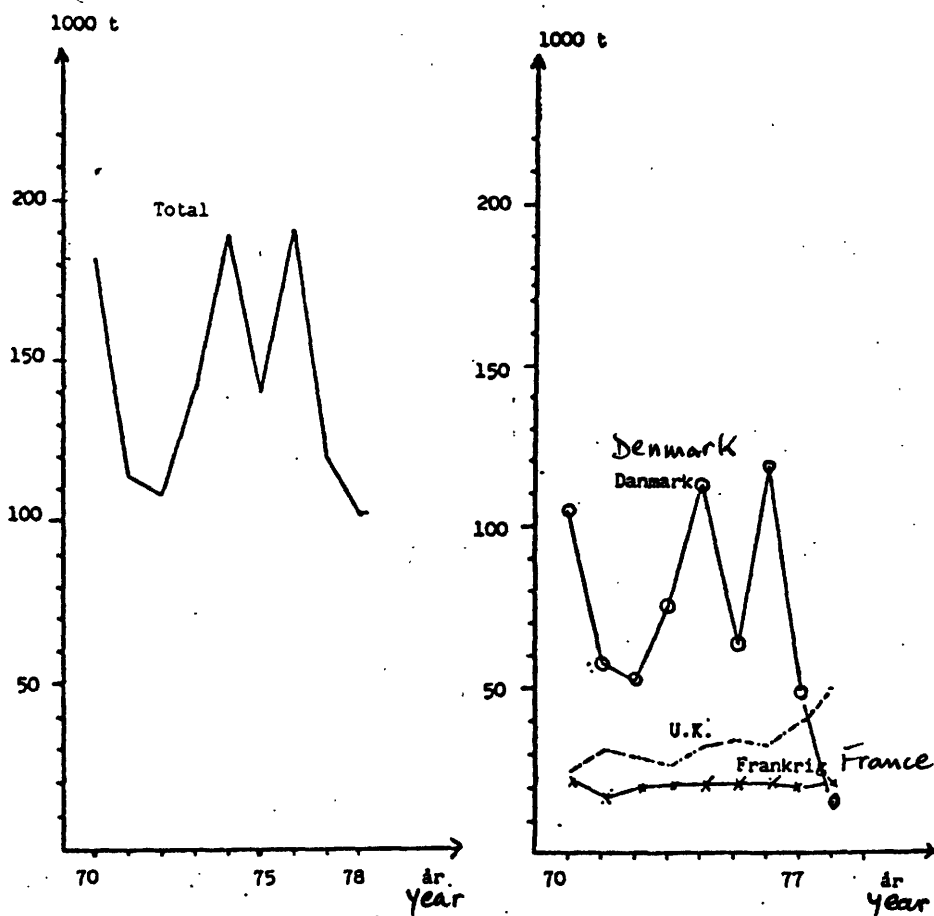
Whiting

The total catches of whiting in the North Sea fluctuated either side of 150 000 tonnes between 1970 and 1977, with a maximum of just under 200 000 tonnes in 1976 and a minimum of just over 100 000 tonnes in 1972; cf. Figure 1.14. The catches have been rather underestimated, however, since considerable quantities of undersized whiting is discarded whilst still at sea and is therefore not included in the catch.

Danish catches accounted for 52% of the total catch in the period 1970-77, with Great Britain and France taking shares of 20 and 14% respectively.

FIGURE 1.14

Catches of whiting in the North Sea, 1970-78.



Source: as for Figure 1.7.

Catches made by Great Britain showed a regular increase between 1970 and 1977, growing from just under 25 000 tonnes in 1970 to just under 40 000 tonnes in 1977. Levels of Danish catches, on the other hand, were unstable, with major fluctuations either side of an average catch of about 80 000 tonnes; cf. Figure 1.14.

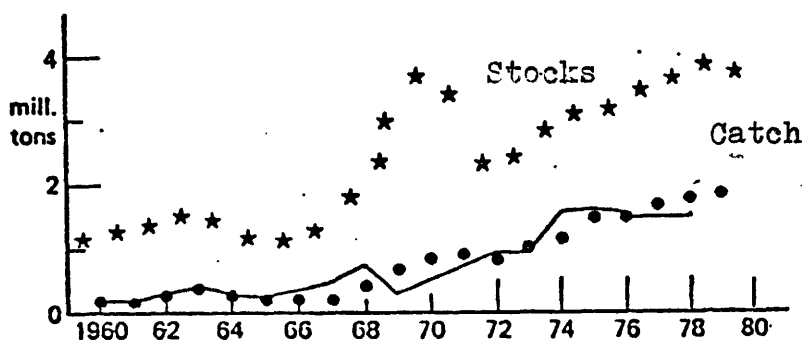
Danish catches are taken in the central and northern parts of the North Sea (ICES areas IVa and b), those of Great Britain mainly in the northern part of the North Sea, with French catches being distributed just about evenly over the whole of the North Sea (ICES area IV).

Sand eels, Norway pout and sprats

The whole of the 1960s saw a steep increase in the stocks of sand eels, Norway pout and sprats, from just over 1 million tonnes in 1960 to a maximum of just over 3.5 million tonnes in 1970; cf. Figure 1.15. This is presumably connected with the decrease in the stocks of mackerel and herring, with these species having left a gap in the food chain which was taken over to a certain extent by the sand eels, Norway pout and sprats. These species reproduce rapidly, leading to a considerable increase in stocks in only a few years. This is probably the explanation for the generally steep increase in catches of these species from approximately 250 000 tonnes in 1960 to approximately 1.5 million tonnes in 1977; cf. Figure 1.15.

FIGURE 1.15

Stocks and catches of sand eels, Norway pout and sprats in the North Sea, 1960-78.



Source: see Note 3.

There now follows a more detailed description of the development in the catches of sand eels, Norway pout and sprats by the major catching nations in the North Sea in the period 1970-77.

Sand eels

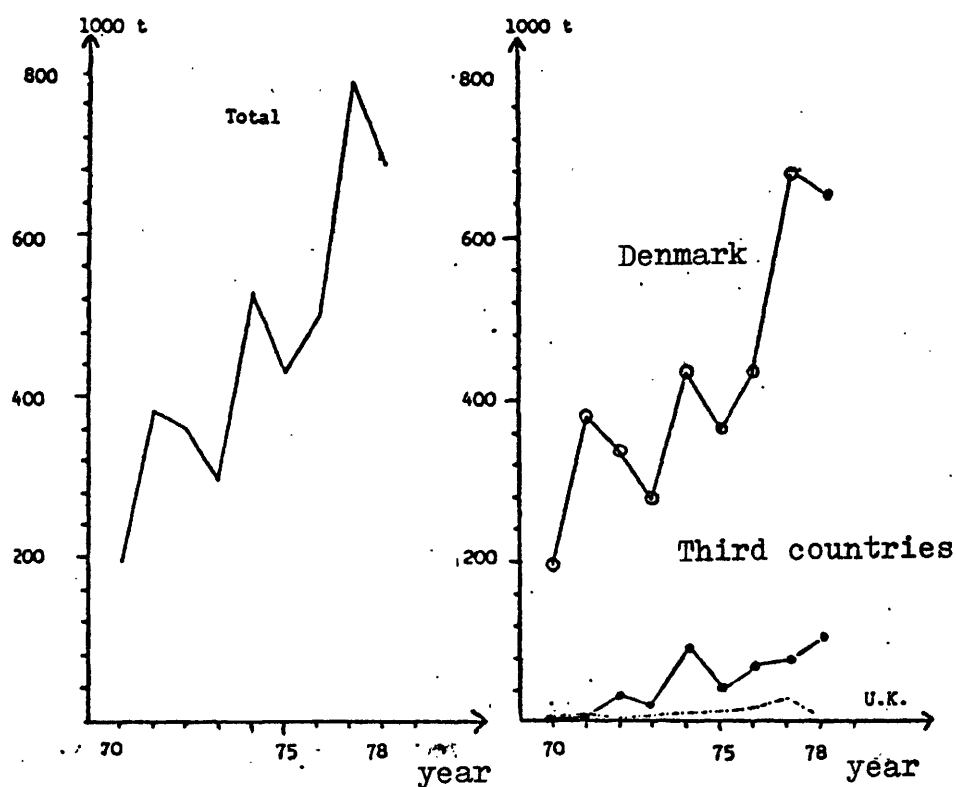
The total catch of sand eels has developed from a level of just under 200 000 tonnes in 1970 to just under 700 000 tonnes in 1978.

Denmark's share of the total catch in the period 1970-77 was 88%, with catches by third countries, in this case those taken by Norway and Great Britain in particular, being 10% and 2% respectively.

Sand eel fishery by all three countries has grown considerably. The relative increase was particularly steep in the case of Norway and Great Britain, which only began to fish seriously for sand eels in 1970, reaching respective levels of approximately 105 000 tonnes and approximately 25 000 tonnes by 1977. Danish catches rose in the same period from just under 200 000 tonnes to 660 000 tonnes; cf. Figure 1.16.

FIGURE 1.16

Catches of sand eels in the North Sea, 1970-78.



Source: as for Figure 1.7.

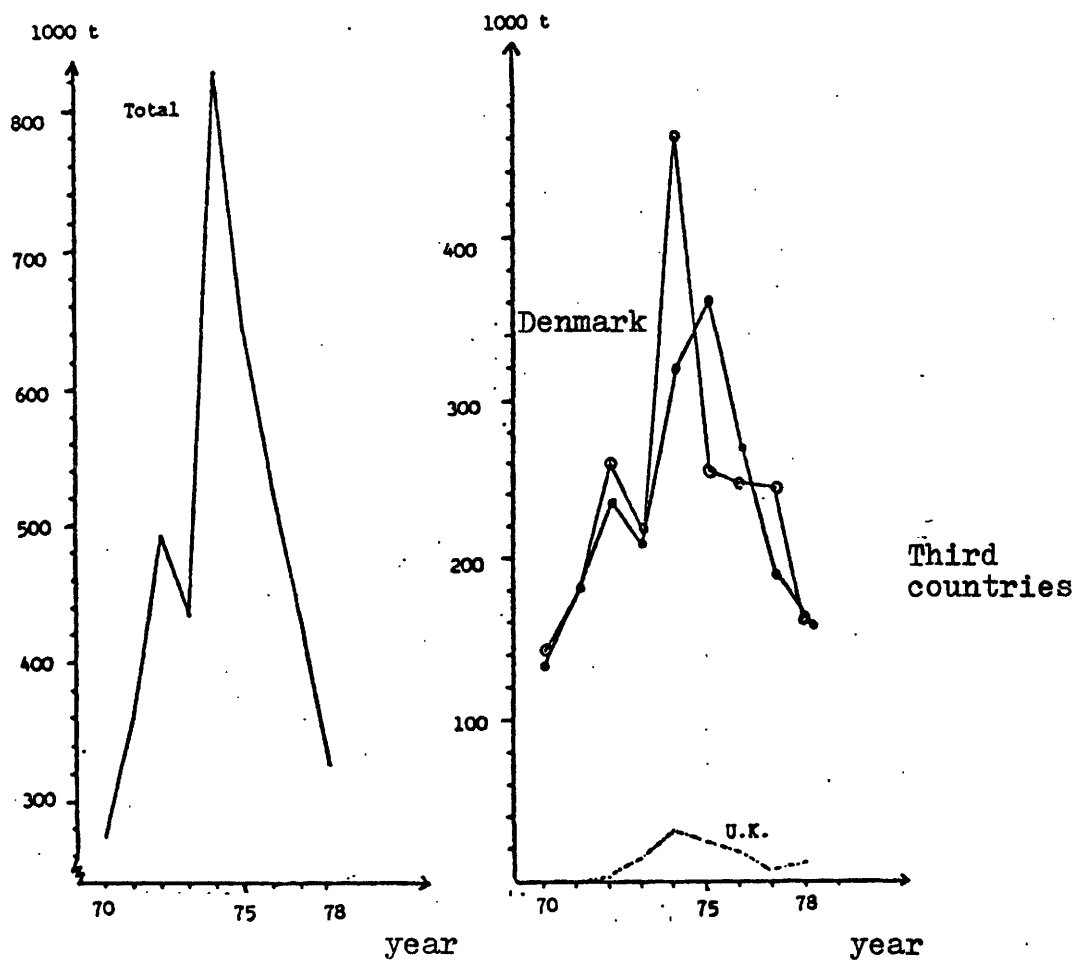
Fishing for sand eels by Denmark takes place mainly in the central part of the North Sea (ICES area IVb), with the other countries' fishing being done primarily in the northern part (IVa).

Norway pout

Catches of Norway pout, which is fished mainly in the northern part of the North Sea, rose from approximately 270 000 tonnes in 1970 to approximately 800 000 tonnes in 1974, with a subsequent fall to approximately 300 000 tonnes in 1978; cf. Figure 1.17.

FIGURE 1.17

Catches of Norway pout in the North Sea, 1970-78.



Source: as for Figure 1.7.

The Danish share of the total catch in the North Sea in the period 1970-77 was 50%, with 47% going to the third countries, mainly Norway and the Faroes, and 3% to Great Britain. Developments in the annual catches made by the

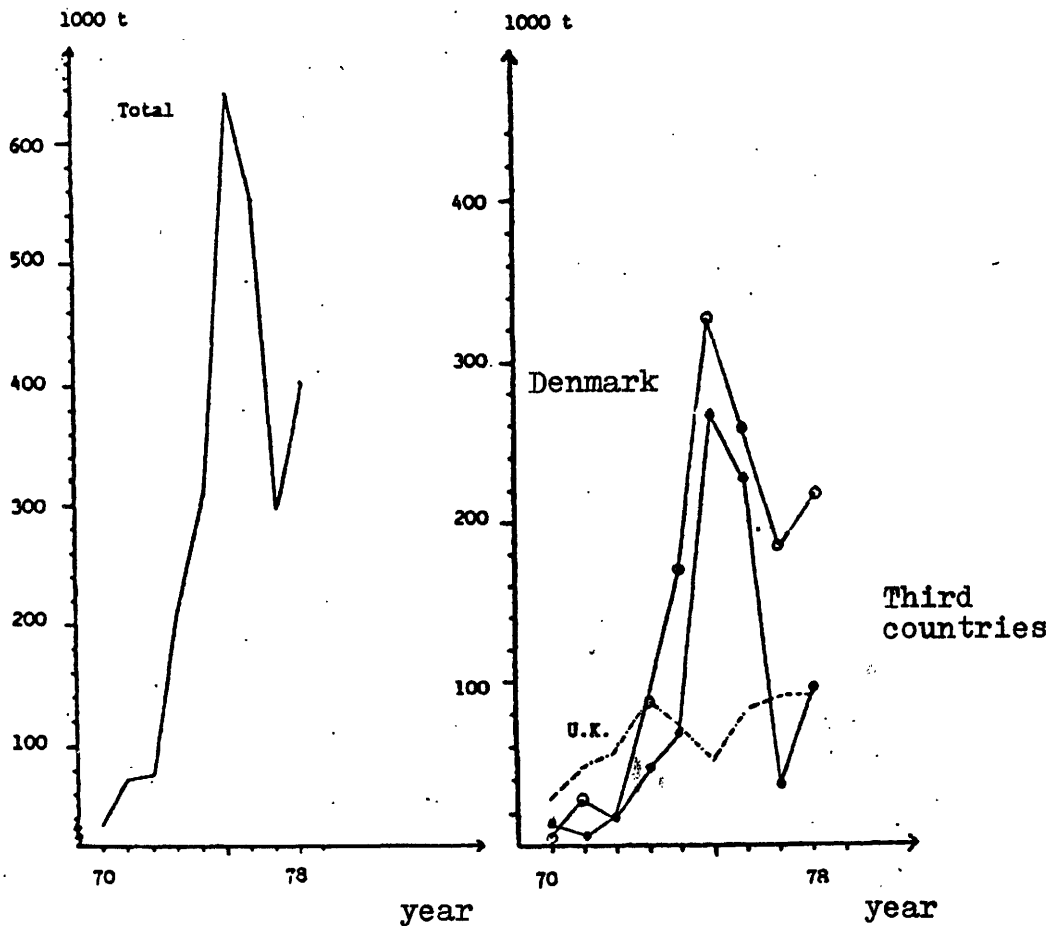
individual countries were largely in line with developments in the total annual catch. The Danish catch in 1977 was 240 000 tonnes, that of the third countries (Norway and the Faroes) 146 000 tonnes, and that of Great Britain 4 000 tonnes.

Sprats

Total catches of sprats in the North Sea rose from approximately 50 000 tonnes in 1970 to a maximum level of approximately 650 000 tonnes in 1976, followed by a fall to approximately 350 000 tonnes in 1977-78; cf. Figure 1.18.

FIGURE 1.18

Catches of sprats in the North Sea, 1970-78.



Source: as for Figure 1.7.

Sprat fishery in the North Sea was dominated in the period 1970-77 by Denmark, with a 46% share of the total catch, with third countries, mainly Norway, and Great Britain taking 29% and 22% respectively.

A characteristic feature of the development which took place between 1970 and 1977 in the catches made by the individual countries is the increase in the catches made by Great Britain by comparison with those made by Norway and Denmark.

Whereas Denmark and Norway reached their maximum level of catches of respectively 330 000 tonnes and 270 000 tonnes in 1975, followed by a subsequent marked fall, the catch made by Great Britain fell from just under 90 000 tonnes in 1973 to 50 000 tonnes in 1975, followed by a rise to a maximum level of 90 000 tonnes in 1977.

Danish catches of sprats are made mainly in the central part of the North Sea, whereas the catches made by Norway and Great Britain are distributed just about evenly between the central and northern parts (ICES areas IVa and b).

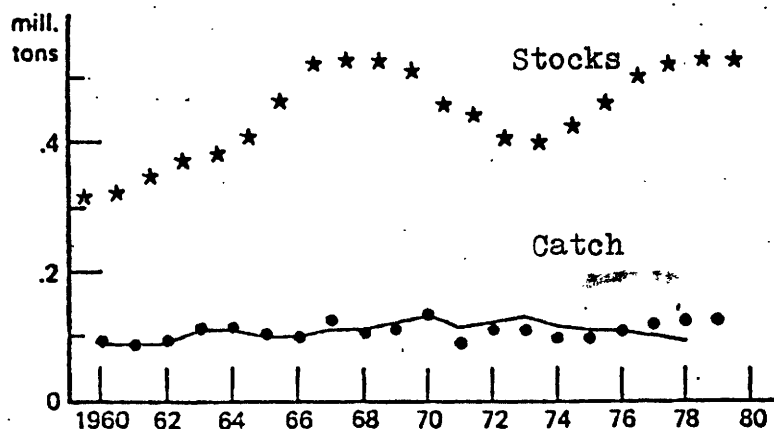
Plaice

This survey of the North Sea catches of the various species will now be concluded with plaice, which is not affected to any great extent by the relationships described above between the stocks of the individual species.

Stocks in the North Sea have fluctuated between 300 000 tonnes and 500 000 tonnes since 1960, and catches have been approximately 100 000 tonnes; cf. Figure 1.19.

FIGURE 1.19

Stocks and catches of plaice in the North Sea, 1960-78.



Source: see Note 3.

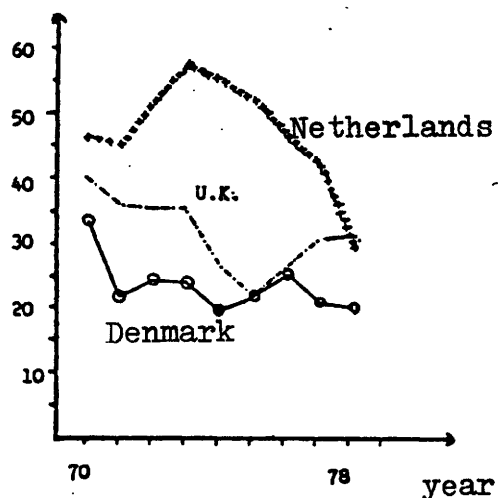
According to the Scientific and Technical Committee for Fisheries of the Commission of the European Communities ⁴⁾, this is the maximum level of catch which it would be possible to maintain in the long term.

Of the total catch in the period 1970-77, the Netherlands took 42%, Great Britain 28% and Denmark 21%.

There have been certain variations between the catches made by individual countries in the period 1970-77, although these have not had the effect of disturbing their relative positions to any great extent. The catch taken by the Netherlands in 1977 was 42 000 tonnes, by Great Britain 31 000 tonnes and by Denmark 20 000 tonnes. The Netherlands catch fell steeply, however, from 1977 to 1978, whereas the Danish catch showed only a small fall in the same period; cf. Figure 1.20.

FIGURE 1.20

Catch of plaice in the North Sea, 1970 - 78. 1000 tonnes.



Source: as for Figure 1.7.

Plaice is caught mainly in the central part of the North Sea (ICES area IVb).

Stocks and quantities caught in the Skagerrak and Kattegat

The quantity caught by Denmark in the Skagerrak and Kattegat represents 16% of the total Danish catch.

In the period 1970-77, Denmark took 81% of the total catch of selected species ^{x)}. The other EEC countries took 1% , and third countries, mainly Sweden and Norway, 18%. In the period 1975-77, these species accounted for approximately 90% of the total quantities caught in the Skagerrak and Kattegat.

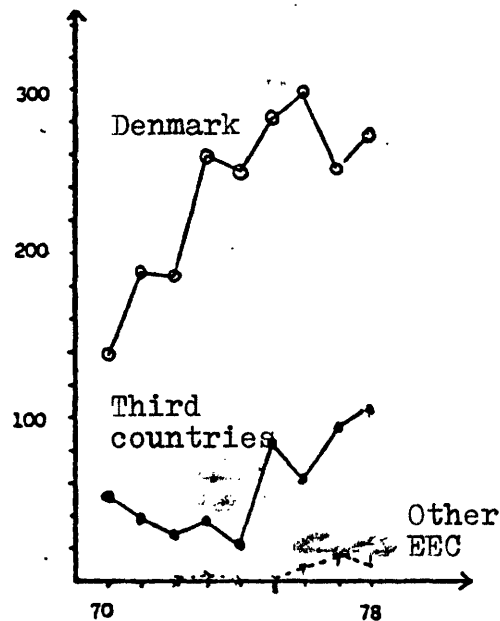
x) cf. page 4.

The development which took place in the catches of these species in the period 1970-77 is illustrated in Figure 1.21. The Danish catch rose from 140 000 tonnes in 1970 to just under 300 000 tonnes in 1976, with a subsequent fall to 250 000 tonnes in 1977. Catches by third countries fell from 50 000 tonnes in 1970 to 20 000 tonnes in 1974, rising to just under 100 000 tonnes at the end of the period in 1977.

Other EEC countries, mainly the Netherlands, caught less than 1 000 tonnes for most of the period 1970-75, although the quantity caught rose by about 12 000 tonnes ¹⁾ between 1975 and 1977.

FIGURE 1.21

Catches of selected species in the Kattegat and Skagerrak, 1970-78. 1 000 tonnes,



Sources: Hans Frost: Importance of Danish deep-sea fisheries to the national economy, and its significance for the future - PRELIMINARY REPORT, South Jutland Universitetscenter, 1979.

ICES: Advance Release of Bulletin Statistique, Vol.62, 1977, and Vol.63, 1978.

Danish fisheries in the Skagerrak and Kattegat are concerned mainly with the following species: plaice, sole, cod, coalfish, haddock, herring, whiting, sand eels, Norway pout, sprats and Norway lobster.

- 1) This increase in the Netherlands catch is probably attributable to an error in the reported figures relating to plaice.

The Scientific and Technical Committee for Fisheries of the European Communities has reached the following conclusions in respect of the stocks of a number of these species: we must be aware of any shortfall in the stocks of herring; it is essential to produce additional data relating to sprats; the data which we have on cod, haddock, whiting and plaice are inadequate; stocks of coalfish appear to have stabilized in the Kattegat, and those of cod to be in the course of stabilizing. Furthermore, the results of surveys carried out by Denmark and Sweden appear to indicate that there has been a reduction in the stocks of herring in the Kattegat.

The most important species of fish taken by Denmark in the Skagerrak and Kattegat in the period 1970-77 for direct consumption were cod, plaice and herring, and for industrial processing herring and sprats.

The value of Danish landings of cod, plaice and herring for direct consumption represented approximately 50% of the value of the total landings from the Skagerrak and Kattegat in the period 1970-77, whereas the value of the landings of fish for industrial processing, consisting mainly of herring and sprats, represented 20% of the total value of the landings from the Skagerrak and Kattegat.

Cod

The total quantity of cod caught/annually during the period 1965-70 ranged from 13 000 to 18 000 tonnes. Between 1970 and 1978

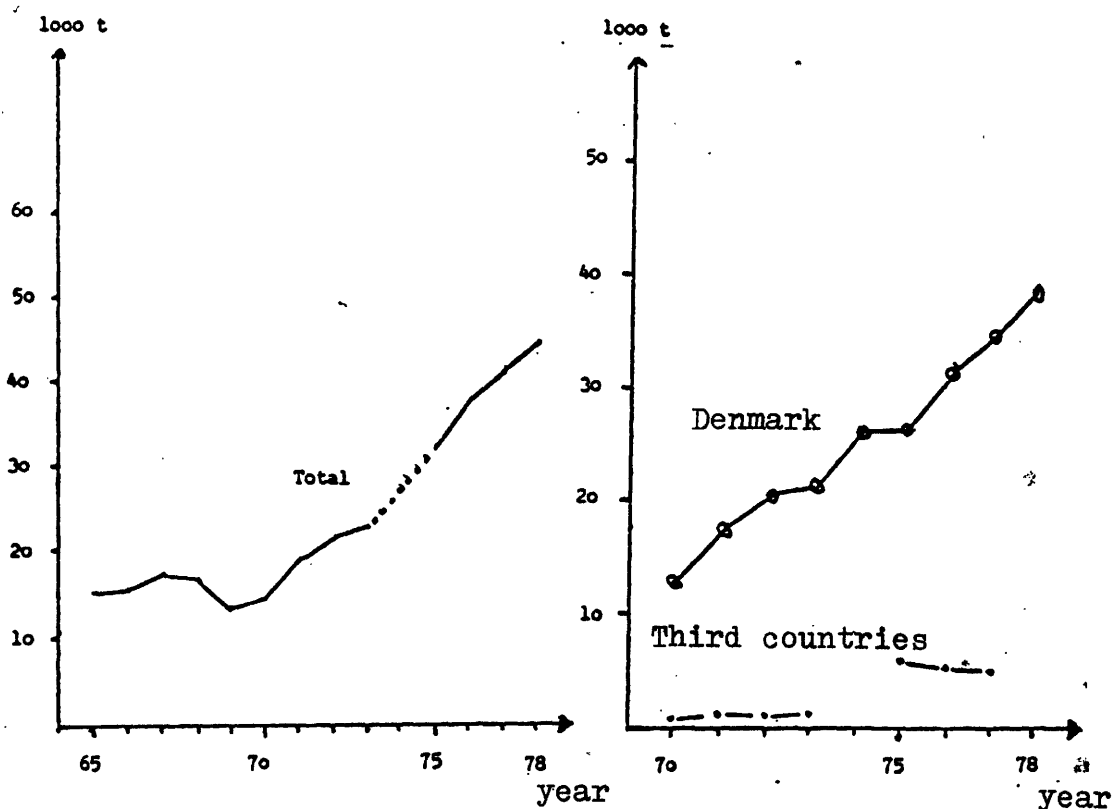
the quantities caught increased from just over 14 000 tonnes to just under 45 000 tonnes; cf. Figure 1.22.

Of the total quantity caught in the period 1970-77, Denmark took just under 90%, with the remainder being taken by third countries, mainly Sweden.

The annual quantities caught in the period 1970-77 increased from 13 000 tonnes to 35 000 tonnes in the case of Danish catches. Catches by third countries in the period 1970-73 were approximately 1 000 tonnes per year, and between 3 000 tonnes and 6 000 tonnes in the period 1975-77; cf. Figure 1.22.

FIGURE 1.22

Catches of cod in the Skagerrak and Kattegat, 1965-78.



..... no details available

Source: as for Figure 1.7

Plaice

The total quantity of plaice caught in the period 1965-75 remained relatively constant at about 15 000 tonnes per annum, and increased from just under 16 000 tonnes to approximately 30 000 tonnes between 1975 and 1978; cf. Figure 1.23.

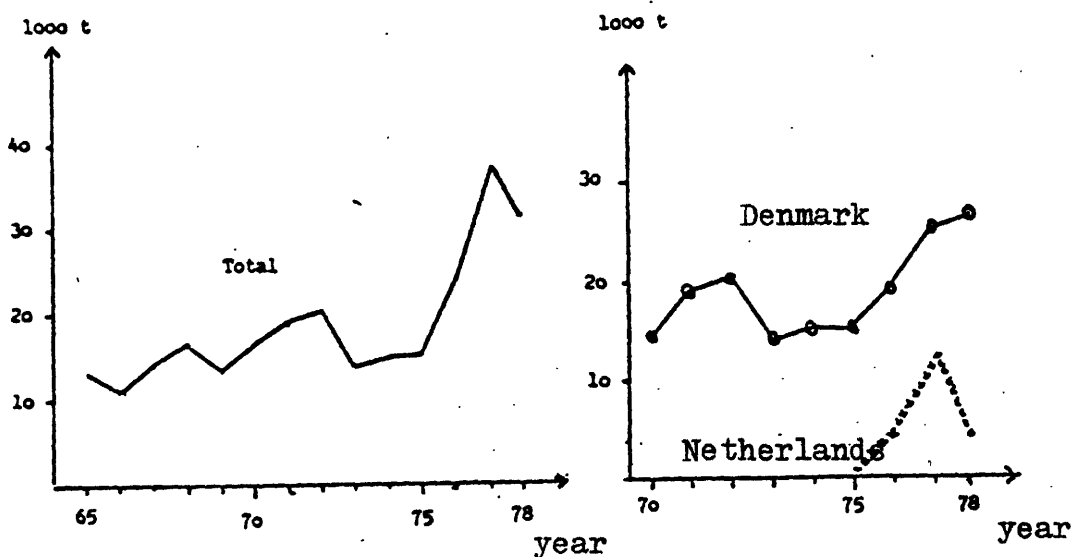
Denmark's share of the total quantity caught in the period 1970-77 was just under 90%, with the Netherlands' share being just under 15%. The reported annual quantities caught by the two countries in the period 1970-77 show that fishing by the Netherlands took place exclusively between the years 1976 and 1978 ¹⁾. The quantities caught

1) See Note on page 23.

by Denmark fluctuated in this period between approximately 14 000 tonnes in 1973 and just over 24 000 tonnes in 1977; cf. Figure 1.23.

FIGURE 1.23

Catches of plaice in the Skagerrak and Kattegat, 1965-78.



Source: as for Figure 1.7

Herring

Total catches of herring fell from approximately 15 000 tonnes to 85 000 tonnes between 1970 and 1978; cf. Figure 1.24.

Approximately 55% of the total quantity caught both for direct consumption and for industrial processing in the

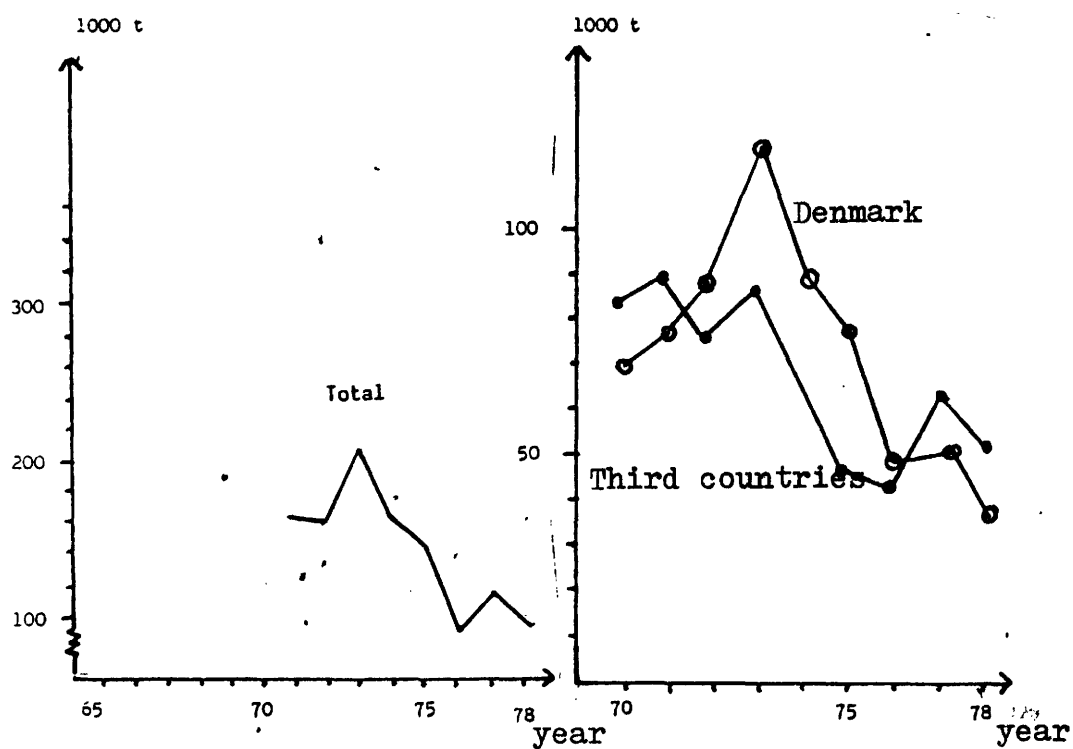
period 1970-77 was taken by Denmark, with the remainder being taken by the third countries Sweden, the Faroes and Norway, with Sweden being the most important of these.

The development which took place in the annual catch in the period 1970-77 reveals a maximum of just under 120 000 tonnes for Denmark in 1973, followed by a fall in catches to approximately 50 000 tonnes in 1977, due mainly to a

fall in the catch for industrial processing. The main trend in the catches made by third countries was a similarly marked fall from approximately 80 000 tonnes in 1970 to 50 000 tonnes in 1978; cf. Figure 1.24.

FIGURE 1.24

Catches of herring in the Skagerrak and Kattegat, 1965-78.



Source: Since a certain degree of uncertainty attaches to the figures contained in EUROSTAT'S 'Fisheries, catches by area' relating to the catches of herring in the Skagerrak and Kattegat, ICES's 'Cooperative Research Report' No. 93, 1980, has been taken as the source of the above.

Sprats

The annual catch of sprats in the period 1965 to 77 was around 5 000 tonnes until 1972, followed by a steep rise to 105 000 tonnes in 1975, and falling to just under 75 000 tonnes at the end of the period; cf. Figure 1.25.

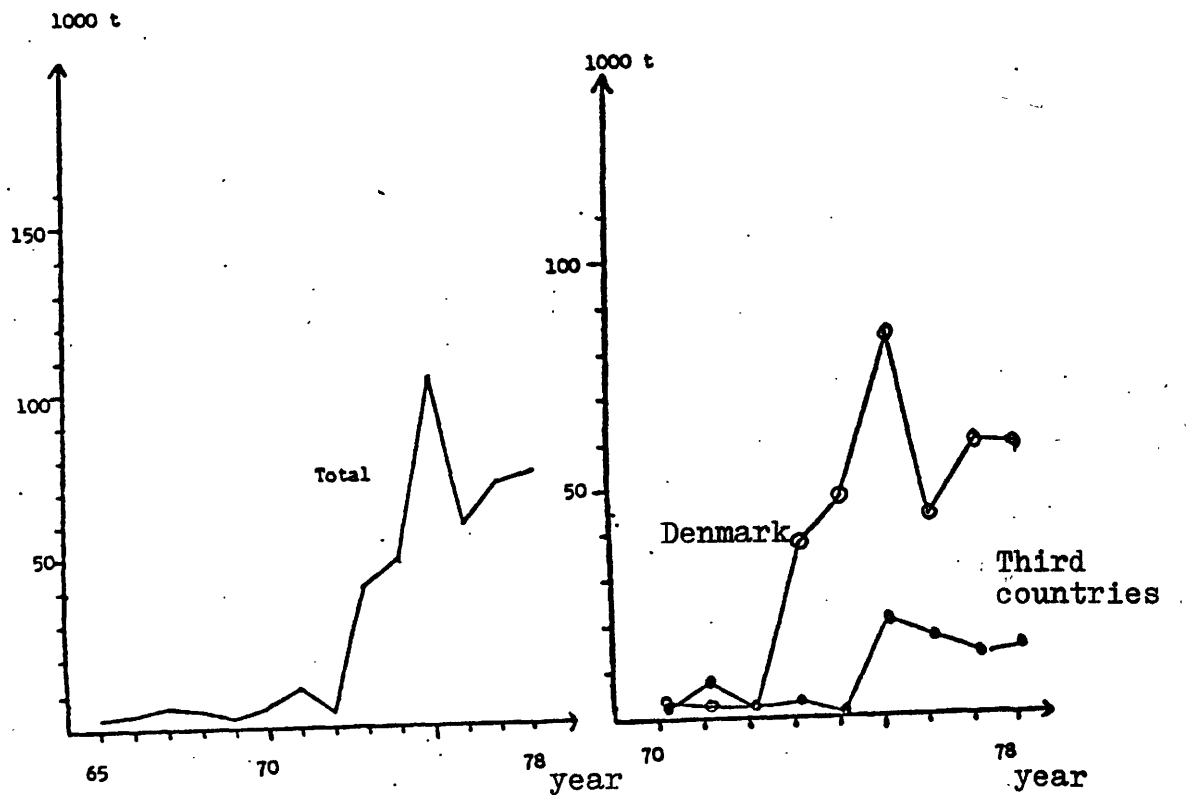
Denmark took approximately 80% of the catch in the period 1970-77, with third countries, mainly Sweden, taking approximately 20% of the total catch in the period.

The development which took place in the annual catch shows a steep increase in Danish catches, from approximately

5 000 tonnes per year between 1970 and 1972 to a level of between 85 000 and 40 000 tonnes in the years 1975-77. Catches by third countries were approximately 2 000 tonnes per year in the period 1970-74, and about 15 000 tonnes per year in the period 1975-77; cf. Figure 1.25.

FIGURE 1.25

Catches of sprats in the Skagerrak and Kattegat, 1965-78.



Source: as for Figure 1.7.

1.2 Countries which are particularly significant to the Jutland fisheries

Of particular significance to the Jutland fisheries are on the one hand the EEC countries Great Britain, the Netherlands, France and West Germany, which are the most important EEC countries fishing in the North Sea, and on the other hand the third countries Norway and Sweden, which to a certain extent are important fishing nations in the North Sea, the Skagerrak and the Kattegat, for instance, and which to a certain extent also have within their own fishing zones stocks of fish which have traditionally been exploited by Danish fishermen.

Figures 1.2.1, 1.2.2 and 1.2.3 illustrate the importance of fisheries to these countries on the basis of the value of their catches as a percentage of gross national product, employment within the fisheries sector as a percentage of total employment, and exports of fish and fish products as a percentage of total exports.

On the basis of the contribution which it makes to the national product, employment and exports, the relative importance of fisheries is highest in Norway and Denmark and lowest in West Germany, whilst the relative importance of fisheries to the other countries varies in accordance with the basis of measurement.

Whereas the value of the landings made in Norway in 1977 represented approximately 1.5% of the gross national

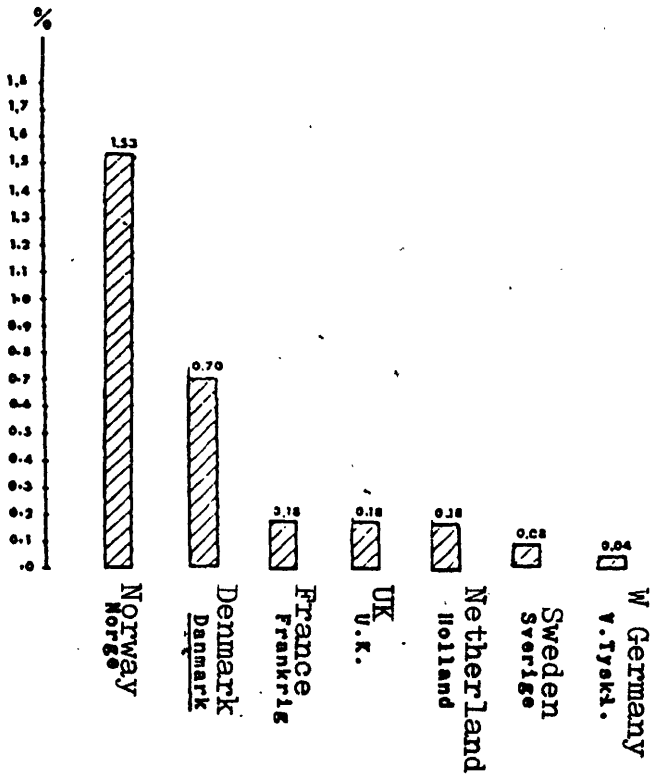
product, it represented only one-half of this figure in Denmark and less than 0.2% in the other countries.

The same picture emerges for employment within the fisheries sector in relation to total employment: 1.8% in Norway, 0.6% in Denmark and less than 0.2% in the other countries.

Exports of fish and fish products in 1977 accounted for just under 10% of total exports by Norway, 6% in Denmark and less than 0.7% in the other countries.

FIGURE 1.2.1

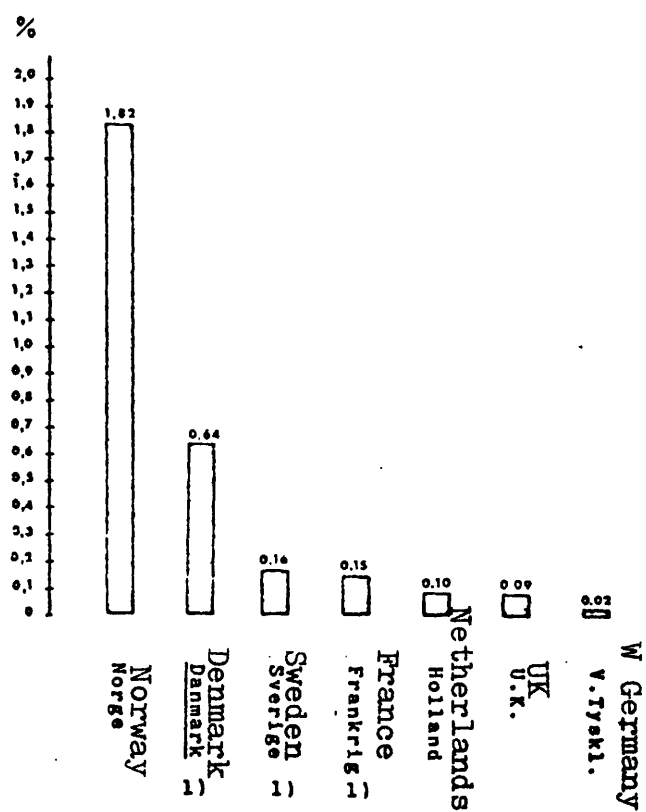
Value of total landings in relation to gross national products, as a percentage. 1977.



Source: OECD: Review of Fisheries 1977.

FIGURE 1.2.2

Fishermen as a percentage of all those in employment, 1977

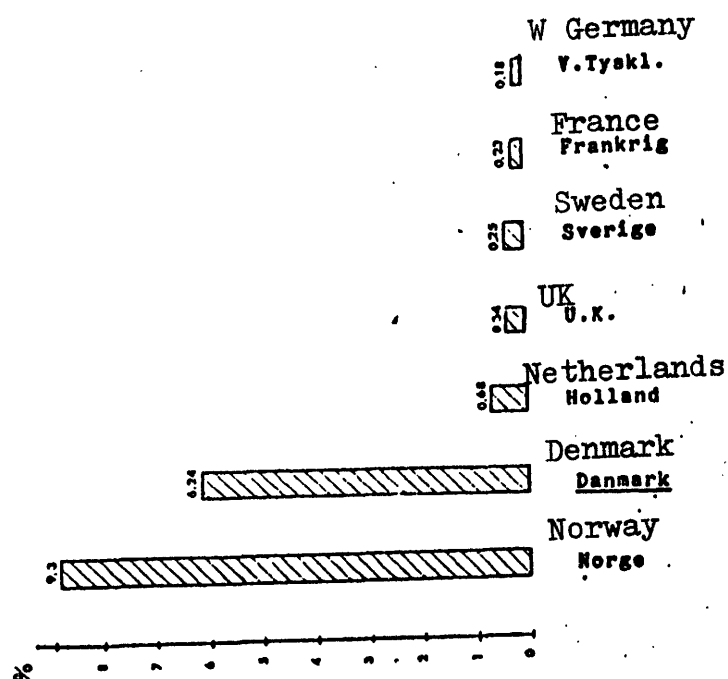


Source: OECD: Review of Fisheries, 1979.

1) 1976

FIGURE 1.2.3

Exports of fish and fish products in relation to total exports, as a percentage. 1977.



1) Includes shellfish and mussels.

Source: OECD: Review of Fisheries 1977.

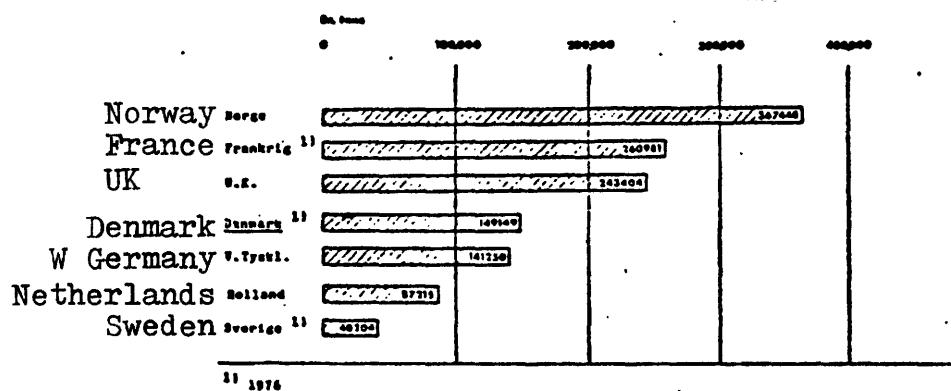
In the absence of more precise information, the gross registered tonnage of the fishing fleet will be used below

as an indication of the catching capacity. Figure 1.2.4 shows the gross registered tonnages of the fishing fleets of the individual countries in 1977. Norway, France and Great Britain had the largest fishing fleets, with gross registered tonnages of between 370 000 g.r.t. and 240 000 g.r.t. Denmark had the fourth largest fishing fleet, with 150 000 g.r.t., followed by West Germany, the Netherlands and Sweden.

An index of the catching capacity of the fishing fleets of the individual countries may be produced by dividing up the total gross tonnage into tonnage groups. Figure 1.2.5 shows that a relatively large proportion of the gross registered tonnage of the Danish and Swedish fishing fleets is represented by vessels of less than 150 g.r.t. On the other hand, quite a large proportion of the gross registered tonnage, of the West German fleet in particular, but also of the British and Netherlands fleets, is represented by vessels of more than 150 g.r.t.

FIGURE 1.2.4

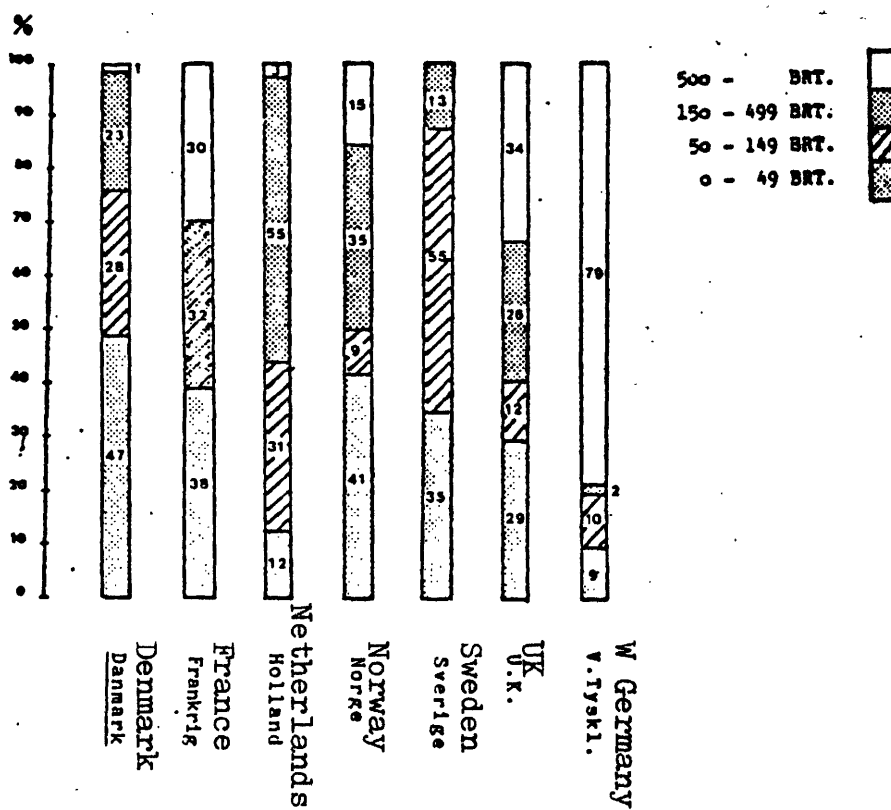
Gross registered tonnage of fishing vessels in 1977.



Source: OECD: Review of Fisheries 1977 and 1978.

FIGURE 1.2.5

Gross registered tonnage of fishing vessels, by tonnage groups, as a percentage. 1977.



Source: OECD: Review of Fisheries 1977 and 1978.

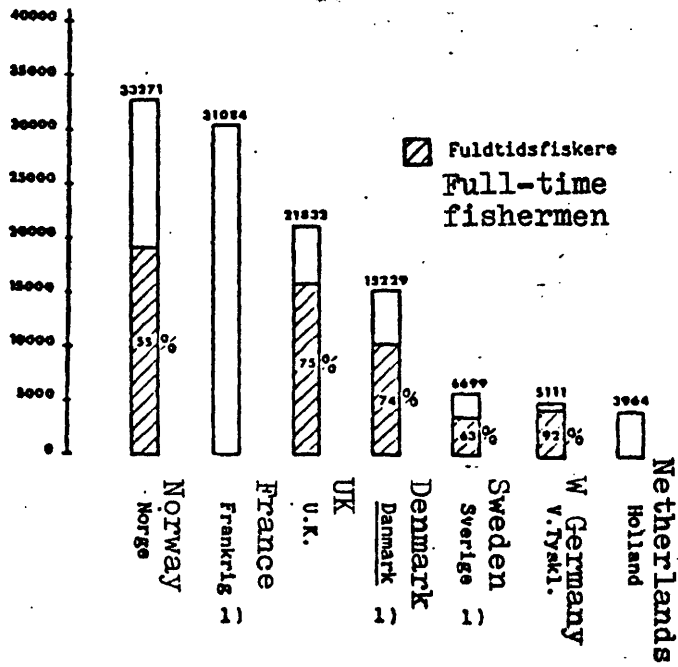
Only 1% of the gross registered tonnage of the Danish fishing fleet is represented by vessels of more than 500 g.r.t., whereas the proportion in the West German and British fishing fleets is 79% and 34% respectively.

Figures 1.2.6 and 1.2.7 contain the absolute figures for employment within the fisheries sector and for the value of the landings. When rated on the basis of the absolute figures for employment within the fisheries sector and for the value of the landings, Norway, France and Great Britain emerge as the major fishing nations in the north-east Atlantic. The level of employment in these three countries lay between 33 000 and 20 000 persons (both full-time and part-time fishermen), whereas Denmark had 15 000 fishermen and the other fishing nations less than 7 000 fishermen.

Although Norway occupies the top position in respect of employment, this position is occupied by France in respect of the value of the landings. France landed fish worth \$ 684 million in 1977, with Britain landing fish worth \$ 546 million, Norway \$ 546 million, Denmark \$ 321 million, with the other countries' landings being worth less than \$ 200 million.

FIGURE 1.2.6

Fishermen 1977.

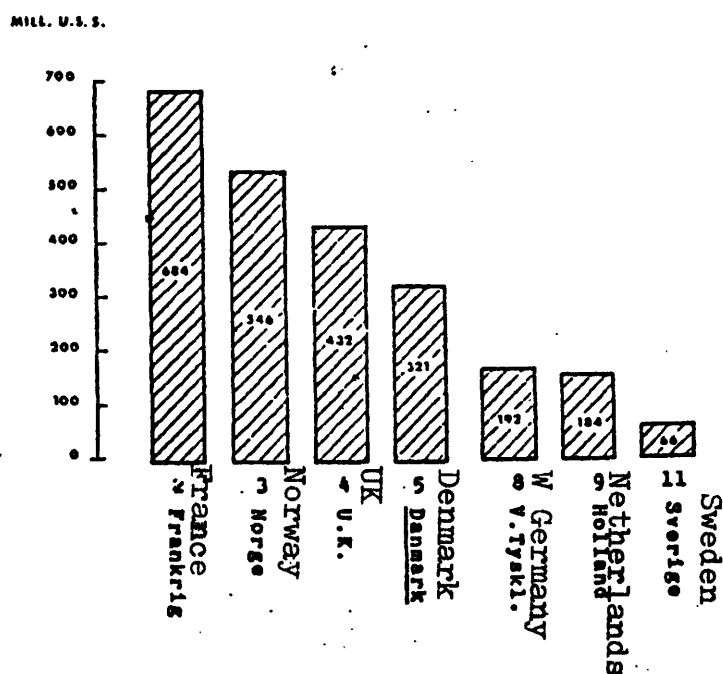


1) 1976

Source: OECD: Review of Fisheries 1977.

FIGURE 1.2.7

Total landings, in millions of US Dollars, 1977.



Source: OECD: Review of Fisheries 1977.

1.3 The market for fish and fish products

1.3.1 Exports/imports of fish and fish products by the countries which fish the north-east Atlantic

The largest exporters of fish and fish products amongst the countries which fish the north-east Atlantic (i.e. the

countries indicated in Table 1.3.1) in 1977 were Norway, with exports of Kr 5100 million, and Denmark, with exports of Kr 3800 million. Iceland's exports in 1977 amounted to Kr 2300 million. The Netherlands, Spain, West Germany and Great Britain each exported fish and fish products to a value of between Kr 1000 million and Kr 2000 million in 1977; cf. Table 1.3.1.

As far as imports are concerned, France was in the lead in 1977, with imports of fish and fish products to a value of Kr 3800 million. West Germany and Great Britain each imported (1977) fish and fish products to a value of about Kr 3500 million, whereas Danish imports (in 1977) were just over one-third of this figure.

Of the 12 countries listed in Table 1.3.1, six were net exporters. According to the size of their net exports, these were Norway, Denmark, Iceland, Spain, the Netherlands and Ireland.

TABLE 1.3.1

Exports and imports of fish and fish products, in millions of kroner, according to product group, 1977.

		Fresh fish	Frozen fish	Salt and smoked fish, etc	Shellfish Mussels	Canned fish	Fish-meal and fish-oil	Other	
BELGIUM	Exp	112	54	14	48	43	15	0	286
	Imp	390	157	66	396	380	99	0	1,489
DENMARK	Exp	1,085	870	163	180	476	991	25	3,790
	Imp	412	205	48	84	264	34	51	1,099
FRANCE	Exp	230	139	59	224	66	72	80	869
	Imp	641	617	187	817	959	226	389	3,836
NETHERLANDS	Exp	945	-	244	388	146	54	12	1,792
	Imp	498 ^{x)}	-	48	211	206	422	-	1,386
IRELAND	Exp	54	67	58	61	0	10	14	263
	Imp	6	3	14	6	0	49	59	137
ICELAND	Exp	42	1,103	514	96	0	561	6	2,327
	Imp	0	8	0	0	2	0	0	10
NORWAY	Exp	135	1,092	1,267	204	271	1,620	512	5,106
	Imp	14	23	19	42	16	29	10	154
PORTUGAL	Exp	20	4	1	12	261	9	20	328
	Imp	202	82	103	22	0	35	1	444
SPAIN	Exp	48	687	163	0	603	12	6	1,519
	Imp	144	591	189	0	48	43	12	1,026
SWEDEN	Exp	197	19	3	7	52	10	27	317
	Imp	90	331	131	165	107	227	288	1,338
W. GERMANY	Exp	115	416	36	103	386	169	24	1,248
	Imp	536	581	273	348	522	753	538	3,550
UK	Exp	166	405	145	290	104	62	0	1,172
	Imp	216	768	22	407	736	1,144	0	3,294

x) Includes frozen fish.

Source: OECD: Review of Fisheries, 1977.

Exports/imports of fresh fish

Of the countries listed in Table 1.3.1 - of which the exports and imports by individual countries are described below - Denmark and Holland were the major exporters of fresh fish, followed by France and Sweden. Denmark and Holland each exported fresh fish to a value of just under Kr 1000 million in 1977, with France and Sweden each exporting fresh fish to a value of about Kr 200 million. Danish exports of fresh fish in 1977 constituted the

largest individual product group amongst total Danish exports of fish and fish products.

The major fish importing country was France, with imports of fresh fish totalling approximately Kr 650 million in 1977. Next came West Germany and the Netherlands, and the fourth largest importer of fresh fish was Denmark, whose imports in 1977 were valued at Kr 412 million, representing a good one-third of total Danish fish imports.

Exports/imports of frozen fish

The largest exporters of frozen fish in 1977 were Iceland and the Netherlands. Each country exported frozen fish to a value of approximately Kr 1000 million, whilst Denmark, as the third largest exporter, produced exports of approximately Kr 900 million in 1977. Just under 50% of Iceland's exports of fish and fish products were in the form of frozen fish in 1977.

The major importers of frozen fish in 1977 were Great Britain, France, Spain and West Germany. Imports by Great Britain amounted to just under Kr 800 million in 1977, with each of the other countries' imports being worth about Kr 600 million. Imports by Denmark in 1977 were about Kr 200 million.

Exports/imports of salted, smoked and dried fish

Norway completely dominated exports of salted, smoked and dried fish in 1977, with exports worth Kr 1.3 milliard.

Apart from Iceland's exports, which were worth just over Kr 500 million, the value of exports by all the other countries was less than Kr 250 million, including Danish exports of more than Kr 150 million.

The largest importer of salted, smoked and dried fish in 1977 was West Germany, whose imports were worth in excess of Kr 270 million. France and Spain also each imported salted, smoked and dried fish to a value of just under Kr 190 million in 1977, whereas imports by Denmark were only worth just less than Kr 50 million.

Exports/imports of shellfish and bivalves

The major exporter of shellfish and bivalves in 1977 was the Netherlands, whose exports were worth just less than Kr 400 million, followed by Great Britain, France and Norway. Denmark managed only fifth place, with exports of Kr 180 million in 1977.

France was the largest importer of shellfish and bivalves in 1977, with imports worth just under Kr 820 million. Imports by Great Britain, Belgium and West Germany in 1977 were each about one-half of that figure, whilst Danish imports were just above Kr 80 million.

Exports/imports of canned fish

Spain was the major exporter of canned fish in 1977, with exports amounting to approximately Kr 600 million. Exports by Denmark in 1977 were just under Kr 480 million, exports by West Germany were Kr 100 million below that, and Norway and Portugal each produced exports of approximately Kr 265 million.

Not only was France the major importer of fresh fish, shellfish and bivalves in 1977, but also the major importer of canned fish. The value of French imports in 1977 was approximately Kr 960 million, with imports by Great Britain and West Germany being worth Kr 736 million and Kr 522 million respectively. Denmark imported canned fish to a value of Kr 264 million in 1977.

Exports/imports of fish-meal and fish-oil

Norway and Denmark were the major exporters of fish-meal and fish-oil in 1977. Exports by Norway were worth Kr 1600 million, and those of Denmark just under Kr 1000 million, with Iceland too producing significant exports of fish-meal and fish-oil to a value of more than Kr 500 million in 1977. Approximately one-third of Norwegian exports of fish and fish products in 1977 was in the form of fish-meal and fish-oil.

The major importers of fish-meal and fish-oil in 1977 were Great Britain and West Germany, with imports worth Kr 1100 million and Kr 800 million respectively. Danish imports in 1977 were worth only Kr 34 million. Furthermore, the fish-meal and fish-oil imported by Great Britain and West Germany were the most important items within the category of imported fish products.

1.3.2 Distribution of market shares

The most important Danish export markets for fish and fish products are West Germany, Sweden, USA, France and Great Britain. Table 1.3.2 shows Danish exports to these markets, together with total imports by these markets from major countries of origin.

TABLE 1.3.2

Major Danish export markets for fish for direct consumption in 1977 1)				
Importing country	Danish exports	Total imports (Kr million)	Share of total imports, as a %	
WEST GERMANY	773	2,840	DENMARK	28
			Netherlands	14
			Canada	10
			France	6
			Norway	5
SWEDEN	331	1,091	Norway	31
			DENMARK	29
			Canada	8
			USA	7
USA	327	12,391	Canada	20
			Mexico	11
			Iceland	7
			Norway	4
			DENMARK	4
			Australia	3
			Japan	3
			South Korea	3
			India	3
South Africa	3			
FRANCE	320	3,834	Netherlands	9
			DENMARK	9
			England	8
			Senegal	7
			Canada	7
			USA	6
GREAT BRITAIN	183	2,213	Norway	21
			Canada	10
			DENMARK	9
			Japan	7
			Netherlands	7
			USA	6
South Africa	6			

1) Exports are f.o.b. and imports c.i.f. Danish exports to the individual countries are shown as a % of total imports and therefore do not correspond to the percentages shown here, which were calculated on the basis of the import figures.

Source: Danmarks Statistik: Monthly Foreign Trade Statistics, 1977.

OECD: Statistics of Foreign Trade, Series C, 1977.

Denmark's major market for fish for direct consumption is West Germany, to which Danish exports in 1977 were worth Kr 773 million. Denmark's share of West German imports of fish for direct consumption in 1977 was 28%, the Netherlands share was 14%, and France and Norway each had a share of 5%.

Denmark exported fish for direct consumption to a value of Kr 330 million to Sweden in 1977. One-third of Swedish imports of fish for direct consumption came from Denmark, and one-third from Norway.

The third largest market for Danish fish for direct consumption in 1977 was the USA, to which exports to a value of Kr 327 million were sent. USA imports of fish for direct consumption from Denmark, like imports from Norway, represented 4% of the USA's total imports of fish for direct consumption, with 7% being imported from Iceland and just under one-third from Canada and Mexico.

Danish exports of fish for direct consumption to France in 1977 were worth Kr 320 million. 9% of French imports of fish for direct consumption came from Denmark. A similar proportion was imported from the Netherlands and from Great Britain.

Great Britain is Denmark's fifth largest market for fish for direct consumption. Danish exports to Great Britain in 1977 were worth Kr 183 million. Of Great Britain's imports of fish for direct consumption in 1977, approximately 20% came from Norway, 10% from Denmark and 7% from the Netherlands.

1.4 Fisheries policy of the European Communities

1.4.1 Management of stocks in the north-east Atlantic

1.4.1.1 International Law of the Sea

The increasingly intensive exploitation of stocks in the 1960s caused many countries to express the desire for new international rules for the management of the resources provided by the sea.

At the Second United Nations Conference on the Law of the Sea, which began in 1960, no agreement could be reached on the new rules. The problems were therefore taken up once

more in 1974, at the Third United Nations Conference on the Law of the Sea. The Conference has still not reached agreement on a draft treaty, although general agreement was expressed during the negotiations for the introduction of 200-sea-mile fisheries zones.

The problems in the north-east Atlantic increased in parallel with the United Nations Conferences on the Law of the Sea. The falling stocks, biological over-fishing and the North East Atlantic Fisheries Commission's (NEAFC) lack of powers to control fisheries all contributed to the increased pressure from a number of the north-east Atlantic fishing nations to have measures implemented in order to safeguard their national fisheries. The process was started by Iceland, which in 1972 extended its fisheries zone to 50 nautical miles. In 1975, Norway introduced trawl-free zones at between 12 and 50 nautical miles. On 15 October 1975, Iceland further increased its fisheries zone to 200 nautical miles, and on 1 January 1977, Norway also extended its fisheries zone to 200 nautical miles. At a meeting in The Hague on 3 November 1976, the European Communities decided to extend the fisheries zones of Member States to 200 nautical miles in the North Sea with effect from 1 January 1977, and in the following year the fisheries zones in the Skagerrak, the Kattegat and the Baltic were also extended.

Before the fisheries zones were extended, the international management of stocks had been the responsibility of the

North East Atlantic Fisheries Commission (NEAFC). However, the ability of the NEAFC to control fisheries in the north-east Atlantic was limited. The control measures upon which agreement could be reached were difficult to implement, because they were ignored and because the NEAFC could neither control the fisheries nor apply sanctions against countries violating the agreements. This situation led to the resignation of Norway from the NEAFC in 1976, and as a consequence of the decision of the EEC countries in 1976 to allow the European Communities to represent member countries at the NEAFC, these countries also resigned during 1976 and 1977. The Eastern Bloc countries have not, until now, wished to recognize the European Communities as the representative of its member countries. Difficult negotiations remain, therefore, in respect of the changes

which will be required to the Convention of the NEAFC if the NEAFC is to continue to play a part in the management of stocks in the north-east Atlantic.

Because of the differences in the geographical extent of the EEC countries' fisheries, the extension by the EEC countries of their fisheries zones gave rise to a number of problems in respect of the internal allocation of resources in view of the accepted free access of member countries to the entire EEC sea, and in view of the loss of catches in the fisheries zones of third countries.

Access to the whole of the North Sea is of critical importance to the Danish fishing industry, since the most important fishing grounds lie outside the Danish fisheries zone which would be created if the centre-line principle were to be applied to the dividing up of zones between the countries. The Danish catch of the species mentioned in Section 1.1 in the northern part of the North Sea (ICES area IV) which lies outside what would become the Danish fisheries zone on the basis of the above was just under 1 million tonnes in 1976-77, or approximately 40% of the catch in the whole of the North Sea. A certain proportion of this catch was, of course, taken outside the EEC sea, in the Norwegian zone. On the basis of the proposal put forward by the Commission of the European Communities, Denmark would be allowed to catch approximately 200 000 tonnes in 1978 in the Norwegian zone of the North Sea ⁵).

The dependence of Denmark and the other EEC countries on inshore fisheries is illustrated in Table 1.1, which shows the size of the fisheries of the individual countries within a zone of 12 nautical miles. Danish catches in the country's own 12-nautical-mile zone represented 16% of the total catch in the period 1973-75, whereas the catches taken by Ireland, Great Britain and the Netherlands in their own 12-nautical-mile zones were considerably larger, at 19%, 46% and 41% of the total catch respectively. This serves to further emphasize Denmark's dependence on fisheries in other than inshore waters, i.e. mainly in what would be the fisheries zones of other EEC countries if no joint EEC sea had been established, and partly in the fisheries zones of third countries.

TABLE 1.4.1

Catches by EEC countries in the 12- and 200-nautical-mile zones, 1971-75. Live weight.

	Total	Denmark's own 12 nautical mile zone		12-mile zone of other EEC countries		EEC 12 - 200 nautical mile zone		Outside-EEC fisheries zone	
	1000 t	1000 t	%	1000 t	%	1000 t	%	1000 t	%
BELGIUM	53	2	3.8	11	20.7	31	58.5	9	17.0
DENMARK ¹⁾	1689	271	16.0	32	1.9	915	54.2	471	27.9
FRANCE	798	213	26.7	79	9.9	298	37.3	208	26.1
W. GERMANY	474	68	14.3	12	2.5	98	20.7	296	62.4
IRELAND	86	68	79.0	-	-	15	17.5	3	3.5
NETHERLANDS	338	155	45.9	21	6.2	144	42.6	18	5.3
GREAT BRITAIN	1096	445	40.6	2	0.0	248	22.6	401	36.6

1) For Denmark, 1973-75.

Total figures: Eurostat, Fisheries, Catches by fishing area, 1964-76, 1977.

Broken-down figures: Calculated by the Commission of the European Communities on the basis of Minutes of the European Parliament, Document No. 474/76, p.28.

Source: Svend Søndergård Pedersen: Fisheries Policy of the European Communities - the fight for economic gain. Unpublished special study, University of Århus, 1979.

Table 1.4.1 also shows the catches taken by Denmark and the other EEC countries in the fisheries zones of third countries between 1971 and 1975. In the period 1973-75, Denmark took an annual catch of 470 000 tonnes, or 28% of the total annual catches in the fisheries zones of third countries. The proportion of the total West German catch in the period 1971-75 was 62%, with an annual catch of just under 300 000 tonnes. Great Britain and France also took a large proportion of their catch from the fisheries

zones of third countries, with 37% and 26% respectively of the total catch being taken in this way.

1.4.1.2 Management of stocks by the European Communities

The framework of the policy for stock management by the European Communities was laid down in a Council Directive⁶⁾ in 1970. The main feature of this Council Directive is the acceptance of the principle of equal access for all EEC countries to the fisheries zones of Member States. It was also stated that joint Regulations should be drawn up in respect of deep-sea fishery, together with a joint structural policy relating to fisheries as a whole. The enlargement of the European Communities in 1973 involved the modification of the principle of equal access for EEC countries to the fisheries zones of Member States, so that fishing within national fisheries zones ranging from 6 to 12 nautical miles should be reserved for the traditional fisheries in these areas. These Regulations are valid until 31.12.1982⁷⁾.

The actual negotiations on joint Regulations in respect of deep-sea fishing were initiated only in 1976, when it became clear that the need to extend the fisheries zones into the north-east Atlantic was imminent.

A compromise solution was reached at The Hague on 3 November 1976, whereby agreement was reached between the EEC countries on the following points: 1) that the fisheries zones of member countries should be extended to 200 nautical miles; 2) that the Commission should enter into negotiations with third countries in respect of mutual fishing rights; 3) that particular consideration should be given to fisheries in the north of Great Britain, Ireland and Greenland in any future negotiations in respect of internal allocation of resources, and 4) that in the event of the Council of Ministers failing to reach agreement on control measures, individual Member States should be free to introduce measures at national level, on condition that such measures were necessary from the point of view of the conservation of resources, were temporary, non-discriminatory, and had been approved by the Commission.

Agreement was not reached, however, on the proposal by the Commission for the control of fisheries in 1977. The Council therefore decided, as an interim Regulation, that fisheries in the first few months of 1977 should be held at the 1976 level, although this Regulation was subsequently extended to cover the whole year because agreement could still not be reached.

Agreement was reached in the course of 1977 for the introduction of close seasons for herring in the North Sea, and for a periodical ban to be imposed on fishing for Norway pout in an area to the north-east of Scotland (the area known as the Norway pout grounds), together with a ban on fishing vessels in the EEC sea undertaking processing other than salting, shrimp-boiling, filletting, freezing and the processing of waste and catches unavoidably taken in excess of quotas. Fisheries agreements were also reached with a number of countries including the Faroes, Norway and Sweden.

On 16 January 1978 ⁸⁾ the Commission put forward a series of proposals for the control of fisheries in the north-east Atlantic in 1978, which included:

- quotas for the most important species fished by individual member countries in 1978;

- measures designed to increase the control of member countries' fisheries;
- grants to enable fishing fleets and the fishing industry to be adapted to suit changes in the nature of the catch;
- a ban on fishing in the Norway pout grounds;
- the drawing up of rules concerning net sizes and catches taken in excess of quotas;
- assistance for the fisheries inspectorates in Denmark and Ireland.

The quotas proposed by the Commission for 1978 in the North Sea, the waters around Great Britain and the Bay of Biscay, when related to the catches taken in 1973 and 1976, show (cf. Table 1.4.2) that Great Britain, West Germany and Ireland were able to improve considerably their potential catch of the species subject to quotas. These increases in the potential catches should be viewed on the one hand against the need to meet the requirement of the Hague agreement to give particular consideration to the fisheries in the north of Great Britain and in Ireland, and on the other hand as a means of compensating for the losses which the distant-water fisheries of West Germany and Great Britain in particular suffered as the result of the extension of the fisheries zones of third countries. Denmark, the Netherlands and Belgium, on the other hand, have been forced not only to accept a reduction in their permissible catch, but also to make a contribution to

compensate for the reduction in the potential catch of the other countries.

TABLE 1.4.2

Average catches by EEC countries in 1973 and 1977, and the existing quotas of the Commission of the European Communities for the North Sea, the waters around Great Britain and the Bay of Biscay (ICES areas IV, VI, VII and VIII), in 1000 tonnes.

	Average catch 1973 and 1977	1978 quota	Percentage change
BELGIUM	30 268	23 993	- 20.7
DENMARK	1 122 609	1 002 515	- 10.7
FRANCE	221 284	221 383	0.0
NETHERLANDS	185 418	135 558	- 26.9
IRELAND	71 826	78 418	9.2
UK	677 353	744 087	9.9
WEST GERMANY	81 029	146 316	80.6

Source: ICES: Bulletin Statistique, Vol.58, 1973.

" : Advance Release of Bulletin Statistique,
Vol.62, 1977.

COM (:78) 6 final, dated 16 January 1978.

At a Meeting of the Council of Ministers of the European Communities on 30 January 1978, this proposal was rejected by Great Britain on the grounds that it did not adequately safeguard the fishing interests of Great Britain. The remaining eight countries accepted the proposal, however, and agreed to adopt the proposal as part of their national fisheries control regulations for the north-east Atlantic in 1978⁹⁾.

On 31 January 1978, Great Britain announced that it would apply existing fisheries control regulations to the waters around Great Britain in 1978, and that it would possibly extend these measures or introduce new measures wherever necessary in order to conserve fish stocks. In July 1978 Great Britain introduced a series of measures at national level, including the extension of the Norway pout grounds from longitude 0° to longitude 2° east and a ban on fishing for Norway pout in that area between 1 October 1978 and 31 March 1979.

In the course of 1978, the European Communities reached a number of temporary, mutual fisheries agreements with other countries, including Norway, Sweden and the Faroes.

The EEC countries were also unable to reach agreement on joint control measures for 1979. The Council of Ministers therefore decided, as an interim Regulation, that when controlling their own fisheries member countries should take into consideration the total acceptable catches (TACs)

proposed by the Commission for 1979, as well as the agreements reached by the Commission with third countries. Great Britain continued to control Norwegian pout fishery in 1979, which led to Great Britain being taken to Court by the Commission for allegedly having introduced a control measure which had the effect of discriminating against the fishermen of the other EEC countries, in this case exclusively Danish fishermen.

In spite of the opposition of Great Britain, which did not wish to enter into agreements with third countries as long as the joint fisheries policy remained unresolved, a series

of temporary fisheries agreements were reached with other countries, including Norway, Sweden and the Faroes, as had been done in 1978.

A common system of controls had still not been adopted at the end of 1979.

1.4.2 Structural policy

As far as the general regulations are concerned, the structural policy of the European Communities relating to the fisheries industry is laid down in Council Directive 101/76 "for the establishment of a joint structural policy for the fisheries sector". The same Council Directive also serves as the framework for the management of resources by the European Communities; cf. Section 1.4.1.2.

This Directive states that, in addition to establishing a joint system of sea-fishing, measures shall also be taken for the purpose of controlling and coordinating the structural policy of Member States, and that assistance for such measures may be provided by the European Agricultural Guidance and Guarantee Fund (EAGGF).

Although no steps have been taken to lay down specific guidelines for a joint structural policy for the fisheries industry, nevertheless a number of Council Directives have been adopted in order to make available assistance for fisheries, partly in conjunction with the agricultural policy of the European Communities (Council Directives

17/64 and 355/77) and partly as part of a structural policy, especially in relation to the fisheries industry. (Council Directive 1852/77, with subsequent amendments). When financial assistance is to be allocated, the Council Directives call for special consideration to be given to projects in regional development areas in which particular difficulties exist in relation to the development of production facilities. In accordance with Council Directives 17/64 "relating to the conditions of entitlement to receive assistance from the EAGGF" and 1852/78 "relating to the implementation of temporary joint measures for the reorganization of inshore fisheries", grants are available from the EAGGF for the purchase, construction and modernization of fishing vessels and for fish farming. As a general rule, any grants made available by the Fund should not exceed 25% of the approved level of investment,

with the additional condition that the Member State in whose area the project is to be conducted should also take part in the financing of the project.

Grants paid to Danish fisheries on the basis of these Directives have gone almost exclusively to Greenland. Denmark received about Kr 10 million in grants in 1978-79, representing 4% of the total financial assistance paid to fisheries in the same period on the basis of these two Directives. The largest amounts of assistance were received by Ireland, Italy and Great Britain¹⁰⁾.

In accordance with Council Directive 355/77 "relating to joint measures for the improvement of the conditions for the processing and sale of agricultural produce", the consumer fish industry is entitled to receive grants from the EAGGF for the purpose of investing in buildings and equipment which will rationalize or improve the processing of agricultural/fisheries products, improve the marketing network and promote awareness of prices and pricing in the markets for agricultural/fisheries products.

Grants paid by the Fund may not exceed 25% of the approved level of investment, and are also conditional on the country in whose area the project is to be implemented participating in the financing of the project. Denmark also provides State grants in accordance with the Law relating to structural grants for the consumer fish industry; cf. Section 4.2.2.

Grants paid by the EAGGF in 1978-79 to the consumer fish industry in Denmark amounted to Kr 7 million, exclusively for projects in the south of Denmark. The level of grant paid in 1979 represented 17% of the total grants made available to the consumer fish industry by the EAGGF (not including special allocations of funds for the Mediterranean region) ¹¹⁾.

1.4.3 Marketing policy

The principal objectives of the marketing policy of the European Communities are firstly to ensure free internal trade by forbidding Member States to introduce restrictions on their internal trade, and secondly to protect the

processing industries of Member States by the creation of a joint tariff barrier against imports.

In addition, special regulations apply to the most important species sold in the form of whole, fresh, chilled and frozen fish, and to shrimps.

The principal guidelines are laid down in Council Directive No. 100/76/EEC, dated 19.01.1976 "relating to common marketing arrangements for fisheries products".

In order to improve the quality and to promote the sales of fish products, the Council Directive also opens up the possibility of introducing quality standards. Standards of this kind have already been adopted in Council Directive No. 103/76/EEC, dated 19.01.1976 "relating to the creation of common marketing standards for certain types of fresh and chilled fish". The standards classify the fish in accordance with its freshness and size, and cover the species cod, coalfish, haddock, whiting, plaice, Norway haddock, mackerel, herring, sardines, anchovies and hake. The standards apply equally to fish caught by the fishermen of member countries and to fish imported from third countries. The standards must be met if the fish in question is to be sold for human consumption. Checks to ensure compliance with the marketing standards are the responsibility of the Fisheries Inspectorate in Denmark.

In order to ensure a balance between the supply and demand

for fish products, and to guarantee fishermen a reasonable level of income, the Council Directive contains regulations for the creation of producers' organizations and for the introduction of a price control system.

Producers' organizations

A producers' organization is a recognized association of fishermen. The authority to recognize a producers' organization is vested in the individual member countries. In order to participate in the price control system for fisheries products operated by the European Communities, the fishermen must be members of a producers' organization

and must undertake to comply with the regulations laid down by the producers' organization in respect of matching supply to demand and sales, etc. A producers' organization may also become involved in the processing of the goods landed by its members, and may be organized in accordance with customary business principles.

A producers' organization may also plan its fishing activities in order to improve the conditions under which it will sell its landed catches. Finally, the Council Directive also opens up the possibility of granting exclusive recognition to a single producers' organization in the country in which it has been established, i.e. all the fishermen in the area covered by that producers' organization have no choice but to be members.

A single producers' organization which covers the entire country was established in Denmark in 1974. A number of producers' organizations have been established in several of the other EEC countries, representing local interests, the interests of small-scale fisheries or the interests of deep-sea fisheries.

Price control system of the European Communities

The producers' organizations lay down minimum price levels, below which members may not sell their landed catches. In the event of the fishermen being unable to obtain the stipulated minimum price, the fish will be bought at the minimum price by the producers' organization.

Purchases made by the producers' organizations are financed by means of a fund, which is maintained partly by members paying a levy on each kg of fish landed , partly by selling the fish which has been purchased in such a way that it will not interfere with normal sales of the species in question and partly, under certain specific conditions, with financial assistance from the European Agricultural Guidance and Guarantee Fund (EAGGF).

Each year, a target price is fixed for the most common species of consumer fish and shrimps on the basis of the average price obtained over the previous three years

in representative wholesale markets. On the basis of this, an intervention price is then laid down for each species, which will lie somewhere between 60 and 90% of the target price. In the event of these prices being used as the minimum prices by the producers' organizations, then they will be entitled to receive financial support from the EAGGF.

Although at the present time the price control system applies only to fish for direct consumption, there is nothing to prevent a producers' organization from implementing a system of minimum prices for fish for industrial processing, although this will not attract financial support from the EAGGF.

Purchases made by the Danish producers' association in 1978 amounted to approximately Kr 2 million, of which approximately 50% was refunded by the EAGGF. These purchases correspond to a weight of fish of 1452 tonnes, or to just under 4% of total Danish catches of fish for direct consumption. The quantities of fish purchased by the producers' organizations in the other EEC countries were considerably greater, in the case of the larger EEC countries, than the purchases in Denmark. In relation to the total catches of fish for direct consumption by these countries, purchases lay between 1% and 2.4%; cf. Table 1.4.3.

TABLE 1.4.3

Quantities of fish taken off the market by the producers' organizations in 1978.

	Quantity taken off the market	
	Total tonnes	as a % of total landings for direct consumption
Belgium	1427	2.9
Denmark	1452	0.4
France	7000	1.1
West Germany	5515	2.4
Netherlands	1398	0.5
UK	8139	1.0

Source: OECD: Review of Fisheries, 1978.

Trade with third countries

Council Directive 100/76 also lays down regulations in respect of trade with third countries. These regulations apply to fresh, chilled and frozen fish. These fish products may attract export restitutions (export subsidies) when price conditions on the world market are unfavourable.

Denmark took advantage of the subsidies offered on its exports of frozen cod fillets between 1975 and 1978, and on its exports of mackerel from 1978 onwards. Table 1.4.4 shows that Denmark received just under Kr 7 million in export subsidies in 1977, whilst each of the other EEC countries received less than Kr 4.4 million.

A reference price system has been introduced in respect of imports of the above products from third countries. The reference price for a given product lies between 60% and 90% of its import price. In the event of the import price of a given product from a third country falling below the reference price, the European Communities may implement import control measures in respect of that product.

TABLE 1.4.4

Export subsidies paid by the European Communities in 1977

	Kr million
Belgium	
Belgium	1.6
Denmark	6.9
West Germany	4.3
France	0.6
Ireland	0.2
Netherlands	4.4
Great Britain	3.9
Total	21.7

Source: OECD: Review of Fisheries, 1977.

Finally, it must be added that in those cases in which the fish processing industry of Member States is unable to obtain adequate supplies of raw materials in the form of fish at competitive prices, then the common customs tariff on the import of fish from third countries may be reduced.

For instance, there has been no duty on herrings since 1977, and cod has attracted a reduced level of duty since 1978, which has had an effect on imports of these species in respect of both quantities and prices; cf. Part II, Sections 2.3.1 and 2.3.2.

Notes to Chapter 1.

- 1) Atlas of Living Resources of the Seas,
FAO, Rome 1972.

Peder Agger: "Grænser for vækst i fiskeriet" (limits
to growth of fisheries), Fisk og hav 1973.
- 2) ICES: Advance Release of Bulletin Statistique, Vol.62,
1977 and Ministry of Fisheries.
- 3) Erik Ursin: Multispecies Fish Stock Assessment for the
North Sea, 1960-1979, Danish Institute for Fishery and
Marine Research.

The dots in the Figures indicate the estimated quantities caught, and the curve which has been drawn in indicates the quantities caught in accordance with the Bulletin Statistique of the ICES.

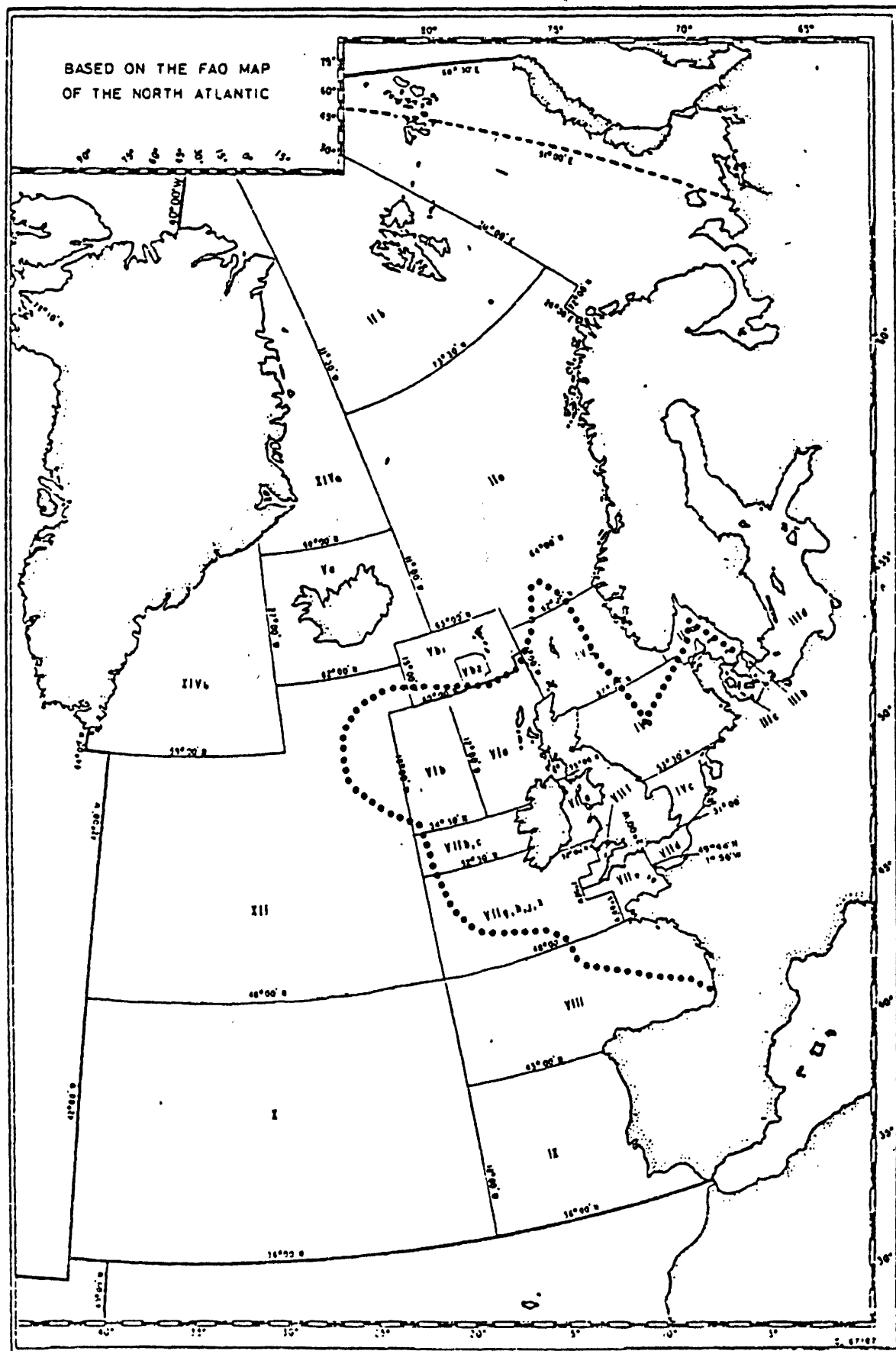
The project group is familiar with the criticism levelled against the North Sea model.

- 4) Com. (79) 612 final version. First report from the
Scientific and Technical Committee for Fisheries.
- 5) Proposed amendment to the Council Directive (EEC), which
defines the quotas to be established for 1978. EFT c 167
dated 12.07.1978.
- 6) Council Directive No. 2141/70 dated 20 October 1970, as
amended by Council Directive No. 101/76 dated 19 January
1976, in respect of the establishment of a joint
structural policy for the fisheries sector.
- 7) Treaty of Accession, Article 100-103.
- 8) Com. (78) 4-10 final version of 16 January 1978.
- 9) In Denmark in the Notice relating to the control of
fisheries in the north-east Atlantic, dated 10 February
1978.
- 10) EEC Bulletin No.6 1979, Press Notices of the Commission
of the European Communities, p - 37, March 1979 and
p - 24, April 1980.

- 11) EEC Bulletin No. 6 1979 and Press Notices of the Commission of the European Communities, P - 72 July 1978, P - 1 January 1979 and P - 4 January 1980.

Map of the statistical areas of the ICES, showing the EEC sea.

(Source: ICES Bulletin Statistique, Vol. 60).



2 DESCRIPTION OF THE JUTLAND REGION

2.1 Economic survey

2.1.1 Area

Denmark consists of the Jutland peninsula and a number of large and small islands. The largest of the islands are Fyn, Sjælland, Lolland and Falster. The capital city of Copenhagen lies on Sjælland.

To the south, the Jutland peninsula has a border of about 50 km with the Federal German State of Schleswig-Holstein. To the west, Jutland has a coastline of about 400 km bordering on the North Sea, to the north-west a coastline of about 150 km bordering on the Skagerrak, and to the east a coastline of about 600 km facing the Kattegat and other internal Danish waterways.

Jutland has an area of 29 766 km², representing 69% of the area of the entire kingdom. Denmark is divided up for administrative purposes into administrative districts ('amter') (cf. Section 2.1.4); Jutland thus contains 7 administrative districts, which for the purposes of this survey have been combined to form three large regions:

- 1) North Jutland, consisting of the administrative districts of Nordjylland and Viborg;
- 2) West Jutland, consisting of the administrative districts of Ringkøbing and Ribe, and
- 3) East Jutland, consisting of the administrative districts of Århus, Vejle and Sønderjylland.

(cf. Table 2.1.1 and Figure 2.1.1)

On the basis of the above, North Jutland and East Jutland each represent just over one-third, and West Jutland just over one-quarter of the total area of Jutland.

Agriculture is the main use to which the land area is put, both in Jutland and in the rest of the country; cf. Table 2.2.2. On average, there is little variation in the proportion of the land area used in Jutland and in the country as a whole. Nevertheless, there is a tendency for a relatively larger proportion of the land area in the south of Jutland to be used for agriculture, whilst the rest of Jutland is more in line with the national average. Developments which have taken place

FIGURE 2.1.1

Denmark, showing the administrative districts on Jutland.

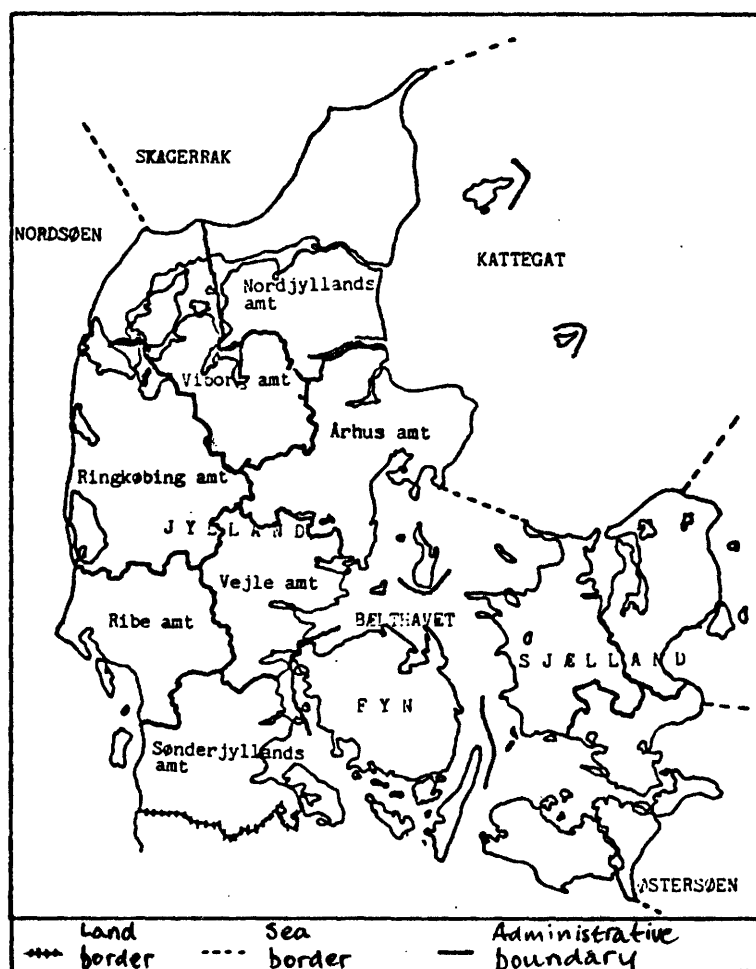


TABLE 2.1.1

Land area of Jutland, by region, in relation to Denmark as a whole.

	land area km ²	coastline km
DENMARK	43 074	7 313
JUTLAND	29 766	3 721
=====		
NORTH JUTLAND	10 294	1 448
Nordjylland admin. distr.	6 172	803
Viborg admin. district	4 122	645
EAST JUTLAND	11 415	1 465
Århus admin. district	4 560	634
Vejle admin. district	2 926	264
Sønderjylland admin. distr.	3 929	567
WEST JUTLAND	7 984	904
Ringkøbing admin. distr.	4 853	598
Ribe admin. district	3 131	206

Source: Statistisk Årbog 1979

in land use over the last 10-15 years have produced a slight fall in agricultural area and a corresponding increase in urbanized areas.

TABLE 2.1.2

Land use in Denmark and Jutland, 1965.

	Agriculture	Market gardening	Woods & plantations	Built-up areas	Other uses
DENMARK	70 %	0.5 %	11 %	5 %	14 %
JUTLAND	70 %	0.2 %	11 %	3.5 %	15 %
Rest of Denmark	69 %	1.2 %	11 %	7 %	11 %

Source: Statistisk Årbog 1979.

Shape of the coastline

Like the rest of Denmark, Jutland was formed by glacial deposits being left on a subsoil consisting primarily of chalk. The shape of the coastline itself and the navigational conditions are therefore a product of the activity of the ice and of upheaval and subsidence of the earth's crust since the glacial period, and finally of erosion and the removal of

material by the sea, which is dependent to a very great extent on the degree of exposure of the coast and on the current conditions.

The west coast of Jutland is extremely uniform in nature from Blåvand in the south to Skagen in the north. It is highly exposed, and the removal of material is at a high level, which is why proper harbour facilities have only been installed within the last hundred years. In view of the fact that reasonable navigational conditions exist, a number of primitive facilities have been available for several hundred years, in the form both of fisheries landing places and of unloading points for Denmark's foreign trade.

For the purposes of this survey, the east coast of Jutland may also be regarded as a uniform whole. Nine large glacial melt

water valleys cut into the land today in the form of well-protected fjords. This, combined with the fertile hinterland, has meant that the greatest growth in the population took place in Østjylland (East Jutland). Exposure of the 'outer coast' is very much less than on the west coast, which is also the case for the removal of material by the sea, with the exception of a single area off the Liim Fjord. The navigational conditions are excellent everywhere, and there are numerous large and small harbours, involved in trade, transport and fisheries.

2.1.2 Population

The population of Denmark in January 1978 was just under 5.1 million, of which only 45% lived on Jutland. Within Jutland itself, about half the population is to be found in the eastern part, about 30% in the northern part and the remaining 20% in the western part. (Table 2.1.3).

It may be seen from Table 2.1.3 that population growth in all the administrative districts on Jutland in the period 1970-78 has taken place at a rate slightly above population growth at national level. However, Table 2.1.4 shows that much of the population growth on Jutland has apparently taken place in the

TABLE 2.1.3

Population in Denmark and Jutland; regions and administrative districts on Jutland, January 1978, January 1976 and November 1970. Expressed in 1000 persons.

	1970	1976	1978	percentage increase 1970-78
DENMARK	4 938	5 065	5 097	3.2 %
JUTLAND	2 193	2 283	2 313	5.4 %
=====				
NORTH JUTLAND	677	698	706	4.3 %
Nordjylland admin. distr.	456	471	477	4.6 %
Viborg admin. distr.	221	227	229	3.6 %
EAST JUTLAND	1 077	1 125	1 138	5.7 %
Århus admin. distr.	533	563	569	6.7 %
Vejle admin. distr.	306	318	321	4.9 %
Sønderjylland admin. distr.	238	245	248	4.2 %
WEST JUTLAND	439	460	469	6.8 %
Ringkøbing admin. distr.	241	254	259	7.4 %
Ribe admin. distr.	198	205	210	6.1 %

Source: Statistisk Årbog for various years.

FIGURE 2.1.2

Denmark, showing major towns and most important fishing ports on Jutland.

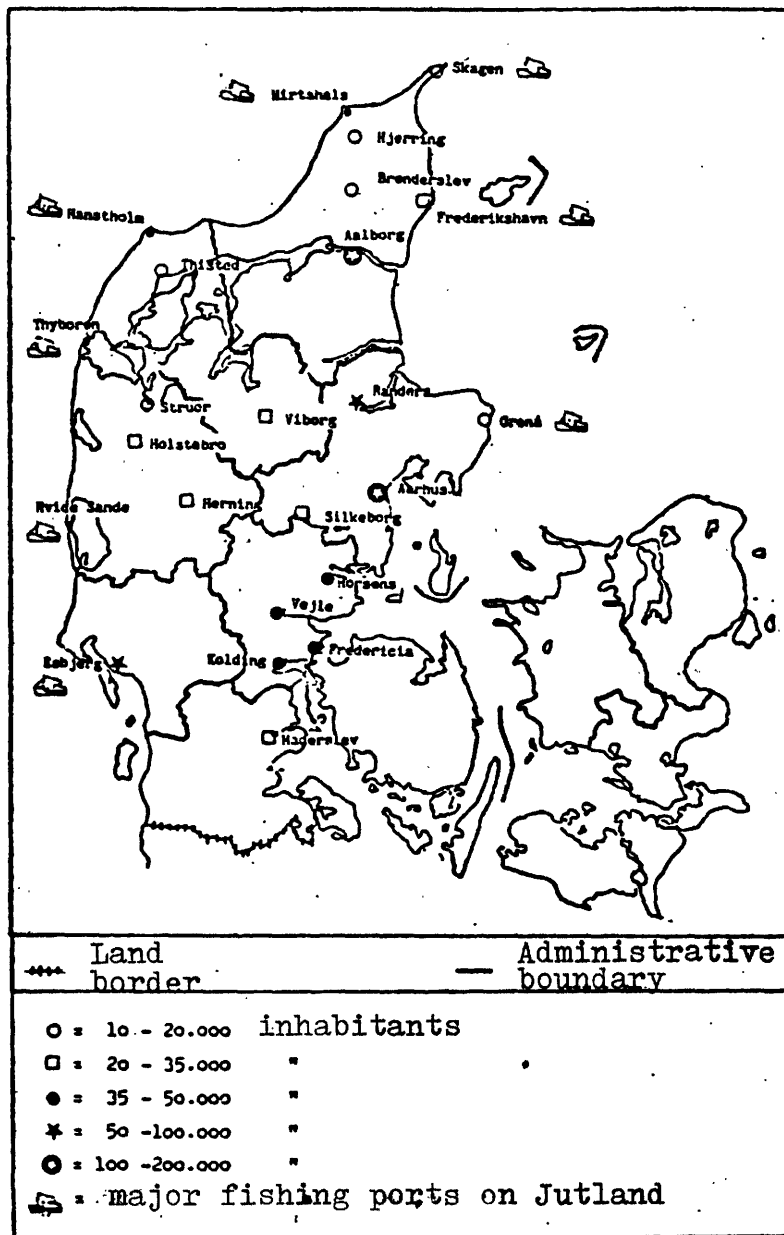


TABLE 2.1.4

Population density and degree of urbanization in Denmark, Jutland, and the regions and administrative districts on Jutland, 1978, 1976 and 1970.

	Persons/km ²			% degree of urbanization	
	1970	1976	1978	1970	1976
DENMARK	114.1	117.6	118.3	79.9	82.6
JUTLAND	73.2	76.7	77.7	72.4	76.6
=====					
NORTH JUTLAND				65.2	73.2
Nordjylland admin. d.	73.7	76.4	77.3	72.9	76.9
Viborg admin. distr.	53.5	55.0	55.6	58.7	64.8
EAST JUTLAND				76.4	79.9
Århus admin. distr.	114.0	123.4	124.8	80.1	83.2
Vejle admin. distr.	101.8	106.0	107.2	75.0	78.8
Sønderjylland admin. d.	60.4	62.4	63.0	69.4	72.9
WEST JUTLAND				69.0	72.4
Ringkøbing admin.d.	49.5	52.4	53.3	66.1	72.0
Ribe admin. distr.	62.8	65.8	67.0	72.5	76.0

Source: Statistisk Årbog 1978 and 1971, and Census Register 1976, Vol. 1

larger towns, since the proportion of the population living in the towns has shown a greater increase in the administrative districts on Jutland than in the country as a whole. Apart from the Århus administrative district, however, all the administrative districts on Jutland are still somewhat below the national average in terms of both population density and degree of urbanization (cf. Table 2.1.4). The major towns and fishing ports in the Jutland regions may be seen from Figure 2.1.2.

2.1.3 Industrial structure

As has already been mentioned, 45% of the Danish population lives on Jutland, and Jutland accordingly contributed 44% of the total Danish workforce between the ages of 16 and 66 years in 1976. (Table 2.1.5).

TABLE 2.1.5.

Distribution of the workforce in Denmark and Jutland, and proportion of population. (1000 persons).

	1970		1976	
	Total workforce	Workforce as a % of population	Total workforce	Workforce as a % of population
DENMARK	2213 ^{XX}	45%	2447	48%
JUTLAND	942 ^X	43%	1049	45%

^X includes population between 14 and 64 years.

^{XX} includes population between 16 and 64 years.

Source: Danmarks Statistik; 1970 Population and Housing Census, and 1976 Census Register.

The workforce as a proportion of the total population is slightly lower in Jutland than in the country as a whole, although, as in the rest of the country, there has been an increase in the workforce as a proportion of the total population in the period 1970-76.

Table 2.1.6 illustrates the employment frequency, i.e. the proportion of the population between the ages of 16 and 66 years in employment. In the period 1970-76 in the country as a whole there was an insignificant increase in the employment frequency amongst men, and a considerable increase amongst women. For Jutland as a whole, the employment frequency amongst men has risen in line with the increase in the national average, whereas the employment frequency amongst women has risen very much faster on Jutland. An increase of approximately 30% in the period 1970-76 has thus brought the employment frequency amongst

TABLE 2.1.6

Employment frequency for men and women between the ages of 14 - 64 years in 1970, and 16 - 66 years in 1976.

	1970		1976	
	women	men	women	men
DENMARK	51 %	88 %	60 %	87 %
JUTLAND	44 %	85 %	57 %	87 %
NORTH JUTLAND	43 %	86 %	55 %	88 %
Nordjylland admin. distr.	42 %	86 %	55 %	87 %
Viborg admin. district	45 %	86 %	56 %	92 %
EAST JUTLAND	47 %	84 %	57 %	85 %
Århus admin. district	48 %	82 %	57 %	84 %
Vejle admin. district	47 %	85 %	57 %	87 %
Sønderjyllands admin. d.	43 %	86 %	55 %	87 %
WEST JUTLAND	38 %	86 %	58 %	88 %
Ringkøbing admin. distr.	48 %	87 %	60 %	89 %
Ribe admin. district	30 %	86 %	57 %	88 %

Source: 1976 Census Register, Vol.3 and 1970 census.

Source: Danmarks Statistik; 1970 Population and Housing Census, and 1976 Census Register.

women on Jutland to a level very close to the national average. The employment frequency for men in the eastern part of Jutland is lower than the national average, but is higher than the national average in the rest of Jutland. This is attributable to a certain extent to the very low

level in the Århus administrative district, due to the concentration there of educational facilities, with the resulting comparatively low employment frequency amongst the 16 - 24-year-olds. The comparatively high employment frequency in the western and northern parts of Jutland are due to the rather higher employment frequency amongst the old, particularly in the administrative districts of Viborg and Ringkøbing. The employment frequency amongst women on Jutland showed the greatest increase in the western part in the period 1970-76, which may be attributed in the main to the concentration of textile and clothing industries in that area, which employ a high proportion of women.

Table 2.1.7 shows the distribution of the workforce amongst major employment groups. It will be seen that the most important change, both for Denmark and for Jutland as a whole, which occurred in the period 1970-75 was a drop in the proportion of the workforce employed in agriculture and

TABLE 2.1.7

Percentage distribution of the workforce amongst major employment groups, 1970 and 1975.

year	agric. and fish.		manuf-acturing sector		build-ing and constr-uction		trade and sales		trans-port sector		admin. educ. social and health		service sector		not stated and on natl. service		Total number of persons in employment = 100%	
	70	75	70	75	70	75	70	75	70	75	70	75	70	75	70	75	70	75
DENMARK	11	9	25	25	9	8	16	15	7	7	21	28	6	6	3	2	2 292 967	2 485 600
JUTLAND	17	14	29	27	9	9	14	14	6	5	18	25	5	5	3	2	963 521	1 083 400
NORDJYLLAND	21	17	25	25	10	9	13	14	5	5	17	23	5	5	3	2	292 799	339 800
Nordjylland ad. d.	18	16	26	25	10	9	14	14	6	6	17	23	5	5	3	2	197 115	221 900
Viborg admin. d.	25	21	24	24	10	9	12	12	5	4	18	23	4	5	2	2	95 684	107 900
ØSTJYLLAND	12	11	31	28	10	8	15	14	6	6	19	25	5	5	3	2	475 261	531 300
Århus admin. distr.	10	9	29	26	10	8	15	15	7	6	20	28	6	6	3	2	236 932	265 400
Vejle admin. distr.	12	11	34	31	10	8	14	14	6	6	17	23	5	5	3	2	136 386	150 900
Sønderjyllands a.d.	18	15	30	27	9	9	14	13	6	6	17	22	5	5	2	2	101 943	115 000
VESTJYLLAND	21	18	28	26	10	9	13	13	6	5	16	22	4	5	2	2	195 461	222 300
Ribe admin. distr.	20	17	26	24	10	9	14	14	7	6	16	23	5	5	2	1	870 150	98 700
Ringkøbing ad. d.	22	19	30	28	10	9	13	12	5	5	15	21	4	5	2	2	108 446	123 600

Source: Danmarks Statistik; Statistisk Årbog 1973 and 1978.

fisheries, and a rise in the proportion employed in administration, education, and the social and health services. It will be noted that North Jutland in particular and West Jutland employ a larger proportion of the workforce in agriculture and fisheries than the country as a whole, but that these regions have also reported a drop which corresponds to the drop at national level. The proportion employed in manufacturing industry during the period 1970-75

remained constant at national level; a slight fall was, however, recorded in the eastern and western parts of Jutland. A typical feature of Jutland is that it lies a little way above the national level in the area of manufacturing industry; this is due to the comparatively high level of employment in this area in the eastern part of Jutland. Also typical is the fact that the proportion employed in administration and education, etc., in Jutland was still a little way below the level for the country as a whole in 1975, in spite of the fact that there had been a marked increase in the previous years.

The falling importance of the 'manufacturing sector' does not simply reflect an increase in the total number of persons in employment, but also a fall in the absolute number of persons employed within industry.

Table 2.1.8 illustrates the industrial structure of Jutland, on the basis of the number of persons employed in the main sectors of industry. A tendency for the individual administrative districts to specialize in certain areas

TABLE 2.1.8

Numbers employed in industrial companies with more than 6 employees in Denmark, Jutland and the regions of Jutland, by main industrial sector. 1977.

	Extraction of raw materials	Food, drink and tobacco industry	Textiles, clothing and leather industry	Wood- & metalworking industry	Paper and printing industry	Chemicals industry	Stone, pottery & glass industry	Iron- and metalworks	Iron and metals industry	Other	Total
DENMARK	1356	74 955	35 071	22 480	34 688	35 517	24 196	8264	146 991	5981	389 499
JUTLAND	661	33 397	22 774	25 576	11 709	7 757	8 753	2109	57 684	1745	156 989
NORDJYLLAND	294	11 897	4 638	3 872	2 490	1 768	4 967	969	17 913	380	49 166
Nordjylland ad. d.	206	8 790	2 509	1 570	1 704	1 010	3 921	183	12 211	162	32 254
Viborg admin. d.	88	3 107	2 129	2 302	786	758	1 046	776	5 702	218	16 912
ØSTJYLLAND	252	16 618	10 185	5 169	8 297	5 043	3 238	210	33 256	1087	83 464
Århus admin. d.	172	8 523	5 367	3 627	5 115	1 861	1 969	176	13 328	485	40 623
Vejle admin. d.	8	5 151	2 548	878	2 326	2 946	543	22	6 745	602	21 769
Sønderjyllands a.d.	72	2 944	2 270	664	856	236	726	12	13 183	109	21 072
VESTJYLLAND	115	4 852	7 951	1 490	922	946	548	930	6 515	60	24 359
Ribe admin. distr.	27	2 578	552	16	481	725	154	487	2 185	43	7 248
Ringkøbing ad. d.	88	2 304	7 399	1 474	441	221	394	443	4 330	17	17 111

Source: Danmarks Statistik, 'Industristatistikken'.

will be observed. Thus the Ringkøbing administrative district is dominated by the textile and clothing industries, whilst the Nordjylland and Ribe administrative

districts are dominated by the food, drink and tobacco industries. Furthermore, all the administrative districts on Jutland have a large iron and metals industry, although with the exception of Sønderjylland the significance of this industry is slightly less on Jutland than in the country as a whole. There is a tendency for employment to be distributed more uniformly over the various groups in the Århus and Vejle administrative districts, unlike the Nordjylland, Sønderjylland and Ringkøbing administrative districts, in which 72%, 88% and 82% respectively of employment is within three major groups.

Unemployment in Denmark and in the Jutland regions may be seen from Table 2.1.9. It is clear that unemployment has been on the increase in all the administrative districts on Jutland, and in particular in Ribe, Nordjylland, Sønderjylland and Århus. Due to a change in the manner of

TABLE 2.1.9

Percentage of unemployment⁽¹⁾ in Denmark, Jutland and the Jutland regions

	1979 ²⁾	1978	1977	1976	1975
DENMARK	9.2	12.4	11.4	10.0	11.1
JUTLAND					
NORTH JUTLAND			15.0	12.7	14.5
Nordjylland ad. d.	12.6	17.7	16.4	13.8	15.0
Viborg admin. d.	10.2	13.7	11.8	9.8	13.3
EAST JUTLAND			10.9	9.8	12.1
Århus admin. d.	10.2	13.4	11.8	9.5	11.7
Vejle admin. d.	9.1	13.3	12.2	11.4	14.6
Sønderjyllands a.d.	8.0	10.8	8.8	8.2	9.3
WEST JUTLAND			9.7	8.3	10.7
Ringkøbing ad. d.	9.3	10.8	9.2	7.3	10.9
Ribe ad. d.	10.3	13.4	11.3	9.6	10.7

- 1) Unemployed members of unemployment funds as a % of total number insured; i.e. non-insured persons have not been included in the figures.
- 2) The statistics were changed with effect from 1 January 1979 so as to include the total number of jobless as full-time jobless, whereas previously only the full-time insured were included. The figures for 1979 include the jobless on all days of the week, whereas the jobless figures for previous years relate only to those out of work on Wednesday.

Source: Danmarks Statistik, Statistisk Årsbog.

TABLE 2.1.10

Proportion of unemployed young people (- 24 year-olds),
January 1979.

DENMARK	27 %
JUTLAND	29 %
=====	
NORTH JUTLAND	29 %
Nordjylland ad. d.	29 %
Viborg admin. d.	29 %
EAST JUTLAND	29 %
Århus admin. distr.	29 %
Vejle admin. distr.	28 %
Sønderjyllands ad. d.	30 %
WEST JUTLAND	29 %
Ringkøbing admin. d.	28 %
Ribe admin. d.	31 %

presenting the statistics, the figures for 1975-78 are not directly comparable with the figures for 1979, and also reflect a number of significant seasonal variations (cf. Section 2.5.1.5). The total level of unemployment in all the administrative districts and in the country as a whole reflects a relatively high level of unemployment in the commercial and office sector, the building trade and amongst semi-skilled workers. It should be noted that the level of unemployment in Nordjylland in particular lies above both the national average and the average for Jutland.

Youth unemployment poses a particular problem; Table 2.1.10 shows that young persons of between 16 and 24 years of age

account for going on for one-third of the total number of unemployed in the country as a whole as well as in the Jutland regions. This may be explained to a very great extent by the existence of a level of unemployment of about 20% amongst young people with no training beyond the education which they received during their basic schooling. Unemployment in this area, as amongst the older age groups, is very much higher amongst women than it is amongst men.

Income and wealth

Table 2.1.11 shows the taxable population divided up in accordance with the size of the gross income. By comparing Jutland with the country as a whole, it will be seen that a slightly larger proportion of the population in Jutland is to be found in the low income group, whilst a rather lower proportion is to be found in the higher income groups of Kr 70 000 and above. The situation is in fact pronounced in Nordjylland, although the Viborg administrative district does have a comparatively large proportion of its population in the middle income groups ranging from Kr 30 000 to Kr 70 000.

TABLE 2.1.11

Taxable persons by gross income group, as a %. 1976.

	Gross income				Total number of persons = 100 %
	5 000-30 000	30 000-70 000	70 000-100 000	100 000+	
DENMARK	26.9	28.1	16.8	10.0	4 020 502
JUTLAND	27.9	28.2	15.4	8.7	1 775 868
NORDJYLLAND	28.3	28.3	14.8	7.9	5 474 210
Nordjylland admin. district	28.2	27.7	15.2	8.1	370 319
Viborg admin. district	28.5	29.5	13.9	7.7	177 102
ØSTJYLLAND	28.1	28.2	15.7	8.9	877 367
Århus admin. district	28.6	28.1	15.7	9.3	442 159
Vejle admin. district	27.8	28.6	16.0	8.6	245 681
Sønderjyllands admin. distr	27.4	28.0	15.4	8.6	189 527
VESTJYLLAND	27.0	28.3	15.6	9.1	351 080
Ringkøbing admin. district	26.7	29.1	15.4	9.1	193 650
Ribe admin. district	27.4	27.2	15.6	9.1	157 430

The percentage figures do not add up to 100, since incomes of less than Kr 5 000 have not been included.

Source: Danmarks Statistik: 'Incomes and wealth in 1976'.

Table 2.1.12 shows the population divided up in accordance with its wealth in 1976. In this case, unlike the division on the basis of income, Jutland, and in particular Vestjylland and Nordjylland, is found to have a comparatively larger proportion of its population within the medium and large wealth groups than is the case for the country as a whole. This situation is probably attributable to the significance of the agricultural industry in respect of employment on Jutland.

TABLE 2.1.12

Taxable heads of families¹⁾, according to wealth groups, 1976.

	W E A L T H				Total number of persons = 100 %
	negative or 0	1 - 49 999	50 000-199 999	200 000+	
DENMARK	41	27	21	11	2 874 261
JUTLAND	37	28	24	11	1 247 293
NORDJYLLAND	36	28	26	11	385 059
Nordjylland admin. district	38	27	25	10	259 186
Viborg admin. district	32	29	28	12	123 873
ØSTJYLLAND	38	28	22	10	618 538
Århus admin. district	43.3	26	21	9.8	315 752
Vejle admin. district	33	28	24	10	171 482
Sønderjylland admin. distr.	34	30	25.1	10.9	131 304
VESTJYLLAND	36	28	24	12	245 696
Ringkøbing admin. district	34	29	25	12	135 369
Ribe admin. district	39	26.4	23.4	11.1	110 327

¹⁾ Heads of families = combined wealth of married couples is assessed, and is therefore recorded on the declaration made by only one partner (the head of the family).

Source: Danmarks Statistik, 'Incomes and wealth in 1976'.

2.1.4. Administrative organization

Public administration in Denmark is delegated to a very great extent to decentralized units in the form of primary communes and administrative districts. There are in total 227 primary communes, grouped together into 14 administrative districts. Of these, Jutland has 141 communes and 7 administrative districts. The statutory basis for the activities of the communes is to be found in the Law of 31.05.1968 relating to the administration of the communes.

The communes (administrative districts) are governed by an Executive Committee (equivalent to the County Council), whose members are elected for a term of four years by and from amongst the residents of the commune (administrative district) who are entitled to vote. The Executive Committee (equivalent to the County Council) elects from amongst its members a Chairman, who is referred to as the mayor.

The activities/powers of the communes are an expression of a division of functions between the State and the commune in respect of taking care of matters of overall public interest. The most important duty of the Executive Committee is to deal with financial arrangements on behalf of the community. The financial means for these arrangements are provided partly by local taxation at the level of the commune and partly by various State grants and refunds. The major proportion of the activities of the communes are laid down by law, thereby either obliging or enabling the communes to arrange or provide support for specific

projects, although it should be pointed out that legal authority is not always required for the activities of and the financial assistance provided by the communes if such arrangements simply satisfy a 'criterion of public utility' and will not lead to competition in relation to other communes.

The existing administrative organization has been in operation since 1970, when a programme of communal reform was introduced in Denmark with the aim of changing the distribution of duties and obligations between the State, the administrative districts and the primary communes. The overall objective of this reform was to transfer as much authority as possible from the centre to the primary communes, and to establish the administrative districts as

coordinating planning bodies and as the bodies which will take charge of any community projects for which a very large population base is required.

As part of the reallocation of responsibilities referred to above, the communes were not only given new duties which had previously been the responsibility of the State, but also had their existing duties extended. Financial support by the State continued to be provided for the duties which had been transferred from the State to the communes, whereas the communes themselves were expected to finance any completely new duties and any duties which had been extended.

State control of activities of the communes

State control of the activities of the communes is limited mainly to a form of control which lays down specific economic and physical guidelines for the activities of the communes, and which imposes certain minimum levels of service which the communes must provide to their residents. This form of control by guidelines thus extends to:

- 1) Loan and investment limits for the communes;
- 2) Land use and planning within the communes;
- 3) Departmental planning and development planning of public services.

Note to 1 above:

Pursuant to the Law relating to the administration of the communes, the Ministry of the Interior has introduced a

system of loan rationing, whereby the opportunities for loans to be obtained by the individual communes will be limited on the basis of the expenditure on construction programmes and the taxation base of the commune concerned. However, the investment limits of the communes will simply be determined by non legally-binding agreements between the Ministry of the Interior and the administrators of the communes.

Note to 2 above:

The Law relating to national and regional planning places the primary communes and administrative districts under an obligation to cooperate with each other and, on the basis of the overall national planning by the State, to work out guidelines for land use and urbanization patterns within the individual administrative districts. Regional plans of this kind are subject to approval by the Minister of the Environment. The Law relating to communal planning also places the individual primary communes under an obligation, based on the regional plan which has been adopted, to work

out a structural plan for the commune containing a report on the major land resources. As part of any major land developments or major building or construction projects, the primary communes are also required to produce a more detailed local plan for use in the area concerned. This is an essential feature of public administration in regional, communal and local planning, since all planning proposals must be produced for public hearing within 3 months.

Note to 3 above:

This relates to the planning of future activities in the area of public services. The social services, the health service and education are examples of areas in which departmental planning and development planning take place.

Distribution of responsibilities between the State and the communes

In order to ensure that residents in the individual communes are, as far as possible, situated on an equal footing in respect of their taxation burden on the one hand and the extent of the communal services which are provided on the other, a range of support and equalization measures has been introduced which, on the one hand, operates by transferring funds from the more prosperous communes to the less prosperous communes, and on the other hand allows for economic assistance to be provided by the State to the less prosperous communes. In other words, these support and equalization measures are intended to

guarantee the communes a largely uniform level of economic freedom. The support measures are provided mainly in the form of

- taxation relief grants and
- block grants.

The taxation relief grants are aimed at ironing out any variations in the level of the taxation burden which derive from the basis of taxation, whereas the block grants are intended to iron out any variations in expenditure, in accordance with the financial commitments of the communes. Grants are calculated partly on the basis of the net expenditure of the commune in precisely defined 'areas of expenditure', and partly on the basis of so-called

'objective criteria', such as the extent of the land area and the road network and the proportion of the population in the various age groups.

Supervision of the activities of the communes

Supervision of the activities of the communes is undertaken by the Ministry of the Interior and by officially appointed supervisory boards. The Ministry of the Interior undertakes the supervision of the administrative districts, whilst the supervisory boards of the individual administrative districts undertake the supervision of the primary communes.

Supervision takes the form of 'legality supervision' on the one hand (i.e. enabling action to be taken against any illegal acts or omissions on the part of the Executive Committee), and on the other hand takes the form of 'responsibility supervision', since it is stipulated that certain major decisions taken by the Executive Committee of a commune require the prior approval of the supervisory board.

'Legality supervision' is applied only occasionally, since the communes generally turn to the supervisory boards for advice and guidance.

'Responsibility supervision' will be used, for instance, when a commune is to obtain a large, long-term loan, when a commune is to sign a guarantee or some other form of

financial security, in the event of communal property being surrendered, mortgaged or newly acquired, or when a commune is to enter into cooperative agreements which will lead to restrictions in the individual powers of the participating communes.

In addition to the general supervision referred to above, the communes are also subject to special supervision in certain areas by the Ministries responsible for those areas.

2.1.5 Assistance to industry provided by the State and the communes at regional level

A fundamental principle applied in Denmark is that assistance to industry is provided by the State, and that specific legal authority is required for any assistance at communal level. The only opportunities which the communes have for providing direct assistance to industry are 1) the building of suitable industrial zones, and 2) the construction and rent/sale of industrial premises; they may also provide assistance to local trade councils. Nevertheless, it will be seen from Chart 2.1.1 that the communes and administrative districts are able in a variety of ways indirectly to influence or support industrial development.

Trade councils

The reason for setting up trade councils is to increase the level of industrial activity and to provide a means of contact between the public authorities and the private sector of business. The trade councils operate at two levels, regionally on the one hand and locally on the other. Jutland has three regional trade councils: the Nordjylland trade council, which covers the Nordjylland administrative district; the Vestjysk development council, which covers the Ribe, Ringkøbing and Viborg administrative districts; and the Sønderjylland trade council, which covers the Sønderjylland administrative district. The regional trade councils are financed by the administrative districts, and

to a certain extent by communal and private subscriptions (from the financial institutions). Represented on the regional trade councils are the subscribers, and the workers' and trade associations from the various sectors of industry. The day-to-day operation of the regional trade councils takes place via small secretariats. These secretariats act mainly as advisory bodies to industry, partly by providing general financial advice, and partly by providing information on the support measures which are available and by helping in the preparation of applications for assistance under these measures. The councils also act to a greater or lesser extent as export consultants and as intermediaries. In principle, the regional trade councils are independent of the local trade councils, although they usually take the initiative in arranging joint meetings, etc., with the local trade councils.

CHART 2.1.1.

Ways of assisting industrial development open to the administrative districts and the communes.

Actions/ Activities	State	Administrative districts	Communes
Payment of grants	<ul style="list-style-type: none"> - Unemployment assistance - Mobility grants - Block grants^{o)} - Taxation relief grants^{o)} - Relocation grants x) - Operating grants x) - Investment grants x) 	<ul style="list-style-type: none"> Grants for public transport Grants for trade councils Taxation^{o)} 	<ul style="list-style-type: none"> Grants for public transport Rent/sale of industrial premises Grants for trade councils Charges for communal services Taxation^{o)}
Credit policy	<ul style="list-style-type: none"> - Loans^{o)} - Permission for foreign borrowing by the communes^{o)} - Loans for construction of industrial premises x) - Loans for crafts and other small industries - Guarantees for operating loans x) - Loans for basic investments x) - Guarantees for loans for rationalization studies x) 		
Other legislation	<ul style="list-style-type: none"> Building regulations, preservation regulations. Environmental regulations. 	<ul style="list-style-type: none"> Permission for building in agricultural areas. Purchase of land for use as recreational areas. 	<ul style="list-style-type: none"> Purchase of land for urban expansion and for use as recreational areas
Planning	<ul style="list-style-type: none"> National planning law^{o)} Departmental planning^{o)} 4-year budgets^{o)} 	<ul style="list-style-type: none"> Regional planning^{o)} Departmental planning^{o)} 4-year budgets^{o)} 	<ul style="list-style-type: none"> Communal and local plans Departmental planning^{o)} 4-year budgets^{o)}
Infrastructure	<ul style="list-style-type: none"> Government harbours Main roads (building) Railways, airports, ferries 	<ul style="list-style-type: none"> Main roads and local roads (operation) 	<ul style="list-style-type: none"> Communal roads Sewers

x) Regional development Law

o) Law relating to the administration of communes and administrative districts

The local trade councils are established in the individual communes. Their structure is similar to that of the regional trade councils, with a committee representing the commune, local industry and the trades unions. However, the local trade councils are financed entirely by the local communes, and their day-to-day running is usually undertaken by a manager employed by the commune. The local trade councils operate at local level with similar duties to the regional trade councils, although at the same time they take the initiative for and arrange more concrete projects to promote the development of local industry and employment. Local trade councils have been set up in 60 of the Jutland communes.

Regional development Law

State assistance to industry is provided partly by the Regional development Law of 1972, and partly by a series of general and specific support measures. The following is a rather brief outline of the regional development Law and its administration, whilst the specific legislation which is of significance to the fisheries sector is discussed in Section 4.1.2.

The Law relating to Regional Development provides for assistance to be made available for purposes of industrial and other types of business development in regions of the country where such development is regarded as being of critical importance in enabling the population to

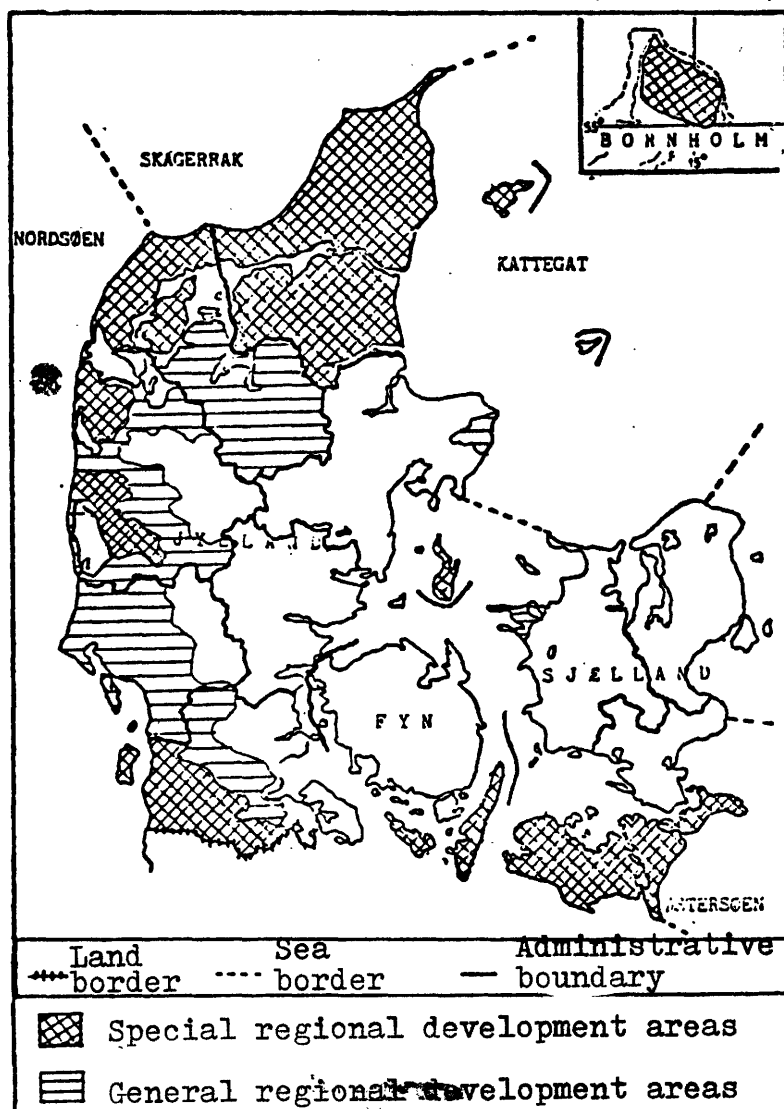
participate in and derive benefit from the general economic, social and cultural progress made by society as a whole. The administration of the Law is the responsibility of the Regional Development Board, with day-to-day matters being dealt with by the Regional Development Directorate, which for administrative purposes comes under the Ministry of Industry. Figure 2.1.3 shows the geographical limits of the regional development areas. The 'general regional development areas' cover 19% of the land area of Denmark and 27% of the population, whilst the 'special regional development areas' cover 33% of the land area and 17% of the population.

In the financial year 1977-78 the Regional Development Board had at its disposal just under Kr 300 million, of which just under Kr 50 million was in the form of a loan from the European Investment Bank, with the rest being in

the form of a grant from the Danish Government. Regional development assistance is provided in the form of grants, loans and loan guarantees to communes and to private organizations. In the 'special regional development areas' grants are made available to cover the initial costs involved in construction, removals, expansion, rationalization and amendments to products, etc., whereas only loans for these purposes are available in the 'general regional development areas'. Similarly, the communes are able to secure loans to meet the expenses involved in the construction of commercial property (industrial premises) for sale or rent. In certain

FIGURE 2.1.3.

Regional development areas in Denmark, as at 01.01.1979.



Source: Regional Development Board, 'Annual Report; 01.04.1977 - 31.03.1978'.

precisely defined circumstances it is also possible for operating grants or guarantees for operating loans and removal grants to be paid, as well as loans and grants in respect of background measures which are important if the business is to remain in existence. Table 2.1.11 shows the geographical distribution of the regional development assistance.

Table 2.1.11 Geographical distribution of regional development assistance.

	1972/73-1974/75	1975/76	1976/77	1977/78
	percentage values			
North Jutland	36.9	38.1	37.0	30.1
North-west and central Jutland	12.6	12.4	9.8	17.7
West Jutland	8.3	14.2	13.2	11.5
South-west Jutland	9.2	9.7	8.4	11.4
Lower Jutland	8.9	9.2	7.3	6.7
Lolland, Falster and Møn	13.9	7.7	13.7	6.3
Bornholm	5.2	3.1	2.6	1.7
Other areas	5.0	5.6	8.0	14.6

A certain amount of regional development assistance is provided to businesses in the fisheries industry; cf. Section 2.5.1.4.

Against the background of uncertainty attaching to the raw materials supply position, the Board imposed limits for a certain period on the assistance which it was prepared to make available for projects within the

consumer fish industry which called for increases in the supply of raw materials, preferring instead to support projects aimed at strengthening local export opportunities, or at the more extensive processing of the raw materials than had previously been the case. The Board also provided wide-ranging support for projects aimed at increasing cold-storage capacity. In dealing with these matters, the Board also sought the opinion of the Ministry of Fisheries.

Harbour administration

Danish harbours are partly State-owned and partly communally-owned or privately-owned institutions. The most important large harbours in west and north Jutland are all Government harbours operated by the Ministry of Public Works. The overall administration of these harbours is the responsibility of the National Harbour Administration, which for administrative purposes divides the country into

two regions. The National Harbour Administration in Frederikshavn is thus responsible for the Government harbours north of Liim Fjord, Frederikshavn, Skagen, Hirtshals and Hanstholm, plus the harbour on Antholt and Hammer harbour (on Bornholm), whilst the National Harbour Administration in Esbjerg is responsible for the harbours on the west coast of Jutland from Esbjerg to Thyborøn. The National Harbour Administration provides a technical and financial advisory service for the individual harbours, and at the same time the Frederikshavn/^{office}provides a technical advisory service to the Directorate. The Director of the National Harbour Administration is also responsible for the local harbour boards, which are the controlling bodies for the individual harbours. Alongside the representative of the National Harbour Administration, the local harbour board also includes representatives of the Ministry of Public Works, the commune, the local fisheries association and the harbour staff.

The harbour board takes decisions in all matters relating to the general upkeep and the day-to-day administration of the harbour, and is also responsible for harbour installations. Whenever new installations are to be built or extraordinary maintenance work is to be carried out, the harbour board will submit its views to the Ministry of Public Works, and will also set out its views in respect of the budget for the harbour.

The day-to-day running of the harbour is the responsibility of the harbour staff, who are employed by the State, and whose day-to-day administrative chief is the harbour master; the larger harbours also employ a harbour engineer and a number of harbour officials. Section 2.6 deals with employment in harbours.

2.2 Fishing fleet

2.2.1 Structure

The size of the fishing fleet registered in the Jutland customs districts in 1978 was 2441 vessels of more than 5 g.r.t. The total tonnage of these vessels was 118 956 g.r.t., with the largest vessels being of approximately 1000 g.r.t. The major proportion of the Danish fishing fleet is registered in Jutland. Figures for the total number of vessels in the entire country in 1978 are as yet only available for vessels of more than 20 g.r.t. Table 2.2.1 shows that 87% of the number and 93% of the tonnage of more than 20 g.r.t. are to be found in Jutland.

TABLE 2.2.1

Vessels of more than 20 g.r.t. in 1978, number and tonnage.

	number	total g.r.t.
DENMARK	1454	110 300 approx.
JUTLAND	1262	103 065
JUTLAND as a %	87	93 approx.

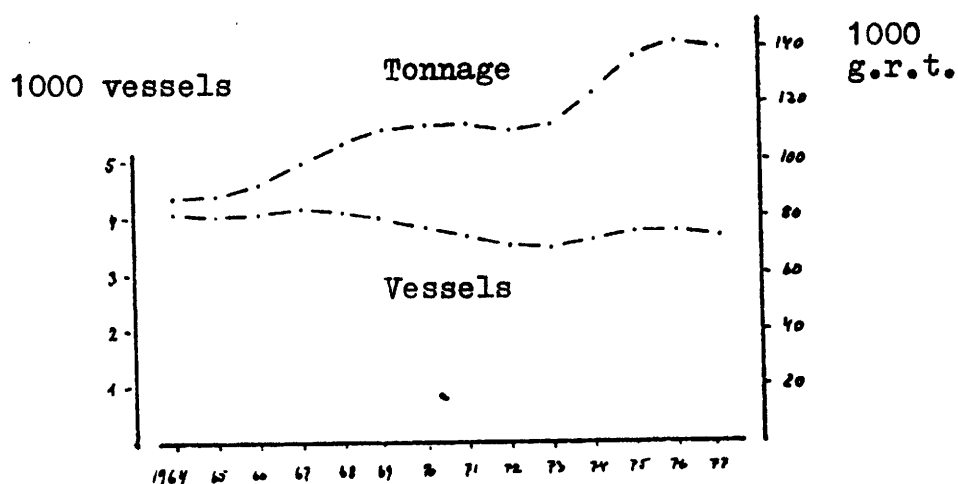
Source: Danmarks Statistik, Yearbook for the Faroes 1977, Fisheries Yearbook 1979.

The developments which have taken place over the last 15 years in the country as a whole reflect a uniform fall in the number of vessels and a rather steep increase in the tonnage (cf. Figure 2.2.1). Today's fleet is therefore composed of fewer, but larger boats. The overall tonnage

has risen particularly steeply since 1973, and there has also been a slight increase in the number of boats.

FIGURE 2.2.1

Development of the Danish fishing fleet, 1964-77;
total number of vessels and total tonnage.



Source: Fisheries Report

A further illustration of this development may be seen in Table 2.2.2a, which shows the changes which have taken place in the Danish fishing fleet with regard to the number of vessels and the tonnage, by size category. It will be seen that the modest increase in the total number of vessels conceals a considerable increase in the number of very small vessels of between 5 and 10 g.r.t., and in the number of large vessels of more than 150 g.r.t., whereas there has been a considerable fall in the number of

medium-sized vessels, especially those of between 10 and 50 g.r.t. However, by far the major proportion of the growth in tonnage has taken place in the area of the large vessels of between 150-200 g.r.t. (35%) and of over 200 g.r.t. (60%).

In the following, the years 1973 and 1978 have been selected as the basis for a more detailed analysis of the number of boats, their size distribution, engine power and age, for the country as a whole and for Jutland.

In view of the fact that, as has already been stated, no figures are available for the country as a whole in 1978, figures for 1977 have been used in Table 2.2.2. It is therefore not possible to calculate Jutland's share of the national totals. This Table shows the distribution of the overall tonnage and the engine power by size category. In 1973, the number of boats in the Jutland fishing fleet was 67% of the national total, and the Jutland fleet had 83%

TABLE 2.2.2a.

Changes between 1973 and 1977 in the number of vessels and in tonnage of the Danish fishing fleet, by size category.

	changes in <u>number</u> of vessels	changes in <u>tonnage</u> (g.r.t.)
5 - 9.9	+ 171	+ 1135
10 - 49.9	- 140	- 2851
50 - 99.9	+ 24	+ 1871
100 - 149.9	+ 7	+ 1028
150 - 199.9	+ 54	+ 9290
200 -	+ 54	+ 16 011

Source: Ministry of Fisheries, Fisheries Reports for 1973 and 1977.

TABLE 2.2.2.

Fishing fleet in Denmark and Jutland, as at the end of 1973 and 1978. Number of vessels, tonnage and engine power by tonnage groups; percentage distribution for each group and Jutland's share as a percentage.

1973		WHOLE COUNTRY		JUTLAND			
SIZE BY g.r.t. GROUP	NUMBER	TOTAL TONNAGE g.r.t.	TOTAL ENGINE POWER HP	NUMBER	%	TOTAL TONNAGE g.r.t.	TOTAL ENGINE POWER HP
5 - 20	2170 63%	28 991 26%	168 871 32%	1112 48%	51 %	15 626 17%	54 % -
20 - 50	863 25%	32 645 29%	147 567 28%	803 34%	93 %	30 020 32%	92 % -
50 - 100	206 6%	14 665 13%	64 360 12%	195 8%	95 %	13 779 15%	94 % -
100 - 140	84 2%	10 432 9%	43 901 8%	79 3%	94 %	9 690 10%	93 % -
over 140	150 4%	25 756 23%	108 021 20%	145 6%	97 %	24 484 26%	95 % -
TOTAL	3473 = 100%	112 489 = 100%	532 720 = 100%	2334 = 100%	67 %	93 600 = 100%	83 % 429 340 81%
1978		WHOLE COUNTRY		JUTLAND			
5 - 20	2260 62%	29 163 21%	224 892 31%	1179 48%	-	15 892 13%	-
20 - 50	804 22%	30 757 22%	169 879 23%	713 29%	-	26 997 23%	-
50 - 100	230 6%	16 636 12%	81 967 11%	213 9%	-	15 324 13%	-
100 - 140	84 2%	10 416 7%	47 560 7%	77 3%	-	9 482 8%	-
over 140	265 7%	52 101 37%	205 603 28%	259 11%	-	51 260 43%	-
TOTAL	3643 = 100%	139 073 = 100%	729 928 = 100%	2441 = 100%	-	118 956 = 100%	- 582 946 -

Note: 1) Data for 1977

Source: Fisheries Report for 1973 and 1977
Fisheries Yearbook 1974 and 1979

and 81% respectively of the total tonnage and engine power in the country. These proportions were all in excess of 90% in the case of boats of 20 g.r.t. and above. It is unlikely that these proportions will have changed noticeably in 1978.

From the Table, it may be calculated that the average tonnage of the Jutland boats has risen from 40 g.r.t. in 1973 to 49 g.r.t. in 1978 (an increase of 22%), and that the engine power has increased from 184 h.p. to 239 h.p. (an increase of 30%).

Figure 2.2.2 shows the distribution of the Jutland fishing fleet by region in the years 1973 and 1978. From this, North Jutland and East Jutland will be seen to be characterized by large numbers of small vessels (of less than 20 g.r.t.), but with North Jutland also having the largest number of large boats (of more than 140 g.r.t.). The reason for this distribution in North Jutland is that a large number of small vessels are registered at Liim Fjord, where the composition of the vessels is similar to that found in East Jutland. The large boats in North Jutland are registered in the fishing ports along the coast of the Skagerrak. The composition of vessels here is similar to that found in Esbjerg.

It will be seen from Figure 2.2.2 that there has been no appreciable change in the composition of the vessels within the individual regions between the two years in question,

over and above what has already been referred to as the general trend for the country as a whole. The number of vessels in the Esbjerg region has actually fallen, however, although on the other hand it is here that the greatest increase in average tonnage and engine power has been recorded. The opposite is true for East Jutland, where there has been the largest increase in the number of vessels, but with the size remaining unchanged.

There is considerable variation in the ages of fishing vessels. The oldest were built just before the turn of the century, although most of the boats in the present fleet were built in the 1940s, 1950s and 1960s.

The average age in 1978 was 25 years for the country as a whole, and 24 years for the Jutland fishing fleet; cf. Table 2.2.3. The ages were very much the same in 1973.

FIGURE 2.2.2

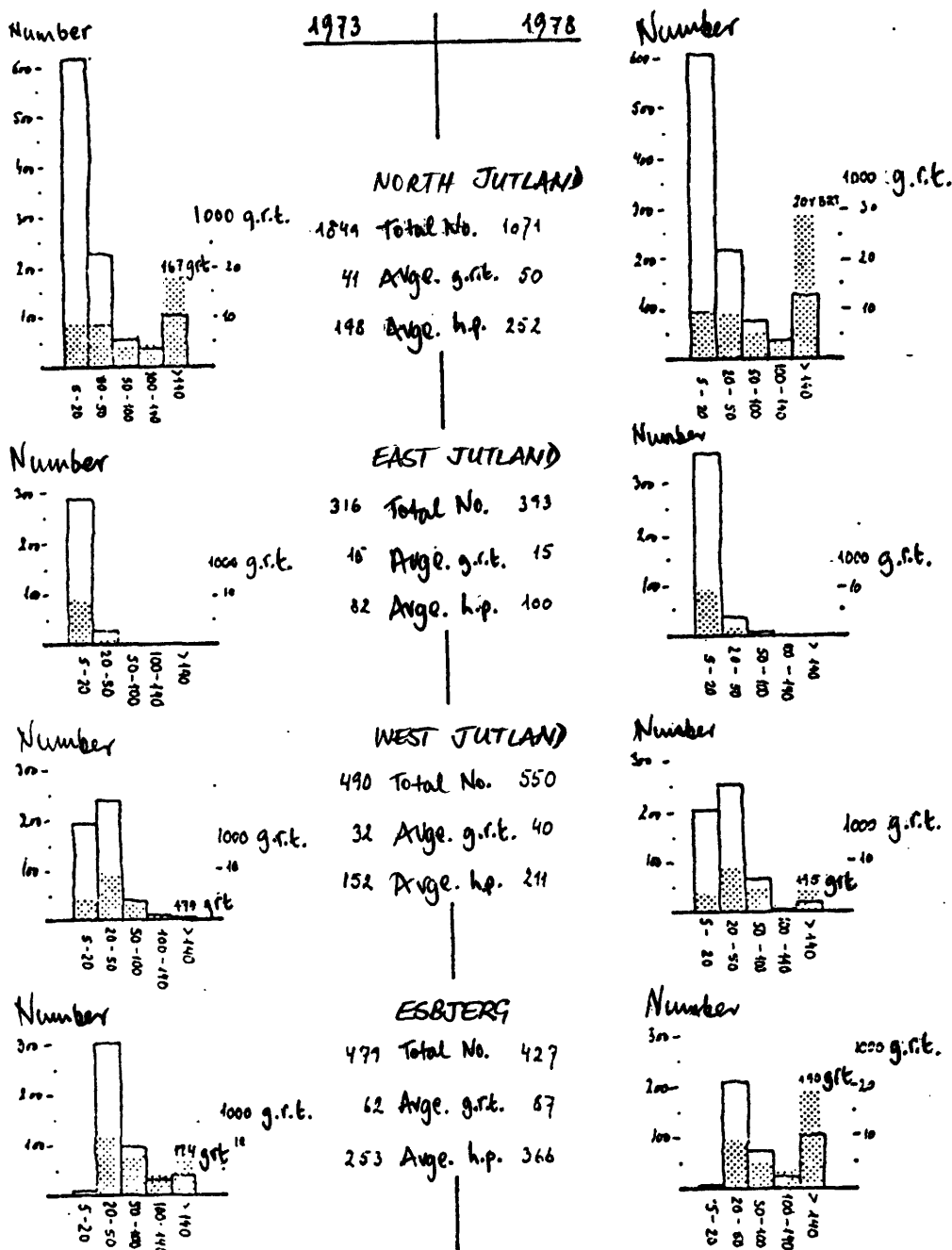
The Jutland fishing fleet, 1973 and 1978, divided up by region. The total number of vessels and the average tonnage and engine power per vessel is shown for each of the regions.

The bar charts relate to 5 size categories based on g.r.t. (as used in Table 2.2.1): the number of vessels (blank bars) and the total tonnage (dotted bars) for each category. The average g.r.t. per vessel is shown for category 5 (vessels of more than 140 g.r.t.).

FIGURE 2.2.2

Jutland fishing fleet, 1973 and 1978, by region. Total number of vessels and average tonnage and engine power per vessel is shown for each region.

The bar charts show the following for five tonnage categories (as in Table 2.2.1): number (open columns) and total tonnage (dotted columns) for each category. The average g.r.t. per vessel is shown for category 5 (over 140 g.r.t.).



Source: Fisheries Yearbook 1974 and 1979.

The same is true for the developments which have taken place within the individual regions, although a difference in the ages of vessels will be observed in this case. West Jutland and Esbjerg have the newest fleet, with vessels of an average age of 19 years in 1978, and North Jutland and East Jutland have the oldest fleet, with vessels of 28 and 27 years respectively in 1978.

TABLE 2.2.3

Fishing vessels: average year of construction in 1973 and 1978

	1973	1978
WHOLE COUNTRY	1948	1953
JUTLAND	1948	1954
North Jutland	1945	1950
East Jutland	1945	1951
West Jutland	1953	1959
Esbjerg	1954	1959

Source: Fisheries Report, Fisheries Yearbook.

There is also a variation in ages within the individual tonnage groups. As a rule, the smaller vessels (of less than 50 g.r.t.) are considerably older than the larger vessels (Table 2.2.4). For Jutland as a whole, the average age of these small vessels was 27-28 years, whereas the average age of the large vessels was only 10-18 years. A feature common to all the regions is that small boats in the 20 - 50 g.r.t. category are older than those in the

5 - 20 g.r.t. category, and that of the large vessels, those in the 100 - 140 g.r.t. category are the oldest.

TABLE 2.2.4

Average year of construction of fishing vessels in different tonnage categories, by region. 1978.

Region	tonnage category				
	5-20	20-50	50-100	100-140	over 140
JUTLAND	1950	1951	1965	1960	1968
North Jutland	1946	1944	1960	1957	1967
East Jutland	1952	1946	1960	-	1963
West Jutland	1958	1957	1969	1964	1968
Esbjerg	1964	1951	1965	1962	1969

Source: Fisheries Yearbook, 1979.

2.2.2 Fishing gear and methods

The Jutland fisheries make use of a wide variety of items of fishing equipment. The equipment is selected not only as a function of its application to catching the desired species of fish, of its suitability for the fishing grounds in question, and of the fisherman's experience in using it, but often also as a function of the traditions of the fishing industry at the individual landing places.

The majority of the boats are built to a design which is specifically suited to fisheries. This is determined by the boat's equipment and deck fittings, and by the size of the boat and the facilities for storing the catch on board.

The ability - on one and the same vessel - to change from one type of equipment to another is usually limited to changing between different types of trawl.

The trawlers are thus able to vary their mode of fishing during the year, depending on the accessibility of the fish and the price. The majority of the Jutland trawlers, and in particular those which are registered in the ports along the coast of the Skagerrak, appear to be very much involved in a switch from industrial fishery to consumer fishery.

The most recent survey of the equipment used in the Danish fisheries dates from 1976, which means that there is no possibility of presenting a clear picture of the present

quantity and distribution of individual items of fishing equipment.

The total value of the fishing equipment and its associated accessories in 1976 was approximately Kr 460 million, of which it may be assumed that approximately one-half belonged to the Jutland fisheries.

The most important items of fishing equipment used in the Danish fisheries are the various types of seine net and trawl. No details are available of the quantities caught by the different types of fishing, although it has been estimated that over three-quarters of the catch is taken using these two types of equipment.

Fishing for species of fish for industrial processing is done almost exclusively with small-mesh trawls, both in the form of bottom trawls and floating trawls. Trawls are therefore the most common type of gear used on vessels registered in the large industrial fishing ports, in particular in Esbjerg and the large harbours in North Jutland.

Small-mesh trawls are also used in herring fishery, and - particularly in North Jutland - in the extensive mixed fishing for fish for direct consumption and for industrial processing. Herring fishery often takes place with a floating trawl drawn by two boats.

There is very much more variation in the methods of catching used by the Danish consumer fisheries. The most commonly used equipment is the Danish seine and various types of large-mesh trawls. Danish seine fishery is common in the fishing ports along the coast of the Kattegat, in particular in North Jutland, and is also practised to a certain extent from the ports on the west coast of Jutland. It is used mainly for catching cod and plaice. This gear is not really suitable for boats of more than 50-60 g.r.t. Trawl-fishing, on the other hand, is in widespread use throughout the whole of Jutland and may be used on most sizes of boat, provided that their engine power is adequate. Nets are also used throughout the whole of Jutland. Various

types of stationary and mobile gear is used for catching many species of fish for direct consumption, including roundfish, flatfish and fish of the herring family (clupeoids). Many of the large ports in West Jutland have specialized in this form of fishery. In this area, nets are used above all for catching cod, plaice and sole.

Pound nets are used extensively in certain areas of East Jutland, where the shape of the coastline allows, and in the fjords in the east and west of Jutland and in Liim Fjord.

Hooks are not used to any great extent in Danish fisheries, and are used almost exclusively by small firms and by part-time fishermen. On the west coast of Jutland, hooks are used mainly for catching roundfish, i.e. cod and haddock, although mainly for catching eels in the fjords. Eel hooks and cod hooks are also used along the east coast of Jutland.

The use of seine-nets in deep-sea fishery is relatively new in Denmark, and is practised only by vessels working out of a single port, Hirtshals, in North Jutland, where approximately 12 of the largest vessels now use this method of catching, usually in the more distant waters to the west of Scotland and in the English Channel.

Processing the catch

It is usual in the Danish fisheries to subject the fish to only a small amount of processing after it has been caught. This generally involves cooling the fish in order to prevent any significant loss of quality, and - as far as most of the species for direct consumption are concerned - removing the innards and cleaning the fish.

The cleaning of fish for direct consumption is generally done by hand. In connection with the problem of separating the species suitable for direct consumption from catches made for industrial processing, a number of vessels have installed equipment for the automatic cleaning, in particular of small fish such as small cod, haddock and whiting. However, these machines have proved difficult to use because they require a great deal of maintenance and frequent adjustment, which is why little use is made of the machines which have already been installed; indeed, many previously installed machines have been taken out of service. In the area of industrial fishery, too, a number of boats (estimated at between 50 and 60) have installed

sorting equipment in recent years for the purpose of sorting the larger fish suitable for direct consumption from catches made for industrial processing. The equipment appears to operate satisfactorily and to produce a positive financial benefit, and one may therefore assume that such equipment will find increasingly widespread applications.

Various methods are used for the storage of fish on board before it is landed, almost all of which share the common feature that they are used for cooling the fish.

In order to ensure that any fish arriving at the first stage of the distribution chain is of suitable quality, the Law relating to the quality control of fish and fish products (cf. Section 4.2.3) stipulates certain minimum requirements in respect of the processing and storage of

the catch on board fishing vessels. The following is a brief outline of the contents of this Law,

- Any holds, equipment, gear and packaging materials used in conjunction with the storage of fish shall be kept clean and in good repair;
- If the fish which has been caught will not be alive when it is landed, then it shall be cleaned, washed and carefully covered with ice without delay. Nevertheless, the majority of the pelagic species of fish and certain other, chiefly small species of fish shall be exempt from the requirement for cleaning and washing;
- The above requirements for cleaning and icing shall be relaxed during the six winter months, thereby enabling short, one-day fishing trips to be made without the need for icing on board;
- When fishing for fish for industrial processing, the quantity of ice used for cooling the fish shall be equivalent to at least 15% of the load, and care shall be taken to ensure that the ice is well mixed with the fish. During the winter (1 October to 30 April), however, a quantity of ice equivalent to only 10% of the load of the vessel may be used.

A single method for the storage of industrial fish is used almost exclusively in the Danish fisheries. The fish is handled in bulk, and is fed by means of movable wooden partition walls to the holds of the vessel, which are filled one after the other in a specific sequence. During

the filling process, the fish is mixed with ice to a more or less effective degree whilst it is still on deck.

A different method is used for the storage of fish for direct consumption, which is normally cleaned and frozen on board. In North Jutland and East Jutland it is usual for the catch to be packed immediately with ice into wooden or plastic containers which the vessel has brought along on the voyage, and which are then stacked in the hold. In West Jutland, on the other hand, no containers are taken along on the voyage. Here the catch is stored in bulk in the hold with ice, and is only packed with ice into containers once the boat has reached port. If the

depth of fish in the hold is great, then horizontal partitions are inserted in order to prevent the fish at the bottom of the hold from being subjected to excessive pressure.

A third method is used in the special fishery known as bright fish fishing which is carried on in West Jutland. The catch, which is generally cod, is stored belly-downwards on ice on shelves in the hold. This gives the fish a very fresh appearance, and avoids any pressure marks on or discolouration of the skin. This is a poor form of storage, however, from the point of view of refrigeration, and it is therefore used only on short fishing trips.

One other form of storage is used in the Danish fisheries. Many of the seine-netters keep at least a proportion of their catches of pelagic fish species in tanks full of refrigerated sea water. This is a gentle method of storage which is highly suitable from the point of view of refrigeration.

Finally, it should be pointed out that experiments into the container handling of fish for direct consumption have been conducted for many years at the Research Laboratory of the Ministry of Fisheries. In these experiments, the catches were placed in containers together with ice and water. After landing, the containers are taken ashore and are then moved directly to the point of processing. The advantages of this method are efficient and gentle

refrigeration and very much easier unloading. The experiments did pose problems, however, in that it was almost impossible to find suitable boats on which the tests could be carried out. Danish boats have small cargo hatches on the deck, making high, narrow containers necessary. Such a configuration makes it difficult to achieve an effective mixture of ice, water and fish.

2.2.3 Ownership and economic conditions

Forms of ownership within the fishing fleet

On the basis of a representative random sample comprising 211 fishing vessels of more than 5 g.r.t., the Jutland Institute of Technology (Jysk Teknologisk Institut)¹⁾ has established that 63.5% of the Danish fishing fleet (number of vessels) in 1976 was owned by a single owner, with 33.6% and 2.9% respectively being owned by jointly-owned shipping companies and by a variety of types of company (partnerships, limited partnerships, cooperatives and limited liability companies).

Individual ownership

The main reason why individual ownership has until now been the predominant form of ownership within the Danish fishing fleet is the fact that the Danish fisheries have been operated traditionally as inshore fisheries using small vessels, thereby calling for limited levels of capital investment in individual vessels. The following circumstances must be offered as an explanation of the fact that this form of ownership continues to be typical of the major proportion of the fishing vessels, in spite of the opportunities which exist for changing to other, and in some respects (see below) more financially advantageous, forms of ownership.

Firstly, individual ownership is the form of ownership which attracts the least number of formal requirements

on the part of the authorities in respect of establishing and operating the business and the keeping of accounts.

Secondly, this form of ownership has also benefitted from the changes which have taken place in fiscal legislation, etc., over the last 25 years, and which were aimed at stimulating industrial investment in Denmark. The ability to claim considerable amounts of tax-free depreciation and the opportunities for claiming depreciation in advance on contracts which had been entered into, to name a few of the main post-war aspects of fiscal legislation, also offered businesses owned by individuals the possibility of postponing and smoothing out their annual tax payments,

and of enjoying the resulting liquidity advantages. The fact that the fishing fleet took full advantage of these opportunities is due not only to the excellent catches to be made throughout the 1960s and in the early 1970s, but also to the fact that the wish to invest was stimulated by the level of inflation, anticipated inflation and favourable conditions for providing finance.

A third factor is the prevailing method of paying wages as a percentage of the value of the catch, which is so characteristic of the Danish fisheries (cf. Section 2.2.4) and which - all things being equal - has the effect of limiting profits in the fishing industry.

Although a system of wages based on a percentage of the value of the catch places the owner of the vessel in a more favourable position when times are bad than a system of fixed wages, the possibility of generating profits when times are good is equally poor, especially if the cost of maintaining the vessel and of buying equipment, etc., rises more steeply than the price obtained for the fish. As the advantage over other forms of ownership is related simply to the tax concessions on the unpaid profits, and as the major proportion of those profits is often - at any rate at certain periods - used to cover the living costs incurred by the owner of the vessel, there has never been any incentive to opt for other forms of ownership which are more advantageous from the point of view of the accumulation of capital.

Characteristic features of individual ownership:

Liability: The owner is personally liable with all his assets.

Formal requirements on setting up the business: None.

Fiscal status: The owner is liable to income tax on his profits.

Payment of tax due: Tax is due on demand.

Accounts: The owner shall comply with the minimum legal requirements in respect of book-keeping and accounts. The use of auditors is not essential.

Tax-free investments, funding and depreciation, etc.: These are available to the owner.

Jointly-owned shipping companies

Like individual ownership, the jointly-owned shipping company has a long tradition in the Danish fisheries as a widespread form of ownership within the Danish fishing fleet. This form of ownership probably originated in the problems encountered in the fisheries industry with the advent of a new generation, when it was common for the previous owner of a fishing vessel, upon selling it, to leave a part of his capital as a negotiable share in the vessel which would attract a proportion of the profits. This form of ownership, which in most respects offers the partner the same advantages and disadvantages as does individual ownership to the individual owner, has played a part in reducing the amount of capital required by young persons wishing to set themselves up as independent masters of fishing vessels.

Pursuant to the Law of the Sea, a jointly-owned shipping company may only operate a single vessel, of which it is customary for the master to own a share of between 30 and 50%. The average share held by masters in 1976 was 41% for the country as a whole. The jointly-owned shipping company is a more widespread form of ownership amongst vessels operating out of the North Sea ports than in the rest of the country, due to the higher average tonnage of these vessels and the correspondingly higher purchase price.

Characteristic features of jointly-owned shipping companies

- Liability:** The partners are personally liable with all their assets in proportion to the share which they hold.
- Formal requirements on setting up the business:** A jointly-owned shipping company must be formed and registered with the local register of trade. One of the partners shall be nominated as managing owner.
- Fiscal status:** The partners are liable to income tax on their profits.
- Payment of tax due:** Tax is due on demand.
- Accounts:** The company shall comply with the minimum legal requirements in respect of book-keeping and accounts. The use of auditors is not essential.
- Tax-free investments, funding and depreciation, etc.:** These are available to the individual owners.

Ownership by companies

Partnership: to all intents and purposes identical with individual ownership in respect of legal status, although there must be a minimum of two personally liable owners. This form of company is normally chosen in those cases in which the partners are personally involved in the operation of the company (which may comprise one or more vessels).

Limited partnership: similar in form to the jointly-owned shipping company, although there is no limit to the number of vessels which the company may own, and the liability of the partners is indirect since a creditor may usually bring a claim only against the company and its general partner, who is personally liable with all his assets. This form of company normally requires that only the general partner need be personally involved in the operation of the company, with the other limited partners acting as passive providers of capital.

This form of company became quite popular in the fishing fleet during the 1960s and 1970s, due to the opportunities for tax deductions open to the limited partners. This form of ownership has thus brought a certain amount of 'external' capital into the fishing industry.

Compared to the forms of ownership referred to above, cooperatives and limited liability companies have an entirely different legal status, since it is the company

itself, and not the individuals behind it, which is the juristic person with the associated rights and obligations. In spite of the immediate benefits which they offer, these forms of ownership are found only to a limited extent in the fishing fleet; cf. 'individual ownership'.

Characteristic features of cooperatives and limited liability companies

Liability:	Liability attaches to the company, which is the juristic person.
Formal requirements on setting up the business:	Memorandum of association, raising of joint capital (Kr 30 000 in the case of cooperatives, and Kr 100 000 in the case of limited liability companies), registration, notification of Directors' names and presentation of accounts.

Fiscal status: The company is liable to tax.

Payment of tax due: Corporation tax (37%) is payable on the taxable profits. Tax is payable one year in arrears.

Accounts: Special requirements apply to the accounts, which must usually be submitted to the Register of Companies. Accounts must be audited and published.

Tax-free investments, These are available to the company.
funding and
depreciation, etc.: Special requirements apply to the allocation of funds to reserves by limited liability companies.

As may be seen from the above summary of the forms of ownership within the fishing fleet, cooperatives and limited liability companies offer a number of advantages in the form of limited liability, lower levels of taxation on profits with an associated increase in the level of self-financing, tax credits and equalization of income, on condition that the owners are employed by the company. Apart from the formal requirements on setting up the business, the only other disadvantage of these forms of ownership is that profits are taxed twice, once in the form of corporation tax and once in the form of income tax to the extent that profits are paid out in the form of a dividend to shareholders or partners.

Extent of the different forms of ownership within the
fishing fleet

Table 2.2.5 illustrates the ownership structure within the Danish fishing fleet in 1978, for all vessels of more than 20 g.r.t. and for all vessels of more than 5 g.r.t. in the North Sea ports²⁾.

The Table is divided up on the basis of individual ownership, jointly-owned shipping companies and ownership by companies, and exhibits close agreement with the random sample-based data from 1976, at 57%, 40% and 2% respectively.

The row and column percentages shown in the Table indicate that individual ownership is very typical of vessels of less than 100 g.r.t., but that this form of ownership decreases as the size of vessel increases. On the other hand, jointly-owned shipping companies are the most common form of ownership for vessels of more than 100 g.r.t. Ownership by companies is the most common form of ownership

TABLE 2.2.5

Ownership structure of the fishing fleet¹⁾, as a percentage, in the various tonnage categories.

The upper percentages are row values, and the lower percentages are column values. March, 1978.

	5-19	20-49	50-99	100-149	over 150	Total	Number of vessels
1 owner - fisherman	32 62	45 56	13 55	6 32	4 25	100 53	1033
1 owner - associated with the industry	50 2	42 1	0 0	4 1	4 1	100 1	24
1 owner - other	43 6	36 3	5 2	8 3	8 4	100 4	75
Jointly-owned fishing company	20 29	41 38	12 40	14 59	13 63	100 40	787
Limited liability company	0 0	42 1	19 2	23 3	15 2	100 1	26
Cooperative	25 0	25 0	25 0	0 0	25 1	100 1	4
Partnership	0 0	25 0	0 0	25 0	50 1	100 0	4
Limited partnership	0 0	0 0	17 1	33 2	50 4	100 0	12
Total	27 100	43 100	12 100	10 100	9 100	100 100	
Number of vessels	532	837	240	190	166		1965

1) The Table includes all vessels of more than 20 g.r.t., plus all vessels of more than 5 g.r.t. operating out of the North Sea ports.

Source: Register of Shipping; Jens Chr. Muff: 'An analysis of Danish North Sea Fisheries in the period 1950-77'. Not published.

for vessels of more than 150 g.r.t., where 8% of the vessels are owned by companies. Half of these are owned by limited partnerships.

Table 2.2.6 shows the capital invested in the fishing fleet on the basis of the following ownership categories:

fishermens' capital, capital associated with the fishing industry (fishermens' families and companies providing a service to fisheries), and 'external' capital, for the individual tonnage categories. The Table shows that the proportion of the invested capital provided by the fishermen themselves reduces as the size of the vessel increases, that the proportion provided by persons associated with fisheries represents a more or less constant share of the individual tonnage categories, with the exception of vessels of more than 200 g.r.t., whereas the amount of 'external' capital increases in proportion to the increase in size of the vessels.

TABLE 2.2.6

Capital injected into the Danish fisheries fleet¹⁾, showing the percentage of each form of capital in the individual tonnage categories. March 1978.

Form of capital	Tonnage categories						
	5-19	20-49	50-99	100-149	150-199	200-	All vessels
	%	%	%	%	%	%	%
Fishermens' capital	88.7	88.4	85.6	63.9	72.0	43.2	83.4
Capital associated with the fishing industry ²⁾	2.7	3.5	3.1	1.8	1.7	5.8	3.1
External capital	8.6	8.1	11.2	34.2	26.3	51.0	13.2

1) All vessels of more than 20 g.r.t., plus vessels of more than 5 g.r.t. operating out of the North Sea ports.

2) Fishermens' families and service and client companies of the fisheries industry.

Source: Register of Shipping; Jens Chr. Muff: 'An analysis of Danish North Sea Fisheries in the period 1950-77'. Unpublished.

In order to check whether there are any regional variations in the ownership pattern outlined in Table 2.2.6, Table 2.2.7 has been compiled on the basis of the numerical data to show the relative significance of the individual forms of capital by region. It may be seen from the Table that the North Jutland fishing fleet has the largest proportion

of 'external' capital on average, which is in line with the North Jutland share of vessels in the larger tonnage categories.

TABLE 2.2.7

Capital injected into the Danish fisheries fleet¹⁾, by forms of capital in the Jutland regions. March 1978.

	Forms of capital		
	Fishermens' capital	Capital associated with the fishing industry	External capital
North Jutland	74.0	3.6	22.4
West Jutland	92.0	1.9	6.1
Esbjerg	85.6	2.7	11.7
DENMARK	83.7	3.1	13.2
DENMARK Capital share of g.r.t.	72.1	3.2	24.7

- 1) All vessels of more than 20 g.r.t., plus vessels of more than 5 g.r.t. operating out of the North Sea ports.
- 2) Fishermens' families and service and client companies of the fisheries industry.

Source: Register of Shipping; Jens Chr. Muff: 'An analysis of Danish North Sea fisheries in the period 1950-77'. Unpublished.

The lowest row of the Table shows the ownership as a percentage of the total number of g.r.t. It may be seen from the Table that 72% of the 1978 tonnage was owned by the fishermen themselves, 3% by persons associated with fisheries, and about one-quarter of the overall tonnage was financed by external capital.

It must be pointed out in conclusion that there is a wide spread in the data used as the basis of the average figures contained in Tables 2.2.5 - 2.2.7.

Financial position in respect of the operation of the fishing fleet

There are no available data in Denmark which may be used to produce an overall picture of the financial situation faced by the fishing fleet in the 1970s. Indeed, the data which are available are sparse, not uniform in structure and, with a few exceptions, not representative of the fishing fleet as a whole. For this reason it is necessary to maintain certain reservations in respect of the value of this Section as a source of information concerning the operating economy of the Danish fishing fleet.

As far as the fishing vessels registered in the fishing ports within Skagen are concerned, the economic consultant of the Danish Fisheries Association compiles an annual report on the operating economy, based on accounts data submitted by the individual firms. In recent years, this data base has extended to approximately 350 sea-going

firms operating vessels of between 5 and 205 g.r.t., and to about 30 firms which use stationary gear (pound nets). This represents just under 10% of all firms in Denmark, and about 15% of the number of firms which are members of the Danish Fisheries Association. Efforts are made to ensure that the data are representative as far as concerns the size of firm, the mode of fishing and the geographical location.

As far as concerns the vessels registered in the North Sea and Skagerrak ports, various sources of information exist relating to the financial situation faced by the fishing fleet in recent years. The data have been compiled at the request of the individual fisheries associations, and are not statistically representative, either of the vessels in the individual ports or of the west coast fleet as a whole. The data is also not uniform in structure, which makes any comparisons impossible.

The only available economic data which are representative of the entire Danish fishing fleet relate to 1976. These data have been collected and processed by the Jutland Institute of Technology for use when assessing the financial situation¹⁾ of the fishing fleet, and are concerned with conditions which are unrelated to the operating economy of the fleet.

Operating economics of fishing vessels registered within Skagen

Table 2.2.8 presents a summary of the developments which have taken place in the operating costs and operating profits of the fishing industry in the period 1973-78, based on an average of approximately 350 vessels. The Table contains details of the average size of the gross profit, the operating costs and the profit at the price ruling for the year in question, as well as details of the relative sizes of the individual cost components in individual years.

TABLE 2.2.8

Average operating costs and their distribution, and levels of profit for fishing vessels registered within Skagen. 1973-77.

Average per firm	1973/75 1)	1976 2)	1977 3)	1978 4)
1. Gross	424 373	501 130	629 690	643 235
2. Operating costs	377 796	454 729	557 538	571 595
of which:	%	%	%	%
Landing costs and ice	9.9	10.2	10.9	11.9
Wages skipper	17.4	16.9	17.1	17.1
crew	30.8	28.7	29.4	29.6
Fuel	10.3	12.4	11.2	11.0
Gear (maintenance and replacement)	7.6	7.0	6.8	6.5
Insurance (boat and crew)	4.7	5.1	4.8	5.0
Maintenance (boat, engine, equipment)	12.9	12.4	13.5	13.2
Depreciation ⁵⁾	5.0	5.7	4.8	5.1
Other expenses	1.4	1.6	1.5	1.6
	kr	kr	kr	kr
3. Net profit before interest and deductions (1-2)	46 576	46 401	72 152	71 640
4. Net profit as a % of invested capital	10.8	7.9	11.0	9.8

Notes: 1) Average for 324 firms.
 2) Average for 350 firms.
 3) Average for 349 firms.
 4) Average for 314 firms.
 5) Vessel 4%; engine and equipment 10%.

Source: Danish Fisheries Association. Operating conditions within the professional fishing industry, 1977 and 1978.

The Table shows that not only the gross profit, but also the operating costs and net profit have increased by about 50% from the average for the years 1973-75 by 1978. There was a particularly steep increase in 1976-77, whereas the position in 1977-78 was marked both by stagnating gross profits and operating costs and by declining net profits.

By examining the developments which have taken place in the relative 'weight' of the individual cost components as they appear in the profit and loss account, it will be found that there has been a slight increase in expenditure on landing costs, ice and oil, whereas the cost of maintaining and replacing gear has been of decreasing importance in the profit and loss accounts for the years in question.

If the data contained in Table 1.2.8 are divided up according to the mode of fishing, as has been done in Table 1.2.9., then it will be seen that trawl fishing produces the highest average gross profit, and that the net profit is at the same level as in Danish seine fishing. In the case of fishery with different types of gear, which is used depending on the time of year, both the gross and net profits are lower than in the two other forms of fishing. As the average capital value (estimated on the basis of the insurance value in the year in question) per firm is lower in the case of Danish seine fishing than in the two other forms of fishing, the return on capital is found to be higher in the Danish seine fishery.

By examining the relative significance of the individual cost components in the different forms of fishing, it will become clear that the landing costs and wage costs 'weigh heavy' in the Danish seine fisheries, which are operated exclusively for catching fish for direct consumption, whereas the costs of oil, maintenance and depreciation play a relatively major part in trawl fishery, which calls for high engine power and is usually done from large vessels.

When divided up into g.r.t. categories, the information contained in the accounts exhibits a more or less positive correlation between vessel size and gross profit/operating costs, as well as such major variations from one year to the next and between the tonnage categories, that it is

TABLE 2.2.9

Relative distribution of operating costs for different forms of fishing, in firms registered in the Skagen ports. 1977 and 1978.

Average per firm in 1977	1 9 7 7				1 9 7 8			
	Trawl ¹⁾	Danish seine ²⁾	Various types of gear, hook and line ³⁾	Total	Trawl ¹⁾	Danish seine ²⁾	Various types of gear, hook and line ³⁾	Total
	%	%	%	%	%	%	%	%
Landing costs and ice	11.6	13.6	6.9	10.9	12.4	13.2	8.0	11.9
Master's wage	16.3	20.8	20.2	17.1	16.3	19.8	21.8	17.1
Crew's wages	27.6	32.8	36.5	29.4	27.7	33.8	33.0	28.6
Fuel	12.4	5.4	7.3	11.2	11.9	4.7	7.6	11.0
Maintenance of gear	6.8	7.0	6.9	6.8	6.6	6.6	6.0	6.5
Insurance	4.9	3.9	4.5	4.8	5.1	4.1	4.7	5.0
Maintenance of vessel	14.0	12.0	11.7	13.5	13.5	12.3	11.1	13.2
Depreciation ⁴⁾	5.0	2.5	4.2	4.8	5.1	3.5	5.7	5.1
Other operating costs	1.4	2.0	1.8	1.5	1.4	2.0	2.1	1.6
	Kr 1000	Kr 1000	Kr 1000	Kr 1000	Kr 1000	Kr 1000	Kr 1000	Kr 1000
Gross profit	692 595	512 211	472 514	629 690	709 566	561 468	398 981	643 235
Operating costs	617 512	444 138	407 978	557 533	631 773	480 440	355 555	571 595
Net profit before interest and deductions	75 083	68 073	64 536	72 157	77 793	81 028	43 426	71 640
Net profit as a % of invested capital	10.1%	18.0%	13.7%	11.0%	9.5%	18.1%	8.7%	9.8%

Notes: 1) Average of 246 firms
 1977 2) " " 18 "
 3) " " 85 "
 4) Vessel 4%; engine and equipment 10%.

Notes: 1) Average of 237 firms
 1978 2) " " 19 "
 3) " " 58 "

Source: Danish Fisheries Association, Operating conditions within the professional fishing industry, 1977 and 1978.

not possible to identify any clear correspondence between vessel size and net profit/return on capital.

On the basis of the area fished, the highest average net profit in 1976 and 1977 appears to have been produced in the Baltic fisheries, with second place being occupied by the Kattegat fisheries, whilst the fisheries in the North Sea, the Skagerrak and the waters within the Skagen alternately produced negative net profits in both years.

The figures produced by the Danish Fisheries Association in respect of operating economy by individual fishing port exhibit such a wide spread that no regionalization of the data is possible.

Operating economics of fishing vessels registered in the fishing ports on the west coast of Jutland

As mentioned in the introduction to this Section, the accounts data relating to the North Sea and Skagerrak fleets have been compiled by the local fisheries associations. Differences in terminology, presentation and classification of the data rule out any re-processing of the data to show an overall view of the economic situation of the west coast fleet.

In terms of both the number of financial years covered and the number of vessels, the most complete set of data available relates to the Thyborøn fishing fleet, and covers 114-170 vessels of more than 25 g.r.t. in the period 1974-78.

When compared with the data for the other ports (Hanstholm and Hirtshals), these data appear to be more or less representative of a major proportion of the west coast fleet, and therefore the following information concerning the fleet has been based on these data. The data are not statistically representative, however.

Table 2.2.10 shows the average gross profit, operating costs and net profit for 170 vessels^{x)} in the years 1977 and 1978. The Table also contains details of the relative 'weight' of the individual cost components in the years in question. For the purposes of comparison with the equivalent operating costs of vessels registered in the Skagen ports,

x) Of these, 65/69 were Danish seiners (25-50 g.r.t.) and 104/99 were trawlers (25-150 and above g.r.t.).

the Table also includes an adapted extract from Table 2.2.8 for 1977.

It may be seen from the Table that the level of gross profit produced by the North Sea fisheries has increased by only 0.2% on average between 1977 and 1978. The fact that total revenue increased by 2% may be attributed to other sources of income, including the payment of laying-up assistance. Against this, there was an increase of 3.3% in operating costs, producing a total reduction of 9.7% in net profit before depreciation, interest charges and other deductions.

TABLE 2.2.10

Average operating costs and their distribution, together with profit figures for fishing vessels registered on the west coast of Jutland (Thyborøn) in 1977 and 1978, and for vessels registered in the Skagen ports, 1977 and 1978.

Average per firm	Vessels registered in Skagen ports		North Sea Vessels (Thyborøn)	
	1977 ¹⁾	1978 ²⁾	1977 ³⁾	1978 ³⁾
	Kroner	Kroner	Kroner	Kroner
Gross profit + landing + ice	569 142	575 080	832 445	834 527
Other income	-	-	19 785	34 039 ⁴⁾
Total income	569 142	575 080	852 230	868 566
Operating costs	470 308	474 302	671 316	693 485
of which:	%	%	%	%
Wages - skipper	20.3	20.6	18.6	17.1
- crew	34.9	34.5	41.0	39.9
Fuel	13.3	13.3	12.1	11.1
Gear	8.0	7.8	8.1	8.2
Maintenance	16.0	15.8	13.4	15.5
Insurance	5.7	6.0	6.5	6.7
Other costs	1.8	1.9	1.4	1.5
	Kroner	Kroner	Kroner	Kroner
Net profit before depreciation, interest and deductions	98 834	100 778	180 914	163 429
Net profit as a % of sum insured	15.0 %	13.7 %	15.8 %	13.6 %

Note: 1) Average of 350 vessels of 5-225 g.r.t.
 2) " " 314 " of 5 g.r.t. and above
 3) " " 170 " of 25 g.r.t. and above
 4) Of which Kr 11 652 paid as laying-up assistance.
 - = not stated.

Source: Fisheries Association for the port of Thyborøn. Various analyses of fisheries operations in 1974, 1975, 1976, 1977 and 1978. Also, Table 2.2.8.

By examining the relative significance of the individual cost components, it will be seen that no major changes took place between 1977 and 1978, except for a relative increase of 15.7% in the cost of maintaining the vessels. Compared with vessels registered in the Skagen ports, and allowing for any differences in the data base due to variations in classification, there is a reasonably high level of agreement between the distribution of costs for vessels on the west coast of Jutland and for vessels operating in Danish inshore waters. The higher average levels of gross profit and net profit produced by the west coast fleet may be attributed to the fact that only vessels of 25 g.r.t. and above are included in the data.

Table 2.2.11 presents a comparison for the years 1974 and 1978 of the distribution of profits and costs between vessels of the same size category (25-50 g.r.t.) engaged respectively in Danish seining and trawling. Fishing vessels in this size category took approximately one-third of the total Danish catch in 1976. It will be seen from the Table that there was an increase of just under 42% in the gross value of the catch taken by the Danish seiners, and an increase of approximately 30% in the net profit before depreciation, interest charges and other deductions, whereas the trawl fisheries recorded an increase of only just under 9% in the gross value of the catch and a fall of 32.4% in net profits. As may be seen from Figure 2.2.3, developments

have not taken place at a uniform rate, either in the Danish seine fisheries or in the trawl fisheries.

TABLE 2.2.11

Relative distribution of operating costs for different forms of fishing in vessels of the size category 30-50 g.r.t. on the west coast of Jutland (Thyborøn), in 1974 and 1978.

Fishing vessels of 25-50 g.r.t.	1974		1978		Absolute development 1974-78	
	Danish seiners 42 vessels	Trawlers 30 vessels	Danish seiners 55 vessels	Trawlers 31 vessels	Danish seiners	Trawlers
	Kroner	Kroner	Kroner	Kroner	%	%
Catch + landing + ice	447 856	478 829	635 423	520 300	41.9	8.7
Other income	10 550	12 123	12 304	14 705	16.6	21.3
Gross income	458 406	490 952	647 727	535 005	41.3	9.0
Operating costs	346 052	385 892	501 298	463 964	44.9	20.2
of which:	%	%	%	%		
Wages - master	20.7	20.0	20.5	18.5	43.9	11.1
- crew	45.4	43.0	44.6	38.2	42.4	6.7
Fuel	8.1	11.4	5.3	11.0	+ 5.1	16.0
Gear	7.3	3.9	6.4	8.8	26.2	171.9
Insurance	5.3	5.3	5.6	6.9	54.5	56.2
Maintenance	11.6	10.8	15.6	14.6	95.0	61.9
Other operating costs	1.5	1.3	1.8	2.0	78.3	85.0
	Kroner	Kroner	Kroner	Kroner		
Net profit before depreciation, interest and deductions	112 354	105 060	146 429	71 041	30.3	+ 32.4
Net profit as a % of sum insured	22.9%	17.9%	23.0%	9.7%		

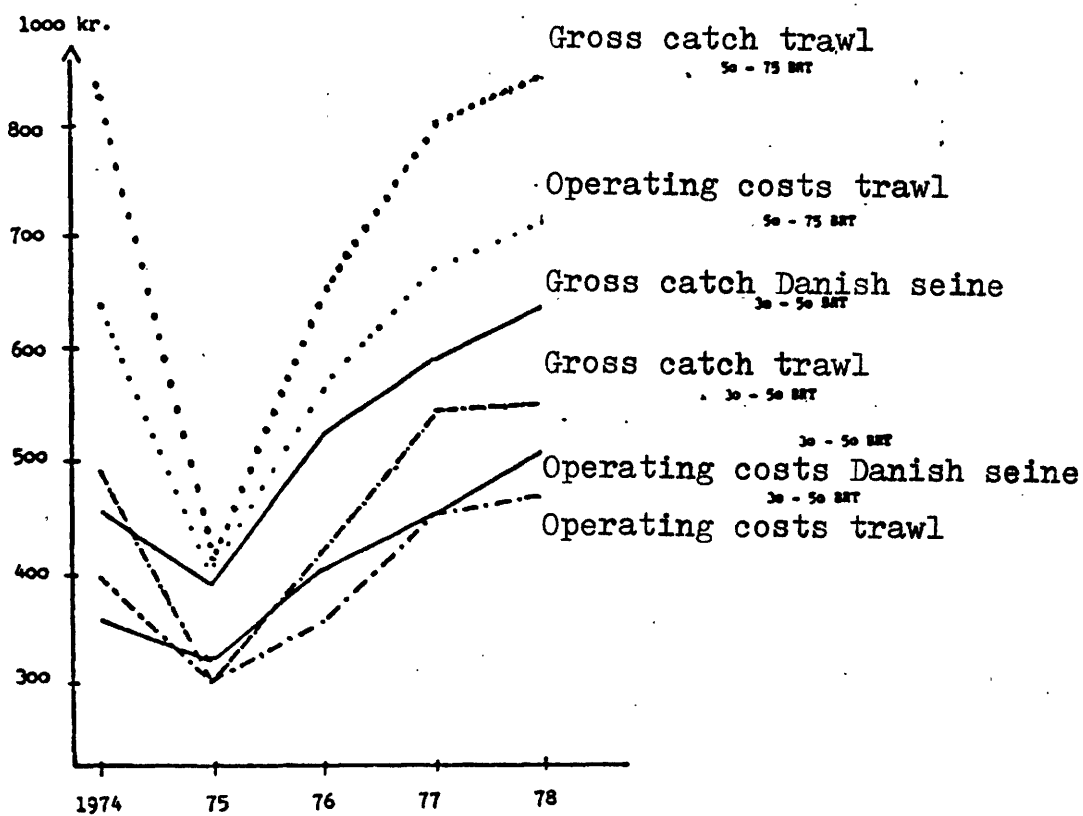
Source: Fisheries Association for the port of Thyborøn. Various analyses of fisheries operations in 1974, 1975, 1976, 1977 and 1978.

There are marked differences in both years in the distribution of costs within the two forms of fishing. A typical feature is the much lower significance of fuel consumption in the accounts of the Danish seiners than in the accounts of the trawlers. Also typical is the fact that a larger proportion of the operating costs of the Danish

seiners is represented by the wages paid to the master and the crew. This appears to be in line with the information which is available for vessels registered in the Skagen ports; cf. Table 2.2.9.

FIGURE 2.2.3

Gross profit and operating costs in the west coast fisheries (Thyborøn), 1974-78, for selected sizes of vessel and forms of fishing.



Source: Fisheries Association of the port of Thyborøn. Various analyses of fisheries operations in 1974, 1975, 1976, 1977 and 1978.

As may be seen from Tables 2.2.8 - 2.2.11, average values have been used throughout. On the basis of basic number analyses of the number of boats registered in Hanstholm, each year produces very great variations in both the gross and the net profit amongst vessels in the same size category range, which may be put down to differences in the degree of proficiency of the various skippers and crews.

Financing of the fishing fleet

The situation surrounding the financing of the fishing fleet is illustrated by the aforementioned representative random sample analysis, which was conducted in 1976 by the Jutland Technological Institute. The analysis covered a total of 211 vessels of more than 5 g.r.t.

The average financial status of the fishing fleet in 1976 may be seen from Table 2.2.12. On the assets side, it will be seen that the fixed assets, estimated on the basis of the insurance values, represent 88% of total assets, which may be explained by the fact that, unlike other businesses, no stocks and inventories are held by the fishing industry.

On the liabilities side, it will be seen that shareholders' capital represents 39% on average, and long-term external capital 49%. However, this average conceals the fact that the shareholders' capital is 50% on average in vessels of up to 50 g.r.t., and about 30% in vessels of above 50 g.r.t. On the basis of geographical criteria, the proportion of shareholders' capital is highest in the inshore waters, which is in line with the size of vessel criterion, at least in North Jutland.

Of the total amount of external capital in the fishing fleet, 22% is financed by loans from Fiskeribanken (the Fisheries' Bank), 19% by foreign loans, 15% in the form of cash credits, 12% by loans from the financial institutions, and with 32% being in the form of other, private external

capital. Whereas the loans from the fisheries' bank represent a more or less constant proportion of the external capital in the individual tonnage categories, it is usually typical to come across foreign loans, mainly in the larger categories of vessel. Thus, 51% of the total external capital is placed in vessels of more than 140 g.r.t. About one-quarter of this is in the form of foreign

TABLE 2.2.12

Average financial status^{x)} of the Danish fishing fleet at the end of 1976.

	1000 kr	%
MOST LIQUID ASSETS	59	6
FEWEST LIQUID ASSETS	46	5
SALEABLE ASSETS	105	11
FIXED ASSETS	849	88
SECONDARY ASSETS	12	1
TOTAL ASSETS	966	100
SHORT-TERM EXTERNAL CAPITAL	106	11
LONG-TERM EXTERNAL CAPITAL	478	49
EXTERNAL CAPITAL RELATED TO SECONDARY ASSETS	8	1
TOTAL EXTERNAL CAPITAL	592	61
ASSETS - EXTERNAL CAPITAL (SHAREHOLDERS' CAPITAL)	374	39
TOTAL LIABILITIES	966	100

x) Note: based on a representative random sample analysis.

Source: Structure of fisheries financing, Danmarks
Sparkasseforening, 1977.

loans, which corresponds to 66% of the total foreign capital in the fishing fleet.

Foreign loans are usually made available in the form of Swiss Francs (80%) and Deutsche Marks (DM) (13%), which, in conjunction with the variations in the rates of

exchange in recent years, has presented part of the fishing fleet, and in particular a number of the larger vessels which were acquired in the middle of the 1970s (1974), with serious problems in meeting the interest payments, resulting in falls in the net profits of the fishing industry.

Return on shareholders' capital

Tables 2.2.8 - 2.2.9 show the average net profit before interest charges and deductions, and Tables 2.2.10 - 2.2.11 show the net profit before depreciation, interest charges and other deductions, calculated in relation to the average capital value based on the sums assured. On the assumption that the external capital upon which interest is to be paid and in respect of which a deduction is to be made in the examples shown, will on average amount to 50%, and that the interest and deduction liabilities will be of

the order of 12% per annum on average, it may be established that in 1977 and 1978 only the Danish seine fisheries were in a position to produce an adequate return on shareholders' capital. Once again, however, it is true that the averages were calculated on the basis of data with a very wide spread.

Notes to Section 2.2.3

- 1) Structure of Fisheries Financing 1977, Danmarks Sparekasseforening, Copenhagen 1977. (Report compiled by the Jutland Technological Institute).
- 2) The basis for the Table is the list of owners published by the Danish Register of Shipping. The Table has been drawn up on the basis of the data contained in Chapter 5 of Jens Chr. Muff's 'An analysis of Danish North Sea fisheries in the period 1950-77', unpublished thesis, University of Århus, 1978.

2.2.4 Employment

Table 2.2.14 shows the number of professional fishermen in Denmark in 1970 and 1976. The period saw a general fall in numbers of just under 10% for the country as a whole, as well as in all the Jutland regions.

In addition to the number of full-time professional fishermen, cf. Table 2.2.15, there is also a considerable number of part-time fishermen. As absolute figures, the details contained in Table 2.2.15 and 2.2.14 may only be compared with certain reservations, as the two Tables

evidently overlap to a certain extent in the case of some administrative districts, due to slight variations in the method by which they were compiled and to a certain degree of uncertainty in respect of the dividing line between the two categories.

The part-time fishermen are found mainly in the Liim Fjord area, the east Jutland fjords, and not least in Ringkøbing fjord, which accounts for about one-third of their number on Jutland. Part-time fishermen are defined as individuals who engage in fishing professionally at a level which

TABLE 2.2.14

Number of fishermen in Denmark, Jutland, the Jutland regions and administrative districts, 1970 and 1976.

	Number of professional fishermen		Self-employed as a proportion of professional fishermen %	
	1970 xx)	1976 x)	1970	1976
DENMARK	11 671	10 837	53	51
JUTLAND	8 409	7 722	48	46
NORTH JUTLAND	3 593	3 248	48	44
North Jutland ad. d.	2 760	2 565	48	42
Viborg admin. d.	833	683	46	50
EAST JUTLAND	1 132	981	52	67
Århus admin. distr.	613	621	54	62
Vejle admin. distr.	309	162	43	64
Sønderjylland ad. d.	210	198	62	82
WEST JUTLAND	3 689	3 493	48	40
Ringkøbing ad. d.	1 849	1 951	52	46
Ribe admin. distr.	1 840	1 542	43	33

x) Professional fishermen are individuals whose income comes predominantly from fishery.

xx) Professional fishermen are persons whose 'normal employment is in fishery'.

Source: Danmarks Statistik, 'Population and housing census' 1970 and 'Census Register' 1976.

TABLE 2.2.15

Number of part-time fishermen in Denmark, Jutland, and the Jutland regions and administrative districts, 1976.

	Part-time fishermen x)	
	1970	1976
DENMARK	3 757	
JUTLAND	-	1 842

NORTH JUTLAND	-	852
North Jutland ad. d.	-	508
Viborg admin. distr.	-	344
EAST JUTLAND	-	365
Århus admin. d.	-	211
Vejle admin. d.	-	62
Sønderjylland ad. d.	-	92
WEST JUTLAND	-	625
Ringkøbing ad. d.	-	605
Ribe admin. d.	-	20

x) Part-time fishermen are defined as individuals deriving less than three-fifths of their income from fishery.

Source: Fisheries Inspectorate.

produces less than three-fifths of their total income. This is such a broad definition, however, that it offers no possibility of converting the part-time fishermen so as to indicate an equivalent number of persons with a full-time occupation as fishermen.

There has been a gradual and even fall in the number of professional fishermen in the country as a whole in the period 1970-76, as well as in all the Jutland regions. It is not statistically possible to produce figures beyond 1976, although there are reasons to assume that the trend has continued in recent years.

As far as the major fishing regions of North Jutland and West Jutland are concerned, the decline which has been observed does reflect a steep drop in the number of self-employed fishermen, and a state of stagnation or a slight increase in the number of wage earners. However, in the administrative districts in the east of Jutland, with the exception of the Vejle administrative district, a slight increase has occurred in the number of self-employed fishermen, together with a steep fall in the number of wage earners.

Regarded as a whole, the proportion of self-employed fishermen of the total number of professional fishermen may thus be seen to be in decline in the major fishing regions of North Jutland and West Jutland, and consequently in the country as a whole, although their proportion is increasing in the eastern part of Jutland, which is less important

from the point of view of fisheries. The wage earners in the Danish fisheries are more or less exclusively unskilled workers; no formal apprenticeship exists for Danish fishermen; cf. Section 2.8.1., and the number of salaried employees is extremely low.

The primary importance of the fishing industry in the area of employment may be seen in Table 2.2.16. As may be seen from this Table, the fishermen represent a comparatively modest proportion of the total workforce, and there is, in actual fact, a falling trend. They have the greatest significance from the point of view of employment in West Jutland and North Jutland, where fishermen represent 1.6% and 1% respectively of the total workforce, which is considerably above the national average of 0.4%. If one examines the number of fishermen with the status of wage earners in relation to the total number of workers, then on the whole the picture will correspond to the overall

picture. Nevertheless, the comparatively minor significance of fisheries from the point of view of employment at national and regional level should be assessed in the light of the fact that fisheries, especially in North Jutland and West Jutland, are concentrated in a number of coastal communities, where employment within the fishing industry occupies a very much more significant position in the overall employment picture; cf. Section 3.

TABLE 2.2.16

Number of fishermen in relation to the total number of persons in employment in 1970 and 1976.

	1970		1976	
	Fishermen as a % of all in employment	Fishermen as workers as a % of all wage earners	Fishermen as a % of all in employment	Fishermen as workers as a % of all workers
DENMARK	0.3	0.5	0.4	0.4
JUTLAND	0.9	1.0	0.7	1.0
NORTH JUTLAND	1.2	1.4	1.0	1.0
North Jutland admin. district	1.4	1.5	1.2	1.4
Viborg admin. district	0.9	1.0	0.7	0.7
EAST JUTLAND	0.2	0.2	0.2	0.1
Århus admin. district	0.3	0.3	0.2	0.2
Vejle admin. district	0.2	0.2	0.1	0.1
Sønderjylland admin. district	0.2	0.2	0.2	0.1
WEST JUTLAND	1.9	2.1	1.6	1.9
Ringkøbing admin. district	1.7	1.7	1.6	1.7
Ribe admin. district	2.1	2.6	1.6	2.2

Source: Danmarks Statistik: Population and housing census 1970, and Census Register 1976.

Age structure

Table 2.2.17a shows the age distribution of persons employed in the fishing industry for the country as a whole. The Table shows the cumulative percentage age distribution of self-employed (skippers) and unskilled (crew) fishermen throughout the country. It may be seen from the Table that the self-employed fishermen are considerably older than the unskilled. It may also be seen that the self-employed within the fishing industry are on average younger than the self-employed in all other sectors. Of the self-employed in the fishing industry, 15% and 33% respectively are under 30 and above 50 years old, whereas the averages in all other sectors are 9% and 47% respectively. The same is true of unskilled fishermen, where 50% and 11% respectively are under 30 and above 50

TABLE 2.2.17

Average ages of skippers and crew in 1976, for the country as a whole and in the Jutland administrative districts and in certain customs districts.

Region Administrative district Customs district	Average age	
	Skipper (1)	Crew (2)
Whole country	44	32.4
North Jutland		
North Jutland		33.9
Hjørring	42	
Skagen	44	
Frederikshavn	53	
Aalborg	33	
Viborg		37.3
Thisted	42	
East Jutland		
Århus		29.2
Århus	48	
Vejle		27.5
Sønderjylland		34.9
West Jutland		
Ringkøbing		37.3
Lemvig	44	
Ringkøbing	36	
Ribe		35.0
Esbjerg	44	

Sources: (1) Structure of fisheries financing, Danmarks Sparkasseforening, 1977.

(2) Census register 1976, Danmarks Statistik 1979.

years old, whereas the averages in all other sectors are 37% and 25% respectively.

Table 2.2.17 shows the average ages of skippers and crew in 1976. The average age of skippers in all administrative districts and in most customs districts lies in the mid-forties, whereas there are considerable variations in the average age of the crew members. This is over the national average of 32.4 years in North Jutland and West Jutland and below the national average in East Jutland (apart from the Sønderjylland administrative district).

TABLE 2.2.17a

Employment status of Danish fishermen as self-employed or unskilled workers, compared with the equivalent status of the entire workforce. 1976.

Age	16-19	20-24	25-29	30-34	35-39	40-49	50-59	60-66	67-69	70 +	Total
<u>Self-employed</u>											
All sectors	0.2	2.0	6.6	11.0	10.9	22.5	24.6	14.6	3.2	4.5	100 %
Fisheries	1.0	3.9	9.7	15.8	12.9	23.5	20.6	10.2	1.2	1.1	100 %
<u>Unskilled</u>											
All sectors	11.1	14.8	10.9	10.8	9.2	18.0	17.0	7.2	0.6	0.4	100 %
Fisheries	13.9	18.0	18.1	17.4	9.4	12.6	7.8	2.3	0.4	0.1	100 %

Source: Danmarks Statistik, Census Register 1976.

Manning

There is considerable variation in the distribution of the labourforce on Danish fishing vessels, depending on the type of fishery concerned, and this point is not covered by any general regulations. Certain minimum legal requirements exist in respect of manning and of the training of skippers and crew (see Section 4.1.3), although these regulations rarely specify the size of the workforce on board.

It is stipulated in the appropriate regulations that fishing vessels of between 20 and 500 g.r.t. shall carry two persons (the skipper and the mate) with navigational training. Three persons with such training shall be carried on vessels of more than 500 g.r.t. It is also stipulated that vessels with an engine power of between 80 and 500 h.p. (roughly equivalent to between 14 and 120 g.r.t.) shall carry one person with engine maintenance/engineering training. Vessels of between 500 and 2000 h.p. shall have two engineer officers. An additional person with such training shall be carried on vessels with an engine power of more than 300 h.p., if such vessels operate outside the area known as the 'restricted zone' (part of the North Sea, Danish territorial waters and part of the Baltic). As there is normally nothing to prevent skippers from obtaining the necessary engine maintenance ticket, it is evident that only 2 - 3 persons need be carried on ordinary fishing vessels of up to approximately 500 g.r.t.

The above represent the minimum requirements to cover the

fishing labour force on board. A random sample analysis (made in 1976 on behalf of Danmarks Sparekasseforening) revealed that an average of 2.9 persons are carried on board Danish fishing vessels. The results of the analysis, which shows the average manning levels on Danish vessels in various tonnage categories, may be seen in Table 2.2.18.

The Table shows that manning levels range from just under two persons on small vessels to just over four persons on the larger vessels. These average figures based on the random sample conceal a range of between 1 and 4 - 5 persons on individual vessels.

TABLE 2.2.18

Manning levels on Danish fishing vessels of various sizes.

Tonnage category	Average manning level (including skipper)
0 - 18.9	1.9 persons
19.0 - 19.9	2.8 persons
20.0 - 46.9	2.8 persons
47.0 - 49.0	3.3 persons
50 - 117.9	3.3 persons
over 118	4.1 persons
<hr/> All vessels	<hr/> 2.9 persons

Source: Structure of fisheries financing, Danmarks Sparekasseforening, 1977.

The figures in Table 2.2.18 also conceal the relative variations between the vessels resulting from differences in the type of fishery in which the vessels are engaged. Catching fish for direct consumption generally requires a larger crew than catching fish for industrial processing, due to the more labour-intensive handling of the catch (sorting, cleaning and icing) on board the vessel. There are, however, internal differences within the consumer fishing industry. For example, there will often be a larger crew on board a vessel engaged in net fishing than on a trawler or Danish seiner.

Fishermens' incomes

Fishermens' wages are normally paid as a certain percentage

share of the gross profit from the sale of the catch less incidental costs, such as landing costs and ice, with the result that the size of the income may be affected by a large number of factors. Apart from the natural factors, such as the availability of fish stocks and weather conditions, etc., a series of national economic factors also plays a major role in the fishermen's earning capacity. The income of the fishing vessel depends on the price obtained for the catch. This price is dependent on the price both on the home market and on the world market, and in the case of fish for industrial processing is also directly dependent on the supply position of other proteins, such as soya protein. Over and above this, the

fishermens' incomes are also dependent on the level of the variable costs incurred in fishing, and are additionally dependent, in the case of self-employed fishermen (individual owners and partners), on the running costs of the vessel.

Against such a background, it is difficult to make any general comment concerning fishermens' incomes. Furthermore, details of income are available from only a few sources, due not least to the fact that incomes vary considerably both in different parts of the country and in the different forms of fishing.

The average gross income¹⁾ in 1976 for the self-employed and unskilled fishermen in the country as a whole may be seen in Table 2.2.19, where it is compared with the incomes of all individuals employed within the same categories.

Table 2.2.19a shows the cumulative frequencies of the number of fishermen, by income group.

Table 2.2.19 and Table 2.2.19a together illustrate two characteristic features of the incomes of Danish fishermen.

TABLE 2.2.19

Average gross incomes¹⁾ and taxable incomes, 1976,
in Kr 1 000.

Category	Average gross income	Average taxable income
Self-employed		
Total	92	55
Fishermen	89	52
Unskilled wage-earners		
Total	62	55
Fishermen	94	78

1) see footnote.

Source: Danmarks Statistik 1978, Incomes and wealth, 1976.

1) Gross income consists of: Wages, social payments, pensions, interest received, surplus/deficit of fixed assets and any activities as a self-employed person.

TABLE 2.2.19a

Self-employed and unskilled fishermen, % based on gross income groups. Whole country, 1976.

	Gross income groups, Kr 1 000									
	5-39	40-70	70-100	100-150	150-200	200-250	250-300	300-400	over 400	Total
<u>Self-employed</u> Fishermen	22.4	27.5	20.8	16.4	6.1	3.1	1.4	1.3	1.0	100 %
<u>Unskilled</u> Fishermen	9.0	22.4	32.8	29.3	5.2	0.9	0.2	0.1	0.1	100 %

Source: Incomes and wealth in 1976, Danmarks Statistik, 1979.

On the one hand, self-employed fishermen (skippers) earn about the same as other self-employed persons, whilst unskilled fishermen (crew) earn considerably more than other unskilled workers, and on the other hand unskilled fishermen generally earn more than self-employed fishermen. Table 2.2.19a, for instance, shows that in 1976 50% of the self-employed fishermen, but only 31% of the unskilled fishermen, earned less than Kr 70 000. Only where incomes rose above Kr 150 000 were there more self-employed than unskilled fishermen.

This apparently paradoxical situation may, of course, be explained by the fact that unskilled fishermen are employed mainly in the larger firms, whereas many self-employed

fishermen operate as small, one-man firms. At the same time, the large firms produce much higher gross profits than the small firms, and are thus able to pay higher wages, which also appears to be the case from Table 2.2.20.

It has already been stated that incomes vary with the type of fishing. Very little data in support of this are available, however. The Danish Fisheries Association, which 'covers' the ports in the Danish inshore waters, has for a number of years been producing an analysis of the accounts of some of its members, by type of fishery. The details of

TABLE 2.2.20

Correlation between size of boat and skipper's wage, 1976.

Size of boat	Average skipper's wage, Kr 1 000
0 - 18.9 g.r.t.	48
19.0 - 19.9 g.r.t.	77
20.0 - 46.9 g.r.t.	64
47.0 - 49.9 g.r.t.	82
50.0 - 117.9 g.r.t.	97
over 118 g.r.t.	140

Source: Structure of fisheries financing,
Danmarks Sparekasseforening, 1977.

incomes produced by this analysis may be seen in Table 2.2.21, from which it is clear that such major variations occur from one year to the next that it is impossible to pick out one form of fishery from the others.

TABLE 2.2.21

Average income in Kr 1 000 for a proportion of the members of the Danish Fisheries Association, by type of fishery in the years 1973-75, 1976 and 1977.

Position	Type of fishery	1973-75	1976	1977
Skipper	all	66	77	96
	Wage			
	trawling	70	79	100
	Danish seining	57	73	93
	different gear	54	71	82
x) Owner's earnings	all	82	74	105
	trawling	89	63	105
	Danish seining	77	88	125
	different gear	65	102	102
Crew	all	69	79	100
	trawling	72	78	102
	Danish seining	60	77	93
	different gear	61	85	95

x) Owner's earnings are made up of the wage + the net profit of the firm.

Source: Operating conditions within the professional fishing industry, 1977.

Danish Fisheries Association 1979.

2.2.5 Working environment

Legislation

The Law relating to the working environment in land-based firms, which came into effect on 01.07.1977, does not apply to fishing vessels.

Fishing vessels are covered by a series of Laws relating to the manning, building and fitting out, etc., of ships. Regulations in respect of the size and training of the crew may be found in the Law relating to the manning of ships and in the Merchant Shipping Act; regulations in respect of the building and fitting out, etc., of ships, including regulations in respect of life-saving and safety equipment and fitting-out of the crew's quarters, may be found in the Law relating to the inspection of ships. Regulations in respect of accident insurance and the obligation to notify accidents may be found in the Law relating to insurance against industrial accidents. The above Laws are discussed in greater detail in Section 4.2.3.

Inspection of the working environment

Only three studies are available concerned with the working environment in the fishing industry: one of these is in the form of a memorandum compiled by Specialarbejderforbundet (the Semi-skilled Workers' Association) on the working conditions within the Danish fisheries, and the other two are studies^{x)} concerned with industrial medicine and industrial sociology. Industrial accident statistics

are published on the fishing industry on the basis of the accidents reported pursuant to the Law relating to insurance against industrial accidents; the most recent survey is in respect of 1969-70. The working environment is also described by the Danish statistics relating to accidents at sea, which contain details of accidents involving vessels, including shipwrecks and lives lost.

x) Magnus Demnitz: Memorandum on safety and welfare in the Danish fishing fleet. Danish Semi-skilled Workers' Association, 1975.

Leif Vanggaard and Sonja Nielsen: Working environment in the Danish fisheries, 'Ugeskrift for Læger' (Doctors' weekly), No. 7, 1977.

Sonja Nielsen (Leif Vanggaard): Development of the Esbjerg fisheries. A study into sociological development and social medical aspects. Unpublished. University of Copenhagen, 1976(77).

Working conditions

Based on interviews with 221 fishermen in Esbjerg in 1973, Leif Vanggaard and Sonja Nielsen have produced a description of the working conditions in the Danish seining and trawling fisheries. The survey shows that Danish seining is physically heavier than trawling, and that seine fishermen have a more regular working day than trawl fishermen, who are sometimes obliged to work for up to 16 - 20 hours per day. Trawl fishermen often described their whole job as being 'hard work', whereas the seine fishermen applied this description to individual features of the catching process. The conclusion reached by the authors is that the 'tip' of the hard work involved in trawl fishing may well have been removed, but that it has been replaced by a pattern of consistently hard work and short, irregular rest periods. As the data date from 1973, changes may have taken place in working conditions in the intervening period, and it is known that a number of technical improvements have made work easier on the Danish seiners.

Occupational diseases

According to the Esbjerg survey, the two most common occupational diseases in the fishing industry are related to the back and the skin. 70% of those interviewed complained of back pains; 50% of those in the 15 - 40 age group suffered pain, and almost all the older respondents. It has been estimated that, of those suffering from skin diseases, 45% have boils, 30% have irritations of the skin

in the area of the armpits and on the neck, and 23% have eczema of a kind which resembles the mechanics' eczema produced by contact with oil. Although these data produced by the survey may not be compared with the corresponding conditions in other population groups, the figures are nevertheless so striking that it is highly likely that these conditions are encountered more frequently amongst fishermen than in other population groups.

Accident statistics

On the basis of the data published by the Sikringsstyrelse (National Insurance Board) for the period 1970-72, Vanggaard and Nielsen have demonstrated that falls on board fishing vessels are the most frequent cause of accidents, and claim that one-third of injuries of this

kind occur in port. The reason put forward to explain this is that the deck is often slimy and slippery after fish has been landed and ice taken on board, whereas at sea the deck is divided up by duckboards, which reduce the risk of falls. Other reasons are that 30% of accidents are due to taking risks or to situations in which something heavy has fallen on the injured person, 14% are caused when salvaging gear and 14% occur in conjunction with the sorting and cleaning of fish and in conjunction with icing and unloading the catch.

It is claimed that just under 60% of injuries are to legs and hands, with injuries to the head and arms accounting for 13% and 10% respectively of all injuries.

Table 2.2.22 shows the number of accidents at work per 100 fishermen per year, by size of vessel. It will be seen from the figures that vessels of 50 g.r.t. and above have the highest accident frequency. This result is reinforced by the fact that the number of accidents at sea (shipwrecks, groundings, fires, etc.) to fishing vessels increases in proportion to the size of the vessel; cf. Table 2.2.23.

TABLE 2.2.22

Number of accidents at work per 100 fishermen per year, by size of vessel. Average for the years 1970, 1971 and 1972.

g.r.t.	Accidents at work/100 men
0 - 19	2.8
20 - 49	9.6
50 - 99	15.2
100 - 149	12.1
over 150	14.2

Source: L. Vanggaard and S. Nielsen.

TABLE 2.2.23

Accidents at sea, by size of vessel.

g.r.t.	Average annual no. of vessels	Accidents at sea as a % of number of vessels
0 - 19	1130	0.9
20 - 49	402	3.8
50 - 99	115	8.2
100 - 149	90	9.6
150 -	85	13.2

Source: Danish statistics for accidents at sea, 1976 and 1977.

The memorandum published by the Danish Semi-skilled Workers' Association points out that approximately 20% of accidents at sea in the period 1966-73 were caused by human error and negligence. It is likely that the reasons for this were exhaustion, and inadequate instruction and training.

Table 2.2.24 shows the number of injuries and lives lost per 10 000 employees in 1969.

According to the Table, relatively more lives were lost in the fishing industry than in other sectors. According to an earlier survey¹⁾, the most frequent cause of death was drowning after falling overboard or following a shipwreck. Thus in 1967 and 1968 approximately 75% of all deaths at sea were attributed to drowning.

According to Table 2.2.24, relatively few injuries occur in the fishing industry by comparison with a number of other sectors. However, it may be assumed that the number of unreported injuries is higher in the fishing industry than on land, where medical treatment is available more quickly and more easily than in the fishing industry, where several days may pass before a vessel is able to reach land. It is doubtful, then, whether those employed in the fishing industry are any less exposed to injury than those employed in the industrial, and transport sectors, although there can be very little doubt that the risk of injury in the fishing industry is considerably greater than in agriculture.

TABLE 2.2.24

Lives lost and injuries per 10 000 employed in 1969.

	Lives lost per 10 000	Injuries per 10 000
Fisheries	22.0	505.6
Shipping	12.8	623.8
Transport	4.4	523.7
Agriculture	2.2	368.8
Industry and crafts	1.7	564.3

Source: National Insurance Board, Survey No. 2,
Copenhagen 1977.

Although some allowance must be made for the fact that the data used as the basis of the surveys referred to above are not fully up to date, the developments which have taken place in the 1970s have caused scarcely any significant change to the fact that the fishing industry remains a hard and risky occupation from the point of view of the working environment.

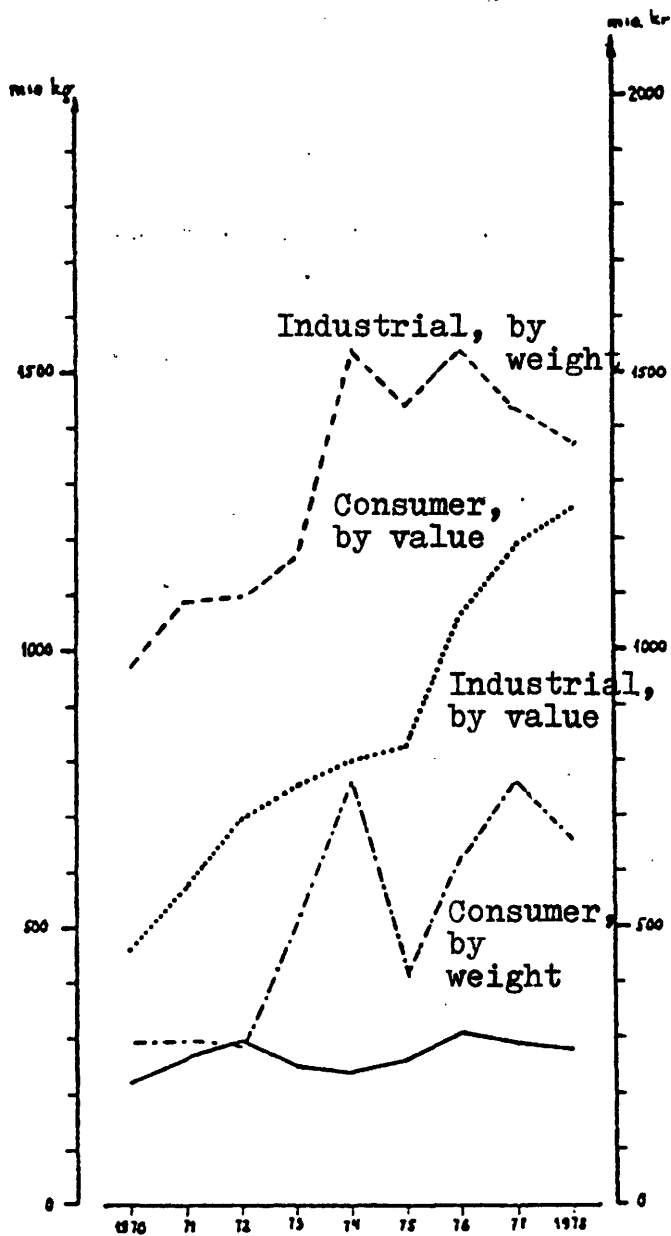
2.3 Landings

Developments in the 1970s

The developments which have taken place in the weight and the value of total Danish landings of fish may be seen in Figure 2.3.1. Landings of fish for direct consumption have remained at a more or less constant level of between 250 000 and 300 000 tonnes since 1970, and it is therefore

FIGURE 2.3.1

Weight and value of total Danish landings of fish for industrial processing and fish for direct consumption, 1970-1978. Kr million and kg million.



Source: Fisheries Report and Ministry of Fisheries, provisional figures, 1978.

the landings of fish for industrial processing which have mainly determined developments which have taken place in the weight of total catches. After a steep increase in the weight of the total catches between 1973 and 1974, the level remained more or less constant for a couple of years, but has been falling steeply since 1977; this trend has continued in the first six months of 1979.

If one examines the development which has taken place in the value of the landed quantity, then the picture was more variable throughout the 1970s. The first half of the period saw an increasing trend for industrial catches to increase in importance, although a noticeable increase has taken place in the value of the fish landed for direct consumption since 1975. Thus, by 1978 the value of the fish landed for direct consumption had risen to 63% of the value of all landings, as against approximately 50% at the beginning of the 1970s.

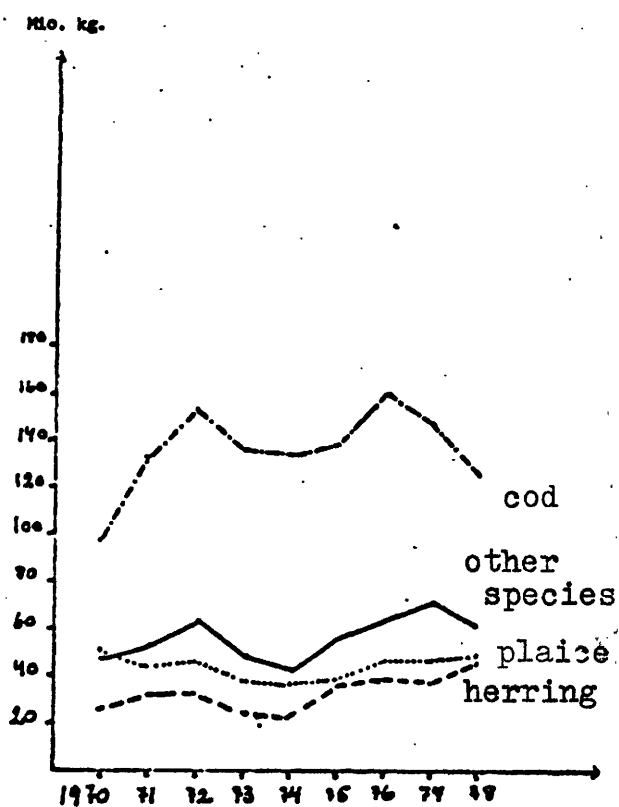
The developments which have taken place in the landings of the individual species may be seen from Figure 2.3.2 in the case of fish for direct consumption, and from Figure 2.3.3 in the case of fish for industrial processing. The most important species taken by Denmark for direct consumption are cod, herring and plaice, which represent approximately 75% of the total landings of fish for direct consumption. It will be seen from Figure 2.3.2 that the fall in total landings of fish for direct consumption between 1973 and 1975 is attributable almost entirely to a

fall in landings of cod, since the landings of plaice and herring have remained more or less at a constant level throughout the entire period; there does appear to be a trend, however, towards a slight increase in the significance of the landings of herring between 1976 and 1978.

As far as the species caught for industrial processing are concerned (cf. Figure 2.3.3), very much greater variations between the species have occurred. A characteristic feature of all species is the fact that quite major variations have occurred from one year to the next, although the 1970s saw a generally uniform increase in the catches of sand eels and Norway pout, with a rapid expansion taking place in the sprat fisheries, especially from 1973-74 onwards, at the expense of the herring fisheries. The steep increase in the total landings of fish for industrial processing between 1973 and 1974 is thus mainly due to the increase in the sprat and Norway pout fisheries. It will be noted that there has been a

FIGURE 2.3.2

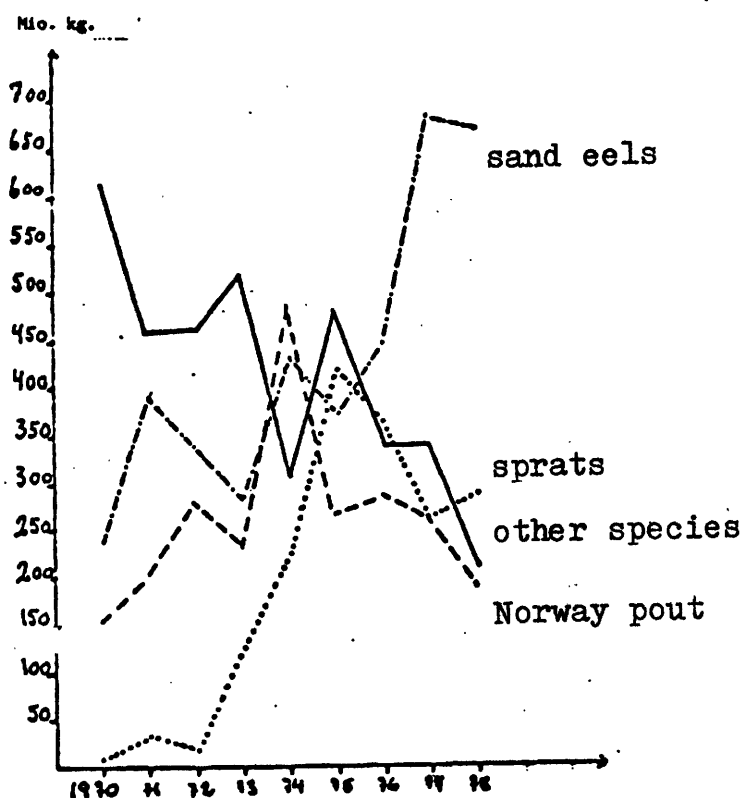
Composition of Danish landings of fish for direct consumption, 1970-78. kg million.



Source: Ministry of Fisheries, Fisheries Report for various years, and provisional figures.

FIGURE 2.3.3

Composition of Danish landings of fish for industrial processing, 1970-78. kg millions.



Source: Ministry of Fisheries, Fisheries Report for various years, and provisional figures.

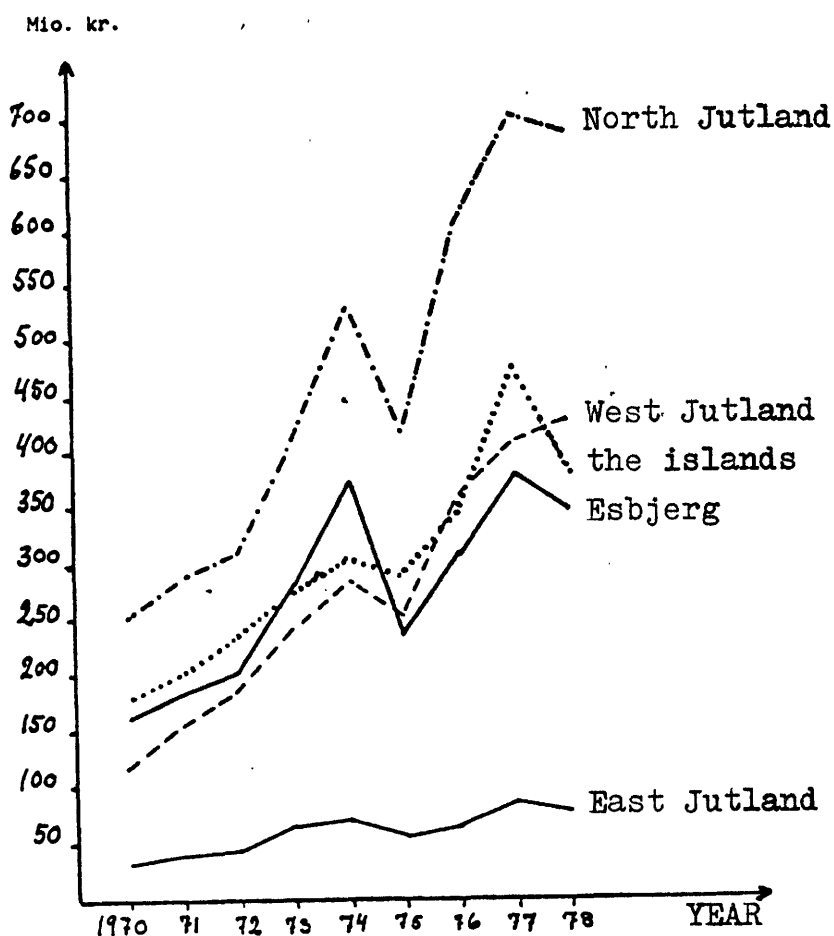
decline in the importance of herring as a fish for industrial processing in recent years. The other species in the group, which mainly includes blue whiting, horse mackerel and unintentional catches of gadoids, have varied in importance during the period, although catches have been

at a low level since 1977, representing about 15% in total.

The regional distribution of the catches in terms of value may be seen from Figure 2.3.4; in this Figure and in those which follow, West Jutland includes only the Ringkøbing administrative district, whilst Esbjerg represents the Ribe administrative district. Whereas East Jutland has remained at a very even and modest level for

FIGURE 2.3.4

Development in sales in the country as a whole and in the Jutland regions, 1970-78. Kr. million.



Source: Fisheries Report and Ministry of Fisheries, provisional figures, 1978.

many years, West Jutland in particular and North Jutland have increased their share of the total value in the period between 1972 and 1978. The steep fall in 1975 mainly affected Esbjerg, North Jutland to a certain extent,

and West Jutland to only a small extent, due to the fact that the West Jutland fishermen are engaged mainly in fishing for direct consumption, whereas the North Jutland and Esbjerg fishermen are very much more involved in

industrial fishery (see below). The steep increase in the value of the landings made in North Jutland has meant that the value of the landings made here in 1978 was equal in size to the landings made in West Jutland and Esbjerg, i.e. on the entire Jutland west coast from Thyborøn in the north to the border in the south. The combined value of the landings on the west coast of Jutland and in North Jutland in 1978 represented 80% of the total value of all Danish landings.

Figure 2.3.5 shows the quantities of fish for direct consumption landed in 1970-78, by the most important species in the individual regions. A characteristic feature is the overall dominance of North Jutland with regard to herring, and in particular the steep increase which took place between 1974 and 1976, whilst as far as cod is concerned, North Jutland remained at a more or less constant level of between 15 000 and 18 000 tonnes for most of the period. A similar situation was true in Esbjerg, which, apart from the good years of 1971 and 1972, managed to land only 10 000 - 13 000 tonnes of cod per year. Apart from a couple of poor years in 1973 and 1974, West Jutland (Ringkøbing administrative district) has shown a marked increase in landings of cod, in particular up to 1976, after which a falling trend established itself. Landings of plaice are more evenly distributed over the individual regions. Apart from a couple of poor years in 1974 and 1975, the overall trend has been a uniform rise, with the exception of

Esbjerg, where landings of plaice have been declining since 1976.

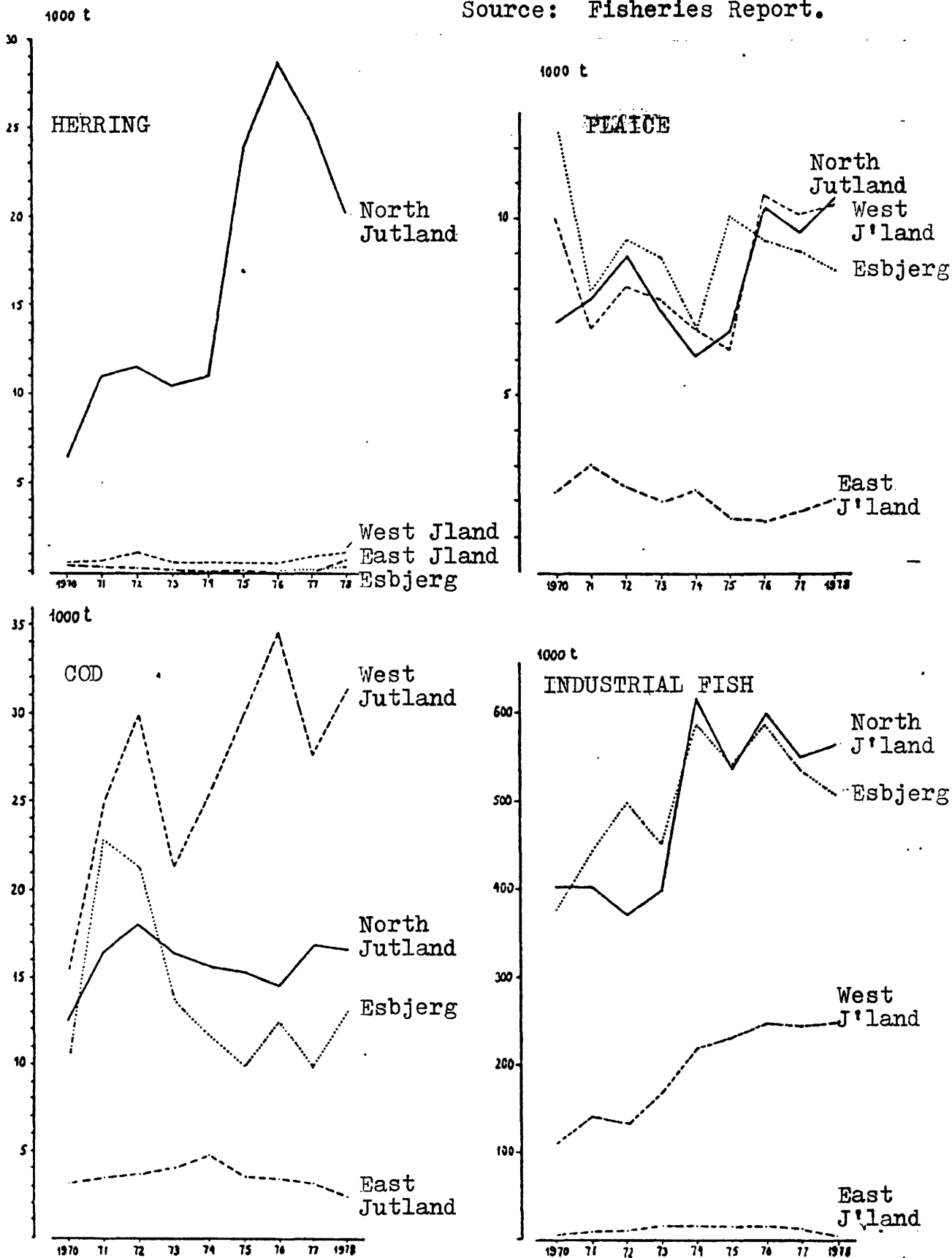
The industrial fisheries operate mainly out of the North Jutland ports and Esbjerg, where landings have been at the same level since 1973. Landings in West Jutland have been at a much lower level than in the two areas mentioned above, although a steep increase did occur during the 1970s.

The overall conclusion which may be reached on the basis of Figures 2.3.4 and 2.3.5 is that the increase in value of the landings made in North Jutland since 1975 is attributable mainly to major increases in landings of herring and plaice for direct consumption, whereas the increase in value of the landings made in West Jutland is attributable mainly to the increase in landings of cod and plaice for direct consumption. On the other hand, the stagnation which has been seen in Esbjerg is due to the general stagnation in the landed quantities of all major species.

FIGURE 2.3.5

Development in Danish landings of three important species of consumer fish and fish for industrial processing, 1970-1978, in the Jutland regions (represented by the largest fishing ports: North Jutland: Skagen, Hirtshals, Hanstholm and Frederikshavn; West Jutland: Thyborøn and Hvide Sande; East Jutland: Grenå).

Source: Fisheries Report.



Landings in 1978

The distribution of Danish and foreign landings in the Jutland regions and by area of use (direct consumption and industrial processing) in 1978 may be seen from Table 2.3.1. In this Table and those which follow, West Jutland includes only the Ringkøbing administrative district, whilst Esbjerg represents the Ribe administrative district.

As far as concerns total Danish landings, 93% in terms of weight were landed in Jutland, and 80% in terms of value. The difference mainly reflects the fact that on the whole all Danish industrial fisheries operate out of Jutland, whereas only 70% of consumer fisheries operate from there. The Jutland consumer fisheries operate principally from North Jutland and West Jutland, whereas the industrial fisheries operate out of Esbjerg, West Jutland and North Jutland. The importance of the industrial fisheries is greatest in Esbjerg, where they represent 70% of the value and 95% of the weight of the total landings; in North Jutland and West Jutland industrial fisheries represent approximately 80% of the weight of the total landings and between 30 and 40% of the value of the total landings.

A certain amount of foreign landings are made in Danish fishing ports, although on the whole only in North Jutland, which in 1978 accepted 83% of all foreign landings. In 1978, 62% of foreign landings were in the form of fish for direct consumption, and accounted for 15% of all landings of consumer fish in 1978.

The distribution of the consumer fisheries in the various fishing grounds is shown in Table 2.3.2. West Jutland and Esbjerg depend on the North Sea, and to a certain extent on the Skagerrak, for their consumer fisheries, whereas the North Jutland consumer fisheries are spread over a number of fishing grounds. Most of the North Jutland consumer fisheries take place in the Skagerrak, where mainly cod is caught; the North Jutland herring fisheries take place mainly in the Kattegat and in the Baltic, whilst the mackerel fisheries take place in the North Sea and in the waters to the west of Scotland. Only a small proportion of the Jutland fisheries takes place in the Belt Sea, and then only from the ports in the east of Jutland.

TABLE 2.3.1

Landings, weight and value of fish, crabs and molluscs in Denmark, Jutland and the Jutland regions, by area of use. 1978.

DANISH LANDINGSWEIGHT

	TOTAL tonnes	CONSUMER FISH		INDUSTRIAL FISH tonnes	% regional distribution		
		tonnes	%		TOTAL	CONSUMER	INDUSTR.
DENMARK	1 705 266	331 683	19	1 373 583	100	100	100
JUTLAND	1 591 987	234 000	15	1 358 000	93	71	99
North Jutland	720 142	131 000	18	589 000	42	39	43
East Jutland	29 289	15 000	51	14 000	2	5	1
West Jutland	309 651	63 000	20	247 000	18	19	18
Esbjerg	532 905	25 209	5	507 696	31	8	37

DANISH LANDINGSVALUE

	TOTAL kr 1000	CONSUMER FISH		INDUSTRIAL FISH kr 1000	% regional distribution		
		kr 1000	%		TOTAL	CONSUMER	INDUSTR.
DENMARK	1 929 438	1 263 056	65	666 382	100	100	100
JUTLAND	1 550 108	-	-	-	80	-	-
North Jutland	692 151	398 000	58	294 000	36	32	44
East Jutland	78 119	-	-	-	4	-	-
West Jutland	432 338	317 000	86	115 000	22	25	17
Esbjerg	347 500	104 641	30	242 859	18	8	36

FOREIGN LANDINGSWEIGHT

	TOTAL tonnes	CONSUMER FISH tonnes	INDUSTRIAL FISH tonnes	% regional distribution		
				TOTAL	CONSUMER	INDUSTRIAL
DENMARK	127 404	83 776	43 628	100	100	100
JUTLAND	111 429	69 084	42 345	87	82	97
North Jutland	106 005	65 685	40 320	83	78	92
East Jutland	235	225	10	0	0	0
West Jutland	1 926	1 676	250	2	2	1
Esbjerg	3 263	1 498	1 765	3	2	4

FOREIGN LANDINGSVALUE

	TOTAL kr 1000	CONSUMER FISH kr 1 000	INDUSTRIAL FISH kr 1 000	% regional distribution		
				TOTAL	CONSUMER	INDUSTRIAL
DENMARK	248 618	222 763	25 855	100	100	100
JUTLAND	211 041	189 090	21 951	85	85	85
North Jutland	194 031	172 996	21 035	78	78	81
East Jutland	1 297	1 292	5	1	1	0
West Jutland	8 032	7 913	119	3	4	0
Esbjerg	7 681	6 889	792	3	3	3

Source: Ministry of Fisheries, provisional figures.

Table 2.3.3 shows the distribution of Danish industrial catches by fishing ground. It will be seen that the North Sea is by far the most important fishing ground for sprats, Norway pout and sand eels, although approximately 20% of the sprats are caught in the Skagerrak, the Kattegat, the Belt Sea and the Baltic.

The regional distribution in 1978 of the most important species of consumer fish may be seen in Table 2.3.4. It will be seen that by far the majority of the mackerel, plaice and species of roundfish (not cod) is landed in Jutland, although only 50% of the herring and approximately 60% of the cod is landed in Jutland. The 1978 situation in Jutland is shown in Figure 2.3.5, although it will also be noted that there is a certain degree of 'specialization' between the regions as far as the less important species are concerned. Thus mackerel and dark coalfish are mainly landed only in North Jutland, whereas most of the haddock is landed in West Jutland and North Jutland. The North Jutland mussel and eel fisheries take place in the Liim Fjord, and the catch is landed in the small fishing ports around the fjord.

TABLE 2.3.2

Danish landings (tonnes) of the 7 most important species¹⁾ for direct consumption, by fishing ground, in Denmark, Jutland and the Jutland regions. 1978.

FISHING GROUND									
Landed in:	North Sea	Skager-rak	Katte-gat	Belt Sea	Baltic	Ringk. Fjord	Liim Fjord	West of Scotland	English Channel
Whole country	-	-	he 43 152	co 13 091	co 55 816	he 1 363	he + pl 438	ma 4 934	co 2 209
Jutland	68 190	59 801	27 991 ^x	3 855	6 210	1 363	434	4 934	0
North Jutland	ma 9 087	co 40 184	he 16 137	-	he 4 366	0	he + pl 434 ^x	ma 4 934	0
East Jutland	-	-	pl 11 854 ^x	3 855 ^x	1 874 ^x				
West Jutland	co 40 863	co 15 831	0	0	0	he 1 363 ^x	0	0	0
Esbjerg	co + pl 18 240	co 3 786	0	0	0	0	0	0	0

1) Herring, cod, plaice, dark coalfish, whiting, haddock, mackerel (letters in the headings indicate most important species).

2) x - contains small quantities of other consumer species and industrial fish.

3) m - the most important fishery in Liim Fjord is for eels, 317 tonnes. A further 3 946 tonnes of fish is landed in Liim Fjord, of which some is taken in the North Sea.

4) - information not yet available.

Source: Ministry of Fisheries, provisional figures.

TABLE 2.3.3

Danish landings of fish for industrial processing (tonnes), by fishing ground and by species, 1978.

Species	North Sea	Skagerrak	Kattegat	Belt Sea	Baltic	Ringk. Fjord	Lim Fjord	West of Scotland	English Channel
Sprats	214 085	23 143	35 828	3 652	6 979	-	2 701	259	1 796
Norway pout	160 899	19 581	4 341	-	-	-	-	4 443	283
Sand eel	649 048	20 702	1 029	-	-	-	-	-	-

Source: Ministry of Fisheries, provisional figures.

TABLE 2.3.4

Danish landings of fish for direct consumption (tonnes) in 1978, by species, in Denmark, Jutland and the Jutland regions.

	Herring	Mackerel	Plaice	Cod	Dark coalfish	Haddock	Hake	Whiting	Eel	Norway lobster	Deep-water prawns	Mussels
DENMARK	46 032	13 516	49 011	125 451	8 714	7 606		2 204	2 338			
JUTLAND	25 154	13 504	42 307	73 404	8 654	7 552	1 493	1 698	398	663	1 893	40 410
North Jutland	20 816	13 492	13 388	18 381	7 432	2 850	964	976	321	562	1 333	40 410
East Jutland	735	0	6 545	3 922	0	11	0	11	10	101	0	0
West Jutland	1 252	5	13 844	38 080	767	4 034	487	387	67	0	0	0
Esbjerg	351	7	8 530	13 021	455	657	42	324	0	0	0	0

Source: Ministry of Fisheries, provisional figures.

2.4 Initial sales

2.4.1. Organization of the trading system and price controls

Initial sales of fish in Denmark take place partly by public auction, partly by sale to the fish marketing association, and partly by direct sales to customers ashore (contract sales).

Fish auctions

Public auctions of fish have been held in Denmark since 1922. In 1977 there were 24 registered auctions in the country, of which 17 were on Jutland; cf. Table 2.4.1. Their number had fallen to 23 by 1979.

TABLE 2.4.1

Number of auctions and quantities sold at auction in 1977.

	Number of auctions	quantities sold at auction 1977			
		tonnes	%	kr million	%
DENMARK	24	345 094	100	1 048 432	100
JUTLAND	17	321 498	93	987 292	94
North Jutland	9	236 086	68	575 476	55
West Jutland	6	72 862	21	364 208	35
East Jutland	2	12 550	4	47 593	5

Source: Fisheries Report for 1977.

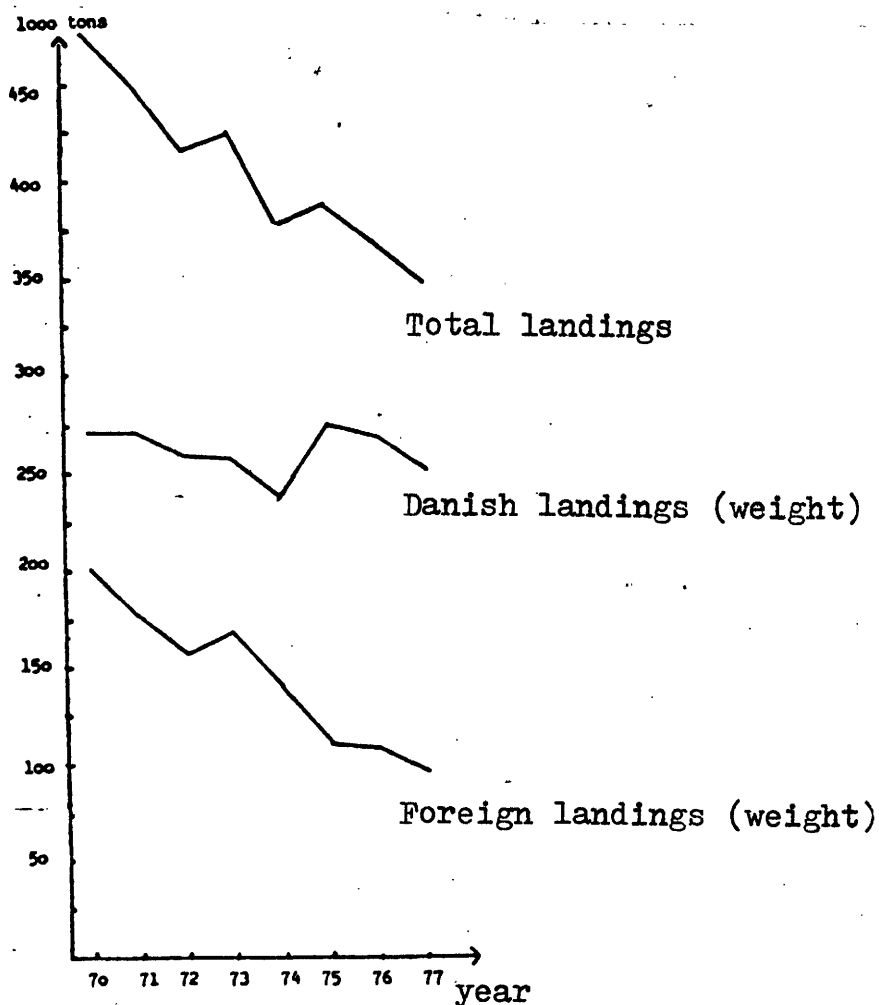
The quantities sold at auction are made up mainly of fish for direct consumption, although the auctions used to sell a proportion of the fish for industrial processing. In the area of fish for direct consumption, the auctions are the main sales channel, with approximately 70% of the weight of fish for direct consumption landed in Denmark, which is equivalent to 65% of the value of the total catch of fish for direct consumption, being sold through the fish auctions.

Similarly, in 1977, approximately 75% of the total landings made by foreign fishermen (fish for direct consumption and fish for industrial processing) were sold by auction. This represents approximately 90% of the value of the landings. In the early 1970s, almost all foreign landings were sold by auction. These high proportions are due to the fact that special permission from the Ministry of Fisheries is required for the disposal of foreign landings outside the network of registered auctions. Such permission has been

granted to a certain extent in recent years. Of the total quantities sold at auction, landings by foreign fishermen in the 1970s represented about 25-30% by weight and 20-25% by value. As may be seen from Figure 2.4.1, foreign landings sold at auction have fallen by half, in terms of weight, between 1970 and 1977.

FIGURE 2.4.1

Danish and foreign landings sold at auction in Denmark, 1970-77.



Source: Ministry of Fisheries. 1977 Fisheries Report.

The development which has taken place in the total quantity sold at auction may be seen from Figure 2.4.1. Whereas the 1960s saw a general increase in total quantities, the 1970s saw a general decline, due mainly to the fall in the quantity provided by foreign landings. The quantity for auction provided by Denmark during the 1970s remained more or less at a constant level of about 255 000 tonnes. When

evaluating the development which has taken place, it should be borne in mind that a greater amount of fish for industrial processing was sold by auction in the 1960s than has been the case in the 1970s.

The principal duty of the fish auctions is to provide a sales channel for the fishermen.

Selling by auction concentrates the supply in one place, and enables a higher price to be obtained for the fish by attracting together a large number of purchasers.

In addition to providing a sales channel, the auction companies also provide varying levels of service at various locations in conjunction with unloading the catch, sorting (by size and by species), re-icing and setting-up prior to auction. These jobs are undertaken by the collecting centres at certain locations, however; cf. below.

Auction fees and the charges for services provided by the auction firms are laid down by the Ministry of Fisheries, and amongst other things take into account the value of the fish sold at the auction in question.

The total expenses associated with selling by auction (including handling) will normally amount to approximately 10-12% of the selling price.

The purchasers at fish auctions are fish wholesalers and other firms within the fishing industry. The large wholesalers and/or processors usually have their own

buyers in the larger fishing ports, whereas the smaller purchasers buy through local intermediaries.

The price of fish is set at the fish auctions on a day-to-day basis by a process of matching supply and demand. A minimum price is nevertheless set for the majority of species, which is administered by Danske Fiskeres Producentorganisation (the Danish Fish Producers' Organization) with assistance from the European Agricultural Guidance and Guarantee Fund.(cf. Sections 1.3 and 2.7.1). Any lot which is offered for sale and which does not reach the minimum price will be withdrawn from auction and sold as fish for processing into feed.

Collecting centres

The collecting centres act as a link between the fishing fleet and the fish auction. The purpose of the collecting centres is to collect together small lots into larger lots of a single species, which may then be offered for auction. The individual fisherman subsequently receives an average price from the price obtained by the collecting centre at auction.

The first collecting centre was established in 1956. A total of 22 centres had been established by 1979, all of which were on Jutland, mainly in the north and west. The collecting centres, of which there are often several in each port, may be privately owned, owned by the fisheries associations, or else organized as cooperative societies. In those ports which have collecting centres, the centres account for 40% on average of the quantity of fish sold by auction, although there is considerable variation from one location to another.

Fish marketing associations

The fish marketing associations act as a selling organ, on the one hand for the fishermen in the smaller ports, where the total catch is not large enough to justify auctions being held, and on the other hand for fishermen who live on islands, where the holding of auctions is made difficult by geographical considerations, etc.

As an organ for the initial sale of fish for direct consumption, the fish marketing associations are particularly widespread on Sjælland, Fyn, Bornholm and the other islands, as well as in East Jutland.

The marketing associations, which are normally established on a cooperative basis, sort and pack members' catches and take charge of the resale of the catches, either directly to the fish wholesalers, to the retail trade, to industrial processors or via the Fisketorv (fish market) in Copenhagen.

Sales are often made on the basis of long-term contracts, in accordance with which the marketing association undertakes to provide regular supplies.

The marketing associations are normally under an obligation to take all the fish sent in by their members, as a result of which - unlike the fish auctions - they must also provide storage facilities. This has led a number of marketing associations to set up their own filetting and freezing plants and to process the incoming fish. The fishermen are usually paid an agreed price for any fish landed, with a year-end adjustment based on the sales achieved by the marketing association in the financial year. The agreed price will normally be based on an average of the prices obtained for the fish product in question at auction over a period. Some of the marketing associations, mainly those on Bornholm, are joint owners of Dansk Andelsfisk (= the Danish fish cooperative), which is involved in the processing and sale (both domestic and export sales) of fish on behalf of the fish marketing associations.

Approximately 20% of initial sales by weight and approximately 25% by value are sold by the fish marketing associations.

Direct sales (contract sales)

Contract sales are by far the major form of initial sales of fish for industrial processing, whereas in the case of fish for direct consumption contract sales play a smaller, albeit increasing role.

As has already been mentioned, large quantities of fish for

industrial processing were formerly sold via the fish auctions, although in relation to the total landings of fish for industrial processing this method of selling is of modest significance at the end of the 1970s. Most of the fish for industrial processing was supplied direct to the fish-meal and fish-oil factories ashore at a fixed price, which is continually adjusted in accordance with any movements in the international market price of fish-meal and fish-oil.

There is a certain degree of variation in the manner in which prices are determined between one fishing port and another; some ports pay in accordance with the quality of the raw material, whereas this is not the case in other ports. Similar variations exist in respect of unloading

charges, etc., which may be included in the settling price or charged to the vessel.

Approximately 75% of the fish-meal industry, in terms of turnover, is owned by the fishermen on a cooperative basis. The shareholders generally send their catch to their own company, and certain cooperative societies place members under an obligation to send in their catches. A few fish-meal factories own fishing vessels and are thus able to guarantee regular supplies. The wages system, together with the fact that the skipper will often own a share in the vessel, has meant that vertical integration and the resulting opportunities for 'internal' price fixing are not used to any great extent.

Direct sales of fish for direct consumption from the vessel to the wholesaler and/or processing plant takes place in all parts of the country, and involves an estimated 10% or thereabouts of total Danish landings of fish for direct consumption. The fish is normally landed at a contract price which is determined in relation to the average auction prices obtained over a period for the species of fish/sorting in question.

A characteristic feature of this form of selling is that a major proportion of the sales of fish for direct consumption which has been sorted from fish for industrial processing, as well as a proportion of the landings of mackerel for direct consumption, are made directly to customers ashore.

As has already been mentioned, an increasing proportion of foreign landings of fish for direct consumption is in the form of direct supplies to wholesalers and/or companies ashore. These supplies have been estimated at between 10% and 15% of total foreign landings of fish for direct consumption.

2.4.2 Nature of demand

Table 2.4.2 shows total Danish and foreign landings of fish for direct consumption in 1976, divided up on the basis of the subsequent use of the fish, based on averages for all species.

TABLE 2.4.2

Use of Danish and foreign landings of fish for direct consumption in Denmark in 1976.

TOTAL CONSUMER SUPPLIES	100%		
HOME MARKET		25%	
of which: total fresh fish			12%
of which: whole			10%
filleted			2%
for processing		13%	
EXPORT MARKET		75%	
of which: total fresh fish			63%
of which: whole			34%
filleted			29%
for processing in Denmark			12%
TOTAL		100%	100%

As may be seen from the Table, more than 45% of the landings of fish for direct consumption were sold in the form of whole, fresh fish in 1976. Approximately 75% went for exports. More than 25% of the landings were processed, of which just under half was exported. The rest of the raw material landed was used mainly to produce fresh fillets, 95% of which were exported.

It will thus be seen from the Table that approximately 75% of the demand for fish for direct consumption comes from the fresh fish sector of the market.

2.5 Processing industry

2.5.1 Consumer industry

In Denmark in 1978, a total of 504 firms were engaged in the processing and sale of fish for the consumer sector of the market. About one-third of these are purely wholesaling operations, one-third are involved in both wholesaling and processing, and one-third are purely processing operations.

The regional distribution of the firms and the nature of their business may be seen in Table 2.5.1. It will be seen that the North Jutland region has about 40% of the total number of firms and workers. Worthy of particular note is the fact that, from the point of view of purely processing operations, North Jutland has more than half the total number in the country.

TABLE 2.5.1

Number of firms engaged in processing and sale of fish, by Fisheries Inspectorate. September 1978.

	North Jutland region ¹⁾		South Jutland region ¹⁾		Whole country	
	no. of firms	work-ers	no. of firms	work-ers	no. of firms	work-ers
Processing	107	2200	51	883	192	3895
Processing and wholesaling	40	1707	46	1057	142	3267
Wholesaling	68	202	46	264	170	628
Total	215	4109	143	1204	504	7790

Source: Ministry of Fisheries.

1) The data are divided up according to the areas covered by the Fisheries Inspectorates in Frederikshavn and Esbjerg; see p.204 for details of area boundaries.

The data contained in Table 2.5.1, which has been compiled on the basis of a survey conducted by the Ministry of Fisheries, include every firm, and may not therefore be compared directly to the data published by Danmarks Statistik, which only include firms with more than 6 employees. However, it is only possible for reasons to do with analytical techniques to base the following description on the data produced by Danmarks Statistik.

2.5.1.1 Structure and ownership

The distribution by size of the firms involved in the consumer fish industry in Denmark and in the Jutland regions may be seen from Table 2.5.2. The details relate only to firms with more than 6 employees, but also include firms engaged in the wholesaling of fresh fish in addition to their processing activities. As in Table 2.5.1., it will be seen that two-thirds of the Jutland firms are

TABLE 2.5.2

Consumer fish industry in Denmark and the Jutland regions by numbers of employees, 1979. x) = 1978.

	6 - 19 employees	20 - 49 employees	50 - 99 employees	100 - 199 employees	200 - 299 employees	300 - 499 employees	Total
DENMARK x)	33	35	12	12	7	1	100
JUTLAND	16	24	9	10	5	1	65
NORTH JUTLAND	7	17	4	8	4	0	40
North Jutland admin. d.	7	15	4	7	2	0	35
Viborg admin. district	0	2	0	1	2	0	5
EAST JUTLAND	7	2	1	0	1	1	12
Århus admin. district	2	1	1	0	1	0	5
Vejle admin. district	3	1	0	0	0	1	5
Sønderjylland admin. d.	2	0	0	0	0	0	2
WEST JUTLAND	2	5	4	2	0	0	13
Ringkøbing admin. d.	1	1	1	0	0	0	3
Ribe admin. district	1	4	3	2	0	0	10

Source: Danmarks Statistik, Special extract from Industristatistikken.

located in the North Jutland region, with the remaining one-third being distributed evenly throughout the West Jutland and East Jutland regions. As in Table 2.5.1., it will also be seen that approximately 40% of the firms engaged in the Danish consumer fish industry are located in the North Jutland region. A typical feature of the distribution by size is the fact that at least one-half of the firms in the Jutland regions are small firms with less than 50 employees. Again, North Jutland differs from the rest of Jutland in having a comparatively large proportion of large firms with more than 100 employees.

The number of employees is only a poor indicator of any developments in the distribution by size of the firms,

since the number of employees may vary considerably due to changes in production and productivity over a number of years, without any significant change occurring to the level of turnover, for instance. Thus the number of firms engaged in the consumer fish industry and their size distribution by number of employees has remained more or less unchanged for the country as a whole throughout the 1970s.

By far the major proportion of the firms covered by Table 2.5.2 fall within the sectors of fillet production and the production of hermetically sealed fish. Thus only 10 of the Jutland firms with more than 6 employees had smoking or salting as their main production area. The resulting picture is not totally accurate, however, as there is a large number of small smokehouses throughout the whole country. The figures show that there is a total of 123 smokehouses in Denmark, of which 55 are on Jutland. A comparison of Tables 2.5.1 and 2.5.2 will also show that there are approximately 100 filetting and canning plants in the country as a whole, some of which include a wholesaling business, with less than 6 employees.

TABLE 2.5.3

Consumer fish industry in Denmark (number of firms with 6 or more employees) and in the Jutland regions, by type of ownership, 1979.

- = no information available

	Enkelt- person	I/S	K/S	A/S	ApS	Andels- foren	Total
DENMARK	-	-	-	-	-	-	-
JUTLAND	13	10	1	28	13	0	65
NORTH JUTLAND	9	7	1	16	7	0	40
North Jutland ad.d.	8	5	1	15	6		35
Viborg admin. d.	1	2	0	1	1		5
EAST JUTLAND	2	1	0	7	2	0	12
Århus admin. d.	2	1	0	2	0		5
Vejle admin. d.	0	0	0	4	1		5
Sønderjylland ad.d.	0	0	0	1	1		2
WEST JUTLAND	2	2	0	5	4	0	13
Ringkøbing ad. d.	1	0	0	1	1		3
Ribe admin. d.	1	2	0	4	3		10

Source: Danmarks statistik, special extract from Industristatistikken.

key:

- Enkeltperson - individually owned
- I/S - partnership
- K/S - limited partnership
- A/S - limited liability company
- ApS - cooperative
- Andelsforen - cooperative society

The form of ownership of the firms engaged in the Danish consumer fish industry may be seen in Table 2.5.3 in the case of firms with more than 6 employees, and in Table 2.5.4 in the case of all firms engaged in the consumer fish industry. The limited liability company predominates amongst firms with more than 6 employees, accounting for 40-50% of all firms. Firms owned by individuals are also very significant, particularly in the North Jutland region, and account for approximately one-quarter of the total number of firms. However, by comparing Table 2.5.3 and Table 2.5.4, it will be seen that, if firms with less than 6 employees are included, firms owned by individuals are considerably more numerous than the other forms of ownership.

TABLE 2.5.4

Sales of the entire Danish VAT-registered fishing industry, 1977 (including firms with less than 6 employees).

	No. of units	Sales kr million	% of total	
			No. of units	Sales
Individual ownership	89	228	44	9
Partnerships and limited partnersps.	28	555	14	22
Cooperatives	18	128	9	5
Limited liability companies	58	1345	29	54
Cooperative societies	5	108	3	4
Other	4	154	2	6
Total	202	2497	101%	100%

Source: VAT Register, Stat. Eft. A No. 38, October 1978

An examination of the overall distribution of sales shown in Table 2.5.4 will show that the importance of the forms of individual ownership is more or less in line with their importance on the basis of the number of units with more than 6 employees, since it will be found that more than 60% of the total sales of the consumer fish industry are made by limited liability companies and firms owned by individuals.

The correlation between size and form of ownership may be seen from Table 2.5.5. It will be seen that the cooperatives and the firms owned by individuals are mainly small firms with less than 50 employees, whereas the limited liability company is typical of the large firms with more than 100 employees, but also to a certain extent of small companies with 20-49 employees.

TABLE 2.5.5

The Danish consumer fish industry, by size and ownership.
1979. - = no information available.

	Number of employees						
	6-19	20-49	50-99	100-199	200-299	300-399	Total
Individual ownership							
Denmark	-	-	-	-	-	-	-
Jutland	5	6	1	1	0	0	13
Partnerships and limited partnerships							
Denmark	-	-	-	-	-	-	-
Jutland	0	2	5	3	1	0	11
Limited liability companies							
Denmark	-	-	-	-	-	-	-
Jutland	4	11	3	6	3	1	28
Cooperatives							
Denmark	-	-	-	-	-	-	-
Jutland	7	5	1	0	0	0	13
Totals							
Denmark	-	-	-	-	-	-	-
Jutland	16	24	10	10	4	1	65

Source: Danmarks Statistik, Special extract from Industristatistikken.

2.5.1.2 Supply of raw materials and production

The supply of raw materials to the fish industry is mainly in the form of landings in Danish ports by Danish and foreign fishermen; however, commercial imports of raw materials have played an increasingly important role in

recent years. The Danish raw materials balance for fish for direct consumption is shown in Table 2.5.6. For a number of years now, a good one-third of the supply of raw materials

TABLE 2.5.6

Whole fresh fish supplied to the Danish market, 1974-1978 (tonnes).

	Danish landings	IMPORTS		Total supply	Imports as a % of total supply	Commercial imports as a % of total imports	Commercial imports as a % of total supply	Total supply after export of whole fresh and frozen fish ²⁾
		of which: foreign landings	TOTAL ¹⁾					
1974	235	121	178	413	43	32	14	-
1975	262	95	158	420	38	40	15	-
1976	301	90	139	440	32	35	11	290
1977	293	84	152	445	34	45	15	285
1978	276	70	158	434	36	56	20	270

Note: 1) Total imports comprise foreign landings (in Danish ports) and commercial imports (entering the country by land).

2) Whole fish plus semi-processed 'cut herring and off-cuts'.

Source: Danmarks Statistik, Imports and Exports for various years.

Ministry of Fisheries, Fisheries Report for various years.

has been imported (foreign landings + commercial imports), and the share of total imports represented by commercial imports has risen from 32% to 56% since 1974. The available raw material does not go only to the fish industry, since Denmark, as may be seen from Table 2.5.6, exports considerable quantities of whole fresh fish. The Table also

TABLE 2.5.7

Raw materials supply balance for the most important species of fish for direct consumption used in the Danish industry, 1976 and 1978 (tonnes of whole fish).

		DANISH landings	IMPORTS ¹⁾		EXPORTS	Total consumption of raw materials ²⁾ fresh + frozen	Raw materials consumption as a % of	
			of which: foreign landings	TOTAL			Danish landings	Danish + for. landings
1976								
HERRING	fresh	39 221	57 259	74 294	15 491 ³⁾	95 709	244 %	99 %
	frozen			2 439	4 754			
PLAICE	fresh	45 909	2 045	3 530	8 184	40 941	89 %	85 %
	frozen			90	404			
HADDOCK	fresh	10 815	2 190	2 314	4 085	9 028	83 %	69 %
	frozen			28	44			
COD	fresh	160 669	1 989	3 139	25 298	140 624	88 %	86 %
	frozen			3 114	1 000			
COALFISH	fresh	12 824	5 792	6 705	7 401	12 696	99 %	68 %
	frozen			810	242			
MACKEREL	fresh	6 715	19 547	22 063	4 804	22 176	330 %	84 %
	frozen			2 726	4 524			
1978								
HERRING	fresh	46 032	20 473	65 865	16 121	91 346	198 %	137 %
	frozen			2 088	6 518			
PLAICE	fresh	49 011	-	4 917	11 304	42 285	86 %	-
	frozen				339			
HADDOCK	fresh	7 606	-	1 634	5 358	3 822	50 %	-
	frozen			84	144			
COD	fresh	125 451	-	10 492	26 782	109 011	87 %	-
	frozen			2 171	2 321			
COALFISH	fresh	8 714	-	7 213	4 923	10 549	121 %	-
	frozen			29	484			
MACKEREL	fresh	13 516	31 729	34 798	5 920	46 740	345 %	103 %
	frozen			5 444	1 089			

Note: 1) Total imports comprise foreign landings (in Danish ports) and commercial imports (entering the country by road).

2) Consumption of raw materials calculated as Danish landings + total imports (fresh and frozen) - exports (fresh and frozen).

3) Includes only whole fish, i.e. no 'cuts' or 'off-cuts'.

Source: Danmarks Statistik: Danish imports and exports and Ministry of Fisheries: Fisheries Report and provisional figures.

shows that the supply of raw materials to the Danish fish industry in the period 1976-78 fell by approximately 20 000 tonnes, which is about twice as much as the overall market supply.

The raw materials supply picture does vary to a certain extent from one species to the next. Table 2.5.7 shows the raw materials supply picture for the most important species used in the Danish fish industry. It will be seen that cod is in principle the only species in which we are fully self-sufficient, whereas we are absolutely dependent on foreign supplies of herring and mackerel. In the case of herring, commercial imports have been increasing in importance in recent years and at their level of about 50% of total imports represented a critical factor in the supply of raw materials to the herring industry in 1978. Total imports of plaice, and in particular of mackerel, have been on the increase, mainly as a result of higher foreign landings in Danish ports. It will also be noted that imported frozen raw materials are of only minor significance to the total consumption of raw materials by the industry, although there is an increasing trend for both mackerel and herring.

Capacity and utilization of capacity

It is not possible to provide a detailed description of the production capacity in the fish industry, although a reasonable yardstick in view of the filletting industry in the industrial picture is the number of filletting machines.

As may be seen from Table 2.5.8., machines were available in 1978 for the filletting of 279 000 tonnes of gadoids, 284 000 tonnes of herring and mackerel, and 39 000 tonnes of plaice. In relation to the 140-150 000 tonnes of gadoids

TABLE 2.5.8

Number of filletting machines and production capacity (1978)

	Roundfish	Flatfish	Herring/ mackerel
Number of machines	123	49	193
Tonnes of raw material annually	279 000	39 000	284 000

Source: Ministry of Fisheries; Recommendations of the Fisheries Commission of 2 November 1978.

processed by the industry in 1977 (cf. Table 2.5.7), the utilization of capacity is at a level of about 50%. It will also be seen that the utilization of capacity in respect of herring and mackerel is as low as 30 - 35%. The machine capacity in respect of flatfish is relatively low, due to the fact that much of the filletting is done manually.

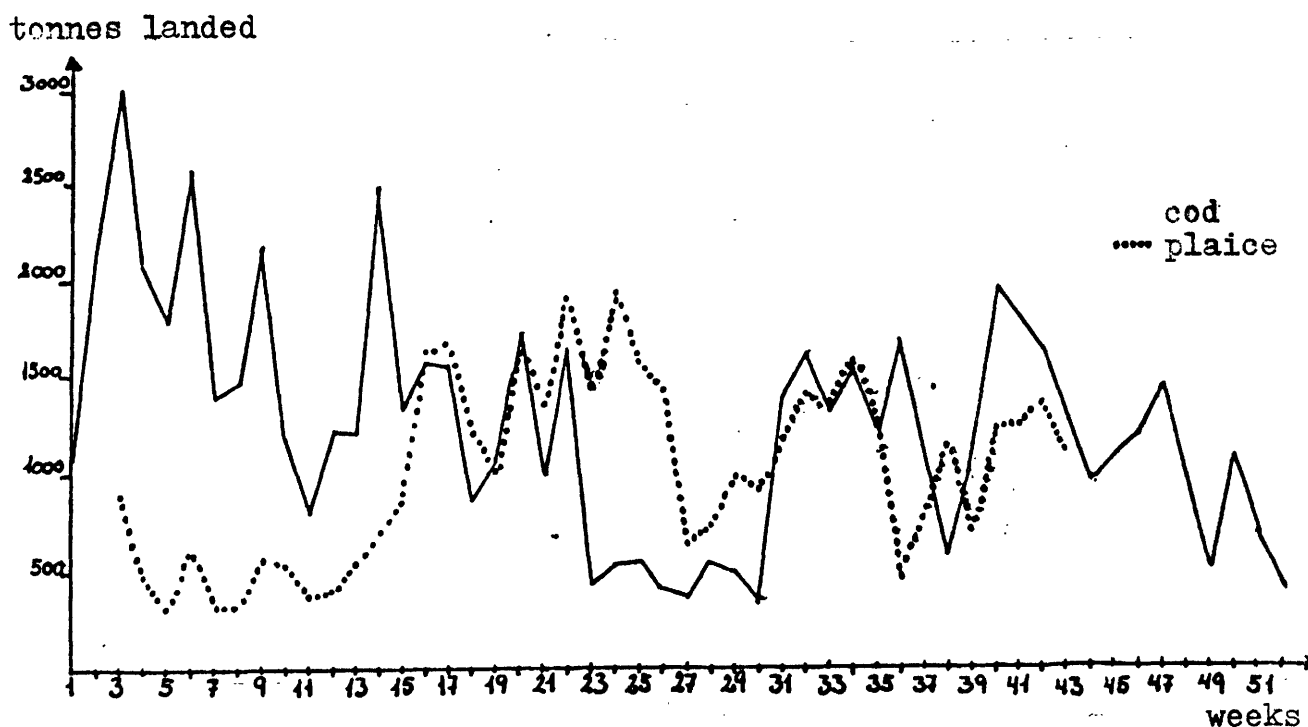
No satisfactory indication of the production capacity and yield can be provided for the canning industry, due to the more varied nature of the production equipment, although a questionnaire circulated by the Ministry of Fisheries in 1978 showed that the utilization of capacity in this area was of the order of 50 - 60 % , but with considerable variations between the individual firms.

The reason for the low utilization of capacity may be found in the major dependence of the fish industry on landings in Danish ports. The landings of the individual species are subject to considerable seasonal variations over the year as a whole, for biological reasons.

Thus, cod representing about 60% of total Danish catches was landed in the period January to May, whilst mackerel representing about 50% of the total catch was landed in the period August to September. The weekly landings within these periods of natural seasonal variations also fluctuate to a very great extent, for a variety of reasons. Figure 2.5.0 shows the overall weekly landings of cod and plaice in 1979.

FIGURE 2.5.0

Danish landings of plaice and cod from the North Sea, the Skagerrak and the Kattegat in 1979. Tonnes.



Source: Ministry of Fisheries, provisional figures

It will be seen that, even in the high season from April to July, there is a fluctuation of 50-100% in the landings of plaice, whereas landings of cod have fluctuated by more than 100% for a large part of the period in question. The authors are in possession of confidential information relating to the level of production in many of the Danish filletting plants. This reveals on the one hand that production fluctuates widely from week to week, and on the other hand that the fluctuations in the firms which process only a single species are noticeably associated with fluctuations in the supplies of fish.

The fluctuations in overall production are greatest in those firms which process only a single species, although such firms account for a significant proportion of Danish production of fillets.

In an effort to relieve these major capacity utilization problems which are governed by the supplies of raw materials, large sums have been invested by the fish industry in recent years in order to extend greatly the deep-freeze storage capacity. This has made it possible to reduce the dependence of production on the daily supply of raw materials; however, benefit has been derived from this mainly by that sector of the industry which produces highly processed products (e.g. canned fish and ready-to-serve meals), since the filletting industry is able only with difficulty to accept the increase in the price of raw materials associated with deep-freeze storage.

TABLE 2.5.9

Deep-freeze storage capacity available to firms in the Danish fish industry in 1979, and growth in capacity since 1972.

	Cold store capacity 1979 m ³			Growth 1972-1979		
	Firms in the fish industry	Commercial cold stores	TOTAL ¹⁾	Firms in the fish industry	Commercial cold stores	TOTAL ¹⁾
DENMARK	147 111	700 147	1 250 823	241 %	125 %	130 %
NORTH JUTLAND	65 193	73 605	202 696	474 %	270 %	188 %
EAST JUTLAND	18 845	276 733	393 316	222 %	239 %	205 %
WEST JUTLAND	22 116	72 192	147 718	33 %	94 %	88 %

Note: 1) includes the total cold storage capacity in the food industry.

Source: Cold Storage Institute, Cold Storage 1972 and 1979.

As may be seen from Table 2.5.9, considerable expansion has taken place in North Jutland, which in 1979 was in charge of just under two-thirds of the total cold store capacity of the Danish fish industry; in addition, there was considerable expansion of the capacity of the commercial cold stores, which in North Jutland and West Jutland are used primarily for fish products and raw materials. The reason for the concentration of this expansion in North Jutland is due in part to the predominance of herring and mackerel in the catches and on the processing side, and most of all to the fact that there were advantages in being able to freeze these species (see above). Significant expansion of the cold storage capacity of the food industry in general took place in the period 1972-79, although the expansion which took place within the North Jutland fish industry was well above the national average; furthermore, this expansion did not take place uniformly over the entire period, but was concentrated into the last 3 or 4 years.

Production of the fish industry

The production (sales) of the fish industry may be seen from Table 2.5.10. As far as concerns the total quantity produced, there was only a modest increase in the period from 1973 to 1978, but there was of course a considerable increase in the total production value. With regard to the importance of the individual product groups, certain minor changes have taken place; fillet production represented 60% of the production value in 1973, although this share had fallen to 55% by 1978. A corresponding increase took place in the production value

of canned fish and ready-to-serve meals, rising from 32% to 36%.

The value of canned shrimps and mussels rose from 7% of the total production value in 1973 to 10% in 1979.

Considerable changes have taken place, however, within the individual product groups. In the area of fillet production, herring off-cuts (and cut herring) have thus remained at a more or less constant level of approximately 25% of total fillet production; in spite of a steep fall in the quantity produced in 1979, the aforementioned share of the production

TABLE 2.5.10

Production (sales) by the consumer fish industry of certain important product groups, in Kr 1 000 and 1 000 kg, 1973-1979.

Customs tariff and product group	1973		1975		1976		1978		1979	
	weight	value	weight	value	weight	value	weight	value	weight	value
03.01 FRESH, CHILLED AND FROZEN FISH of which:	130 464	755 980	110 126	666 815	123 704	913 636	116 755	1 113 404	130 179	1 247 345
fresh and frozen herring	56 825	196 188	45 420	167 652	41 727	168 284	39 216	256 670	45 582	292 356
off-cuts	8 636	60 211	11 037	72 175	15 002	113 976	11 928	112 268	12 704	119 118
fillet, fresh cod	2 553	30 073	2 330	29 685	3 053	39 195	2 964	39 176	2 581	42 873
" , fresh plaice	31 449	242 326	21 277	176 190	33 468	318 534	28 628	350 269	25 928	324 212
" , frozen cod	10 043	121 200	7 221	101 494	8 276	124 170	8 986	150 262	9 897	196 886
" , frozen plaice										
03.02 SALT, SMOKED AND DRIED FISH	4 169	98 785	4 921	135 297	4 850	157 966	5 495	203 618	5 822	224 227
03.03 CRUSTACEANS AND MOLLUSCS, FRESH, CHILLED, FROZEN, SALT OR DRIED	-	-	-	-	581	4 120	1 005	18 343	-	11 153
16.04 FISH, PREPARED OR PRESERVED IN WHOLE PIECES of which: fully-preserved	40 739	405 658	-	458 475	69 392	569 662	-	729 227	-	849 050
marinated herring	5 328	37 081	6 190	44 566	6 603	62 837	4 682	72 978	4 199	74 498
other herring	2 799	15 559	2 740	20 162	2 591	20 178	2 298	30 966	2 683	38 234
mackerel	6 820	38 788	6 846	48 880	9 693	68 425	14 230	116 014	17 329	144 117
semi-preserved										
herring filets	2 368	12 180	3 454	18 365	2 688	17 273	2 720	23 518	2 436	23 211
other herring	3 363	19 417	1 887	14 563	1 673	14 994	1 232	16 725	1 719	22 294
marinated herring	3 208	25 752	4 506	42 458	4 695	45 563	3 290	55 594	3 843	71 469
frozen, breaded fillet	6 633	74 655	6 662	80 478	7 637	97 353	10 320	157 611	10 560	172 132
roe	5 780	26 430	5 102	37 742	6 705	53 842	6 010	49 541	6 501	62 486
cod livers	1 420	8 255	1 250	11 199	1 677	17 488	1 282	14 260	1 295	15 465
frozen, ready-to-serve dinners	-	-	439	5 601	751	8 398	1 615	19 053	2 162	26 503
16.05 CRUSTACEANS AND MOLLUSCS, PRESERVED	7 503	94 888	9 058	130 027	11 357	145 204	-	209 680	-	252 255
of which:										
mussels, fully-preserved	4 388	24 317	4 920	30 515	7 254	39 069	9 208	62 810	10 005	72 041
shrimps, semi-preserved	1 573	51 752	2 426	79 407	2 258	78 129	2 256	106 237	2 495	128 117
Total	175 305	1 355 311	-	1 390 314	201 732	1 390 588	-	2 274 272	-	2 584 030

- no information available

Source: Danmarks Statistik: 'Product statistics'.

value was maintained only by increasing the level of production significantly in relation to 1978. Up to 1978, frozen cod fillets had maintained their share of both weight and value at more or less constant levels of about 25% and just over 30% respectively, although these shares fell to about 19% and 25% in 1979. Fresh cod fillets, on the other hand, showed a comparatively greater increase in their share by weight than in their share by value, reaching a level of about 10% in both weight and value in 1978 and 1979.

The product group made up of prepared fish products also showed to a certain extent significant corresponding changes in respect of both weight and value. Thus the total production of canned herring has shown an overall declining trend in terms of weight, whereas a major increase has been seen in the value of canned herring, similar to that observed in the case of frozen herring off-cuts. It will also be seen that very much more intensive production has taken place since 1975 in the area of canned mackerel, canned mussels and deep frozen, breaded fillets. The production of ready-to-serve fish dinners has also risen steeply over recent years, although still representing only a modest proportion of total production.

2.5.1.3 The market

A substantial proportion of the fish products manufactured in Denmark is sold to foreign countries. Thus in 1978 and 1979, we exported 75% and 80% respectively, in terms of value, of our total production. In addition, there were considerable

exports of fresh and frozen whole fish, to the extent that the total export value of fish and fish products in 1978 exceeded the total production value of fish products. This Section will therefore concern itself primarily with the export market for fish and fish products.

Table 2.5.11 shows the composition of Danish exports in terms of value. It will be seen that exports of fresh and frozen fish are absolutely predominant; frozen fillets are the next largest export product, representing 16% of total exports in 1979, although their share of total exports is showing a declining trend. Exports of fresh fillets and processed fish products, and not least exports of crustaceans (shrimps) and

molluscs (mussels), have on the other hand continued to exhibit an increasing trend in recent years.

TABLE 2.5.11

Danish exports of fish and fish products. Kr 1 000.

	1973	1975	1976	1978	1979
Fresh fish	} 691 182	719 222	828 203	1 113 475	1 277 471
Frozen fish		188 732	220 315	343 014	375 565
Fresh fillet	} 482 712	83 810	92 661	137 528	261 397
Frozen fillet		374 840	497 076	568 510	600 173
Salt, dried, smoked	77 104	118 228	138 584	189 966	273 980
Crustaceans and molluscs; fresh and frozen	42 122	99 232	131 615	251 491	316 667
Prepared fish	165 256	198 549	261 626	372 674	438 793
Crustaceans and molluscs, prepared	71 466	93 847	138 367	192 735	212 414
Total	1 584 813	1 829 131	2 308 444	3 169 394	3 720 460

Source: Statistical Yearbook, various years.

Denmark's most important export markets and her share of those markets have already been indicated in Section 1.3.2, Table 1.4. West Germany is the major customer, taking 30% of total exports. Other large customers are France, Sweden and the USA, with about 12 % each.

A more detailed indication of Danish exports by product group and by market may be seen from Table 2.5.12.

Herring, cod and plaice, in that order, are the most important species in the area of fresh fish, together representing about

three-quarters of Danish fresh fish exports. As far as herring is concerned, exports consist mainly of cut herring, i.e. fish with the head removed or 'fillets', which are held together by the skin along the back. The most important markets for Danish fish exports are the immediate west European neighbours. Thus West Germany and the Netherlands are the most important customers for herring and plaice, whilst the most important

TABLE 2.5.12

Most important fish products EXPORTED by Denmark, by most important customer countries, 1978, 1 000 tonnes.

	Fresh fish, total										Frozen fish, total										salt, smoked, dried salt/dried smoked					fresh and frozen crust. & molluscs					Processed fish products							
	Whole fish, 124.6					Fillet 12.1					Whole fish, 37.5					Fillet 44.7					6.1					16.5					19.9							
	TROUT	BELT (Herring)	PLAICE	Haddock	Cod	Coalfish	Mackerel	Remainder	TROUT	SALMON	FROUNT	HERRING	GREENLAND HALIBUT	COD	PLAICE	Haddock	Coalfish	Remainder	COD	Remainder	SALMON	Remainder	SHRIMPS	NORWAY LOBSTER	MUSSELS	Remainder	PROZEN FILLETS	HERRING	MACKEREL	MUSSELS	SHRIMPS	Remainder						
Sweden	0.2	0.5	1.2	0.8	0.2	0.7	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.2	6.0	0.2	0.2	0.1	0.1	0.1	0.1	3.6	0.2	0.8	0.2	2.1	0.9	1.7	1.5	0.4								
Switzerland	0.1		0.4	0.1	0.4			0.3	0.3					0.6	0.7						0.2					1.6			0.1	0.2								
West Germany	2.0	0.1	3.0	4.2	2.2	3.0	2.9	4.5	1.0	2.7	3.6	1.4	0.2	4.3	0.5	0.4	1.7	0.3	0.3	0.3	0.2	0.2	0.2	0.8	0.5	2.2	3.2	1.3	0.4									
Italy	0.2		0.5	1.1	0.4	0.2		0.1						0.6	2.3			0.9	0.7	0.7	1.0	0.7	0.2		0.5	0.5	0.1											
Norway	0.3		0.3	2.2	0.8	6.5		0.1	0.4	0.2				1.1	0.1	0.1	0.1	0.1	0.1	0.1	1.3	1.3	0.4	0.4	4.0	0.1	0.5	0.4	0.4									
UK															0.4	2.9																						
Austria			2.5		0.6			0.1	0.1					0.4	0.4	0.1																						
Belgium/Luxembourg	0.5		1.4	0.4	0.3	5.5	0.1	0.3						0.2	0.2	0.1											0.1	0.1	0.1									
Netherlands			4.7	2.5	1.2	1.5	0.3	0.5	0.1	0.1	6.4			0.1	0.3	0.7	0.1		0.5								0.1	0.1	0.1									
France			2.2	0.6	8.7	1.0		0.4	0.4	1.0	0.2	0.6	0.6	0.1	0.7	0.1			0.5							0.4	0.1	2.7	0.2									
Czechoslovakia															0.7	17.5	0.8	1.0																				
USA															0.6																							
Greece															0.4																							
East Germany															2.8																							
Poland																																						
Spain																																						
Israel																																						
Poland															0.1				1.4																			
Other	0.3	0.2	0.3	0.2	0.1	0.1	0.1	0	0.1	0.1	0.3	0	0.2	0.3	0.5	0.3	0.1	0.1	0.1	0.1	0.3	0.1	0.2	0	0.2	0.4	0.2	0.2	0.1									
Total Danish exports	3.1	1.6	4.1	11.3	5.4	26.8	4.9	5.9	21.5	5.6	3.2	3.3	1.6	5.2	12.0	2.0	2.3	10.1	4.3	8.7	29.4	1.2	3.1	2.3	4.0	2.1	1.2	0.5	10.7	1.6	1.4	2.8	9.2	4.3	5.9	6.7	1.7	6.0

Note: 1) includes a total of 27 932 tonnes of 'cut' herring (not converted into whole fish)

Source: Danmarks Statistik, 'Quarterly foreign trade statistics'.

customers for fresh cod are France, Belgium/Luxembourg and England. Cod accounts for approximately one-half of the fresh fillet, and other gadoids for about one-quarter; exports of fresh fillet are distributed evenly over all western European countries.

The most important whole fish product groups on the frozen fish market are herring and mackerel, which account for about two-thirds of sales. About half the herring exported is in the form of cut herring or off-cuts; the same is also true of mackerel, although the absolute level is not known in this case. The most important market for frozen herring and mackerel is West Germany, with the Netherlands also being an important market for herring, and East Germany and Czechoslovakia for mackerel. Cod is by far the major product in the area of frozen fillet, and the most important markets are the USA, Sweden and England.

Exports of crustaceans and molluscs consist mainly of shrimps, for which the most important markets are France and Sweden.

Danish exports of processed fish products are divided more or less evenly between fully-preserved fish and semi-preserved or deep-frozen fish. The most important products in the fully-preserved sector are mussels, mackerel and herring; the most important markets are West Germany and Sweden, together with France for mussels and herring.

Frozen breaded fish fillets are the major exported product within the processed fish product group. The most important

markets for these products are England, Sweden and Switzerland.

It may be stated in summary that Danish exports (in terms of both quantity and value) of fresh and chilled fish products account for more than half the total Danish exports of fish products for direct consumption. West Germany is the main customer, and the main product is herring. Other exports of fresh and chilled fish are made up mainly of cod to France and the Benelux countries.

In terms of value and quantity, Danish exports of frozen fish represent approximately one-third of total Danish exports of fish products. Cod is the major single product; exports of cod represent 30% of total exports of frozen fish. The USA is the largest market, although it has declined in importance over the last few years.

Although the overall picture has remained more or less constant over a number of years, certain important changes have taken place in the export structure over the last couple of years, including the fact that the USA market, which used to account for 12% of total Danish exports of fish in 1977, now accounts for only 6% (June 1979); the market share lost by Denmark has probably been taken over by Canada. On the other hand, fish exports to the EEC market were increased from 62% of total exports in 1977 to 70% in June 1979. Cf. also Part II, Sections 2.3.3 and 2.4.3.

Finally, Figure 2.5.1 is a short diagrammatic view of the fish and fish products supplied to the Danish market.

2.5.1.4 Economy of the consumer industry

The economy of the consumer fish industry will be illustrated below partly by describing the developments in production and overheads in the 1970s for the country as a whole, and partly by comparing central accounting figures produced in 1978 by the industry in the Jutland regions and in the country as a whole. The statistical data does not permit the comparison of developments in the economy of the consumer fishing industry in the Jutland regions, nor does it permit any sub-division of the filleting industry and the processing industry.

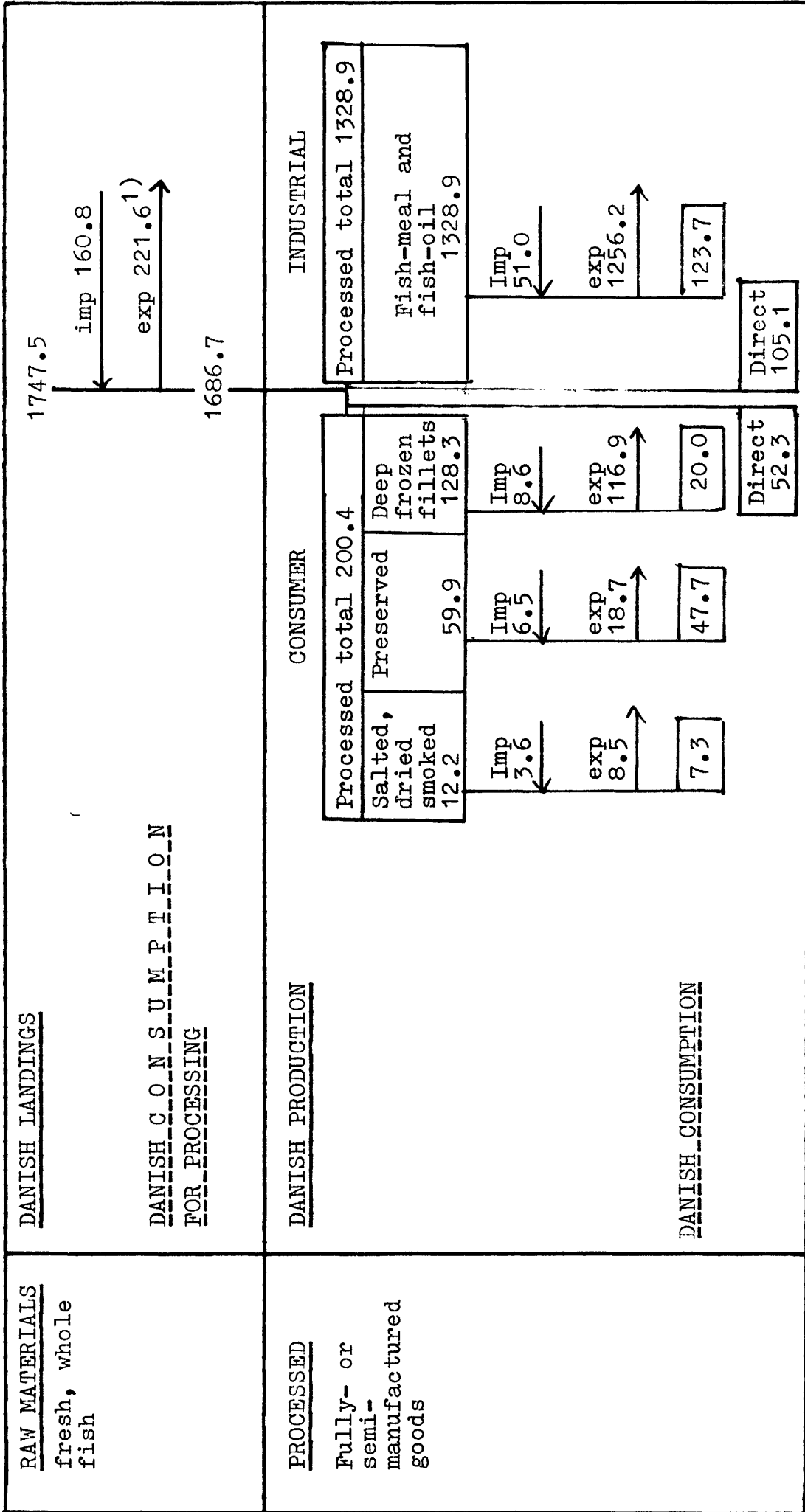
Figure 2.5.2 shows the developments which have taken place in the production value, use of materials, wage costs and

margins^{x)} of the fish industry. It will be seen that the production value and the value of the materials used have developed on the whole in parallel for a number of years.

x) margin is defined as the production value less raw materials and wages costs.

FIGURE 2.5.1

Total supply balance for fish and fish products in Denmark, 1977. In 1 000 tonnes LIVE WEIGHT.

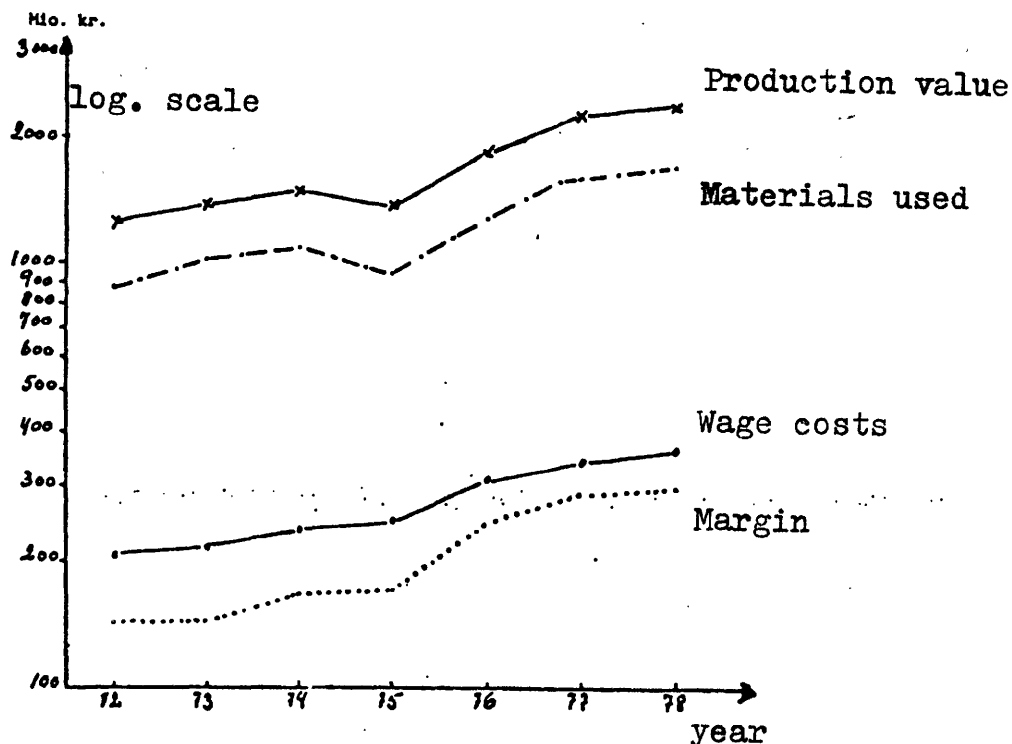


Note: 1) includes exports of fresh fillets of cod and 'cut' herring calculated as whole fish, and is therefore much greater than the figure for exports of whole fish as per Table 2.5.11

Source: Eurostat, 1979: Fisheries - products and fleets 1976-1977.

FIGURE 2.5.2

Consumer fish industry: production value, wage costs, cost of materials and margins (= production value - materials used and wage costs) 1972-1978. Kr million.



Source: Danmarks Statistik: Industristatistikken, various years

Apart from a steep increase between 1975 and 1976, wage costs have shown a modest rate of increase throughout the 1970s, whereas the margin, i.e. the profit before operating costs and depreciation, has shown a quite steep increase from 1975 to 1977, but which slowed down in 1978.

Figure 2.5.3 shows the development which has taken place in the margin, wage costs and materials costs in relation to the

total production value; if this Figure is compared to Figure 2.5.2, it will be seen that the cost of materials has moved from a low level in 1975 upwards at a rather steep rate in recent years, which is attributable to a fall in the relative importance of wage costs and to the stagnation in margins.

FIGURE 2.5.3

Wage costs, materials costs and margins (= production value - materials and wages costs) as a % of production value.

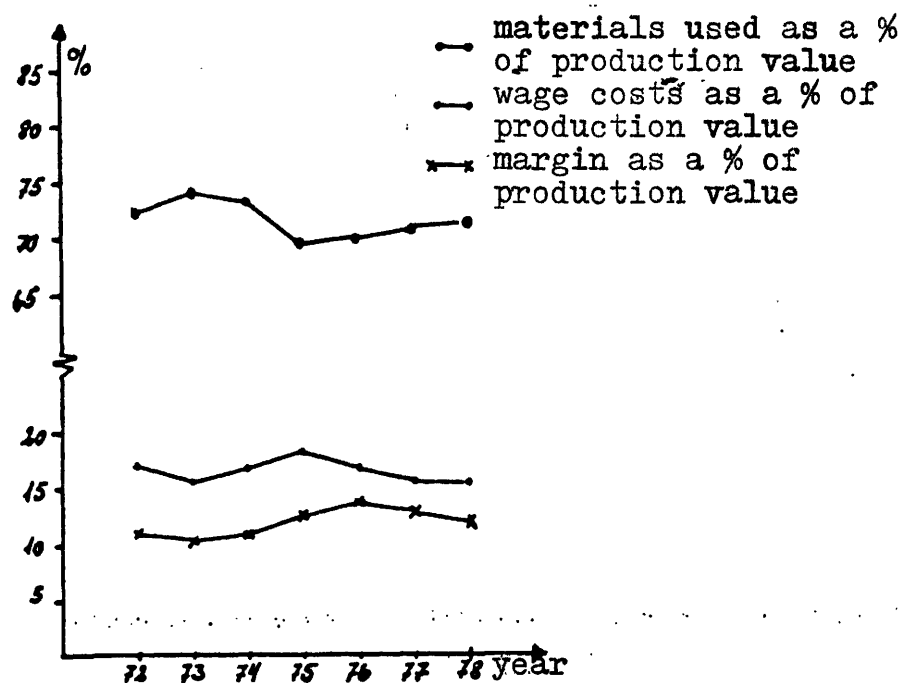


Table 2.5.13 shows that wage costs and the value increment¹⁾ in the fish industry are generally at a higher level than in the meat industry and in the food industry as a whole, which may be taken as an indication of a higher degree of processing and thus a lower degree of capitalization within the fish industry.

TABLE 2.5.13

Wage costs and value increment¹⁾ in production as a % of production value, 1973-1978. (Firms with at least 20 employees).

	Wage costs					Value increment				
	1973	1975	1976	1977	1978	1973	1975	1976	1977	1978
Consumer fish industry	15.5	18.0	16.7	15.3	15.6	28.7	33.1	32.8	30.9	30.9
Fish-meal and fish-oil industry	5.2	9.4	8.1	6.5	7.2	27.5	27.1	26.1	24.6	22.0
Meat and canning industry	12.0	13.3	12.1	12.1	12.6	21.0	24.5	23.1	23.2	23.0
Total food industry	13.3	14.2	14.6	13.2	13.0	28.3	30.7	30.2	27.9	27.1

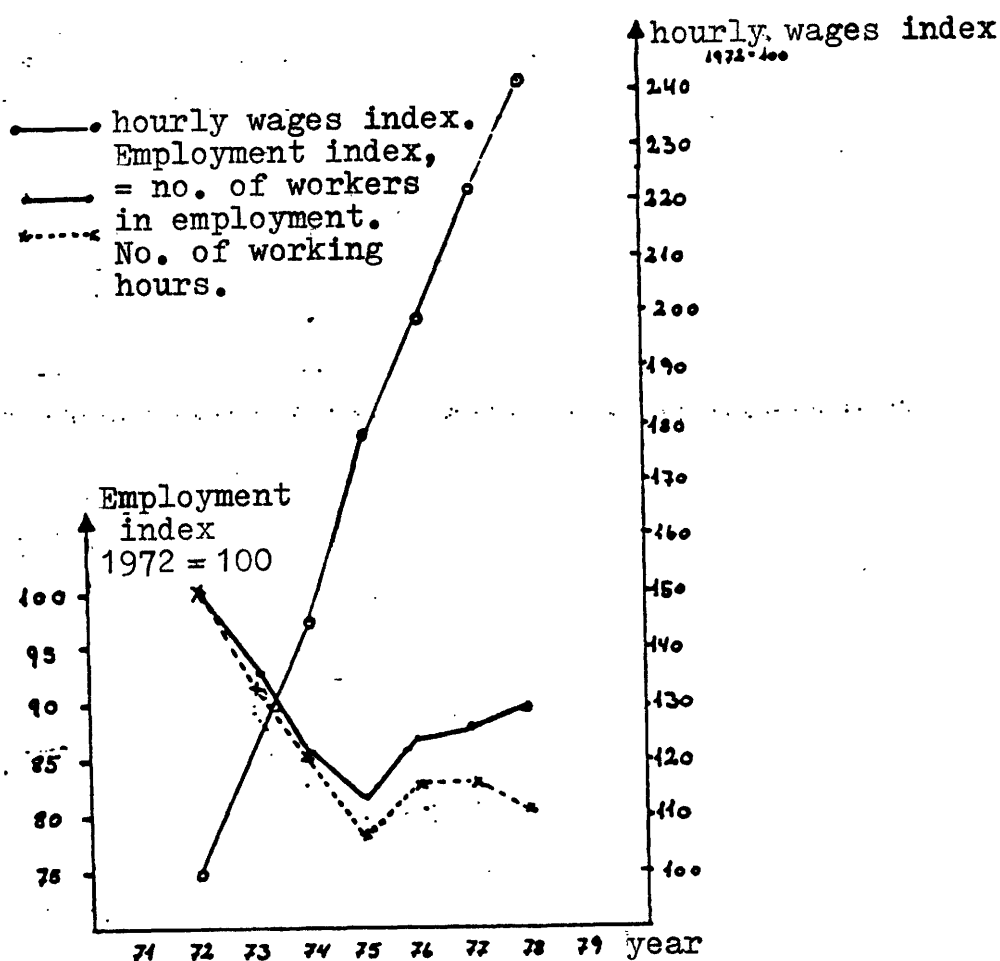
Note: 1) Value increment is defined as production value less materials costs.

Source: Danmarks Statistik: Industristatistikken for various years.

The declining importance of wage costs since 1975 has occurred in spite of a modest increase in employment and a steep rise in wages, cf. Figure 2.5.4, whilst the increase in the cost of materials used should really be viewed in the context of the

FIGURE 2.5.4

Index of employment in the consumer fish industry and index of hourly wages in the food, drink and tobacco industry, 1972-78.



Source: Danmarks Statistik: Statistical Yearbook

" " : Industristatistikken, various years.

increase in the cost of raw materials. Thus the wholesale price index for fish and fish products has shown an increase of approximately 40% in the period 1975-78; this increase is very much greater than the increase in the general wholesale price index.

This development does, however, conceal a number of differences between the individual species of fish. The period 1975-78 saw a steep rise in the price of herring, for instance. Cod also showed a major increase in price between 1975 and 1977, after

which the price stagnated in 1978. The price of plaice, on the other hand, remained more or less constant throughout the 1970s, and showed an increase only in 1977 and 1978 (cf. Part II, Sections 2.2.2 and 2.2.3).

Table 2.5.14 shows the sales of the consumer fish industry in the various Jutland regions. It is not surprising that more than 50% of total Danish sales are made in North Jutland, with East Jutland and West Jutland each accounting for about 10% of

TABLE 2.5.14

Sales by the consumer fish industry, by commodities and by own products, 1978. Kr million.

(firms with more than 20 employees)

	Total sales (1)	sales of own products	sales of commodities (3)	Other sales	$\frac{(3) \times 100}{1}$
Denmark	2433.1	1985.9	444.4	3.8	18.3 %
Jutland	1777.5	1500.8	271.6	2.9	15.3 %
North Jutland	1266.2	1104.9	157.7	1.3	12.6 %
East Jutland	231.3	216.5	14.9	0.0	6.4 %
West Jutland	280.0	179.4	99.0	0.0	35.4 %

Source: Danmarks Statistik: Special extract from Industristatistikken.

total sales. It will be seen that the West Jutland region produces more than one-third of its turnover from the sale of commodities (i.e. goods which are resold without processing) whereas commodities account for only a relatively small proportion of sales in North Jutland and, in particular, in

East Jutland. Thus the firms in North Jutland and East Jutland are purely manufacturing firms to a far greater extent than firms in the country as a whole. Compared with Table 2.5.15, it will also be seen that the firms in East Jutland operate with a rather higher value increment than the firms in the rest of Jutland, which may be taken as an indication that these firms manufacture products requiring a higher degree of processing than do the firms in the rest of the country.

TABLE 2.5.15

Production value, materials costs and value increment for firms with more than 20 employees in the Jutland consumer fish industry, 1978. Kr million.

	Production value		Cost of materials		Value increment	
DENMARK	1915.8	100 %	1323.1	69 %	592.7	31.0 %
JUTLAND	1787.5	100 %	1284.7	72 %	492.7	27.6 %
North Jutland	1281.1	100 %	934.8	73 %	346.2	27.0 %
East Jutland	224.5	100 %	146.1	65 %	78.4	35.0 %
West Jutland	271.9	100 %	203.8	70 %	68.1	25.0 %

Source: Danmarks Statistik: Special extract from Industri-statistikken.

The domestic and foreign turnover of the consumer fish industry may be seen in Table 2.5.16, which shows that the firms in East Jutland are involved in exports only to a limited extent, whereas between one-half and one-quarter of the turnover of the rest of the Jutland consumer fish industry is produced from foreign trade.

TABLE 2.5.16

Domestic and foreign turnover of the consumer fish industry, 1978. Kr million.

	Domestic turnover	Foreign turnover		Total turnover
Denmark	1088.1	1220.5	52.8%	2308.6
Jutland	812.9	964.6	54.3%	1777.5
North Jutland	520.8	745.4	58.9%	1266.2
East Jutland	212.2	19.1	9.0%	231.3
West Jutland	79.9	200.1	71.5%	280.0

Source: Danmarks Statistik: Special extract from Industristatistikken.

Investment in the consumer fish industry

Investment in the consumer fish industry in recent years may be seen from Table 2.5.17; the Table covers firms with more than 20 employees, and is thus representative of firms which

TABLE 2.5.17

Investments in firms with more than 20 employees in the consumer fish industry, 1974-1978. Kr million.

	1974	1975	1976	1977	1978 ^{x)}
Total investments	66.3	29.3	47.2	49.6	78.3
of which:					
in fixed assets	34.1	12.4	14.5	13.0	37.1
in operating equipment, etc.	32.2	16.9	32.7	36.1	40.5

x) provisional figures.

Source: Recommendations of the Fisheries Commission of 2 November 1978 and Danmarks Statistik, Special extract from Industristatistikken, provisional figures.

account for approximately 80 % of total sales. A typical feature of the size of the sum invested from one year to the next is the rather high degree of fluctuation, from Kr 30-80 million. This may be due to a certain extent to the fact that relatively small sums are involved, so that any major single investments will be of quite major significance to the picture as a whole.

After remaining at a relatively low level between 1975 and 1977, investments rose steeply in 1978. There has been a particularly steep increase in investments in fixed assets, which must presumably be regarded in the context of the aforementioned major expansion of cold storage capacity. The increased desire to invest must presumably be regarded in the

context of the introduction of legislation in respect of the provision of financial assistance for structural improvements; cf. Section 4.2.2 and Part II Section 2.5.

A proportion of the investments in operating funds, etc., are in the form of investments in legally required measures for the protection of the environment (mainly to prevent the pollution of water and of the air); in the period in question, such investments were at a level of approximately Kr 1 - 2 million per year, with the exception of 1976, when the sum invested was over Kr 4 million.

Investments in the fish industry have been made largely with regional development assistance (cf. Section 2.1.4); details of all investments in projects within the fish industry which have received regional development assistance are shown in Table 2.5.18. The details contained in the Table relate to both the consumer fish industry and the fish-meal and fish-oil

TABLE 2.5.18

Investments by the fish industry in projects attracting regional development assistance, 1975-1978. Kr million.

	1975	1976	1977	1978	1979
Total investments	28.2	23.6	37.4	17.9	95.0
of which, regional development assistance in the form of:					
grants	1.4	2.3	2.7	1.4	5.6
loans	11.0	5.9	18.9	6.6	26.6

Source: Recommendations of the Fisheries Commission of 2 November 1979 and Directorate for Regional Development.

industries, although in practice regional development assistance is paid only in respect of investments in the consumer fish industry. Thus, a comparison of Tables 2.5.17 and 2.5.18 will show that a very large proportion of the investments in the consumer fish industry took place with loans or grants provided by the Regional Development Board. A total of six firms in the consumer fish industry received regional development assistance in 1977-78, of which three were in the North Jutland region and three in the West Jutland region. A total of 13 firms in the fish industry received regional development assistance in 1979, of which 11 were in the North Jutland region and one in the West Jutland region. Investments in the consumer fish industry were also financed to a certain extent by loans made by Fiskeribanken (the fisheries bank) (cf. Section 4.3), which loaned a total of

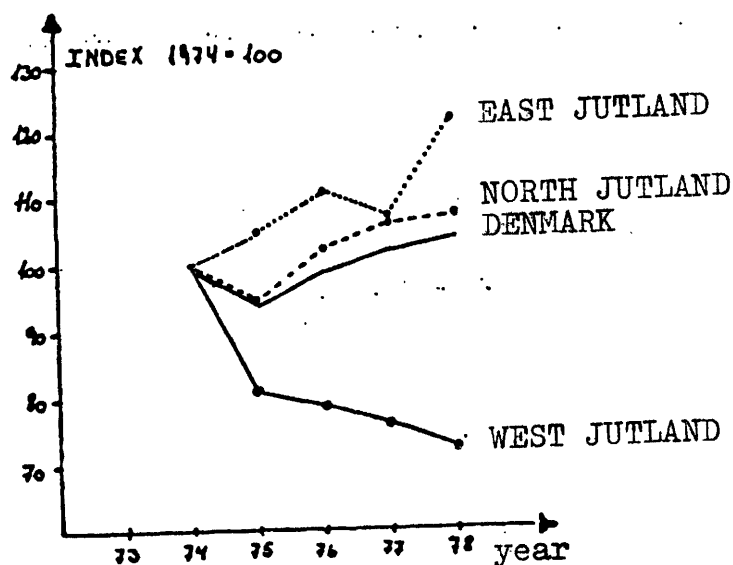
Kr 32 million to the fish industry at market rates of interest in the period 1974-77. Since 1978, investments have been made to a very great extent on the basis of low-interest, fixed-rate loans (known as K-loans), which are also administrated by Fiskeribanken (cf. Section 4.3 and Part II, Section 2.5).

2.5.1.5 Employment

Figure 2.5.4 shows that total employment in the Danish consumer fish industry has fallen steeply since 1972. However, the employment trend within the consumer fish industry has been increasing since 1975. As may be seen from Figure 2.5.5, this increase does conceal a number of variations between different parts of the country. Thus, an increase of between 10% and 20% has been seen in the North Jutland and East Jutland regions, whereas a fall of more than 25% has taken place in the West Jutland region since 1974.

FIGURE 2.5.5

Index of employment based on the number of employees in the consumer fish industry in Denmark and the Jutland regions, 1974-1978.



Source: Danmarks Statistik: Industristatistikken.

The fall in the number of hours worked per employee per year throughout the 1970s may be seen from Table 2.5.19. The modest increase in employment since 1976 does not therefore reflect an increase in the total labour input, since the total number of hours worked has fallen since 1975; cf. Figure 2.5.4.

TABLE 2.5.19

Number of hours worked per employee per year in the consumer fish industry.

	1972	1973	1974	1975	1976	1977	1978
Hours	1626	1518	1502	1466	1472	1431	1364

Source: Danmarks Statistik. 'Industristatistikken'.

The figures for 1978 show that approximately 1500 hours per year per employee are worked in West Jutland, whereas the number of hours per year per employee in North Jutland and East Jutland is only about 1300.

A total of 4784 persons were employed by the Jutland consumer fish industry in 1978; of these, more than 65% were in North Jutland, more than 20% in the East Jutland region, and just under 15% in the West Jutland region. The employment status of these employees is shown in Table 2.5.20; approximately 87% of employees are workers, and this figure varies very little between the different parts of the country.

TABLE 2.5.20

Employment in the Jutland consumer fish industry in 1978.
(Firms with more than six employees).

	salaried employees		workers		Total	
DENMARK	810	13 %	5445	87 %	6296	100 %
JUTLAND	594	13 %	4190	87 %	4784	100 %
North Jutland	367	12 %	2750	88 %	3117	100 %
East Jutland	134	13 %	902	87 %	1036	100 %
West Jutland	93	14 %	538	86 %	631	100 %

Source: Danmarks Statistik: Special extract from Industri-
statistikken.

The distribution of the employees in the consumer fish industry by sex did, however, show considerable variations between the different parts of the country; cf. Table 2.5.21. In North Jutland 61% of the workers and 26% of the salaried employees were women, whereas only 56% of the workers and 26% of the salaried employees in the West Jutland region are women.

TABLE 2.5.21

Employment within the Jutland consumer fish industry by sex and by employment status, 1978.

(Firms with more than six employees).

	Salaried employees				Workers				Total			
	Men		Women		Men		Women		Men		Women	
	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%
DENMARK	581	72%	229	28%	2064	38%	3381	62%	2645	42%	3610	58%
JUTLAND	437	74%	157	26%	1522	36%	2668	64%	1959	41%	2825	59%
North Jutland	271	74%	96	26%	967	35%	1783	65%	1238	60%	1879	60%
East Jutland	97	72%	37	28%	317	35%	585	65%	414	40%	622	60%
West Jutland	69	26%	24	26%	238	44%	300	56%	307	49%	324	51%

Source: Danmarks Statistik: Special extract from Industristatistikken.

The details relating to employment in the fish industry which have emerged above are based on surveys of the number of employees in individual companies which are conducted by Danmarks Statistik on a quarterly basis. It is important to point out in this respect, however, that production within the fish industry fluctuates considerably during the year, and with it the number of employees. This is due mainly to the fact that most of the fluctuations in the supplies of raw materials discussed in Section 2.5.1.2 are transferred directly to the production of the fish industry. Employment is accordingly high in periods when the supply of raw materials is high, but in periods when the supply of raw materials is

lower, employees are laid off for shorter or longer periods.

These fluctuations cannot be illustrated by means of statistics, although an indirect picture is provided by the 1979 unemployment figures issued by Danmarks Statistik (cf. also Sections 2.1.3 and Table 2.1.9). These figures show the average number of periods of unemployment for those persons who have been affected by unemployment during the year. It will be seen that the number of periods of unemployment is greater in administrative districts in which fisheries are of greater importance to the economy, than in the other administrative districts and in the country as a whole. It will also be seen, particularly in the case of women, that

the level of unemployment¹⁾ during the periods of unemployment is lower in those administrative districts in which fisheries are of considerable importance, than in the other administrative districts and in the country as a whole. In other words, the periods of employment are more numerous, although the effect is less severe during these periods than in the other administrative districts.

Since the primary fisheries and the fish industry represent the major commercial base in a small number of large and small communes (cf. Section 3), the production situation in the fisheries and in the fish industry is most clearly reflected in the unemployment figures for these communes. Unemployment in these communes exhibits considerably greater fluctuations over the year than in those communes which are not dependent on fisheries. The percentage unemployment in the North Jutland fisheries communes fluctuated between approximately 5% and approximately 25% in separate monthly periods in 1977. For purposes of comparison, unemployment in communes which are not dependent on fisheries exhibited a relatively even pattern throughout the year, with a level of unemployment of 5 - 10% in the six summer months and a level of unemployment of 15 - 20% in the six winter months.

1) The level of unemployment is defined here as the relationship between the number of unemployed hours and the possible (insured) number of working hours in the period.

2.5.1.6 Working environment in the fish industry

The overall regulations in respect of the working environment in Danish industry are laid down in the Law relating to the working environment of 23.12.1975. This Law, which entered into effect on 01.07.1977, is a framework law which lays down the basic principles in accordance with which steps shall be taken to provide:

- a safe and healthy working environment, which at all times is abreast of technical and social developments within society;
- a base upon which firms may, with guidance, themselves solve problems relating to safety and health.

The Law thus sees the safety and health work of the firms as an essential factor in establishing an acceptable working environment. Firms with more than 10 employees are required to organize their safety and health activities into safety groups, in which both management and employees are represented. These safety groups are required to check that working conditions are acceptable from the point of view of safety and health, and that working processes and methods are performed correctly; the groups are also required to take part in the planning by the firm of safety and health activities.

Any costs associated with the duties of the safety and health representatives, including costs and loss of income incurred in conjunction with the need to attend courses, etc., are to be met by the employer.

In the case of certain, precisely defined sectors, it is stipulated that the State shall provide an industrial medical service in each firm, whose duties shall include consultancy and participation in the planning and execution of measures aimed at improving the working environment. These requirements do not, however, extend to the fish industry.

Safety councils have also been established within individual sectors of industry, and undertake the following on behalf of the entire sector:

- identification of problems associated with the working environment;
- guiding firms in the solution of problems associated with the working environment;
- putting forward proposals and commenting on new regulations;
- providing information and guidance on regulations.

The fish industry comes under the Safety Council for the food, drink and tobacco industry.

Finally, the Law also lays down regulations in respect of leisure time and rest periods, and provides general guidelines in respect of the obligations of the employer, of management and of employees pursuant to the Law.

The Factories Inspectorate is responsible for ensuring compliance with the Law, and also has the following duties:

- to provide guidance to firms, safety councils and labour organizations;
- to keep itself informed on technical and social developments within the area;
- to discuss and approve plans for operating processes and work stations, etc.;
- to issue Regulations by order of the Minister of Labour.

The fish industry is, as has already been mentioned, covered by the aforementioned Law relating to the working environment, in addition to which three Notices were issued by the Factories Inspectorate in 1976 in respect of special regulations relating

to employment within respectively fish filletting firms, the fish preserving industry (fully- and semi-preserved products) and the fish-meal and fish-oil industry. The Notices include Regulations in respect of the temperature and coldness of the premises (place of work) and the equipment in use at the place of work, etc., together with Regulations in respect of slippery floors and working clothing, etc. Certain aspects of the Regulations may be interpreted quite liberally, due to the use of expressions such as 'suitable' or 'acceptable' to a great extent. The Regulations came into force on 1 July 1977, although at the present time it is impossible to assess to what extent they have been adhered to.

Specific surveys into the working environment in the Danish fish industry are extremely rare, and indeed only one report¹⁾ has been made available to the public; this was compiled by the Kvindeligt Arbejderforbund og Specialarbejderforbund (the Association of Female Workers and Semi-skilled Workers) in Esbjerg in 1974. Furthermore, official accident statistics are structured in such a way that it is impossible to focus directly on the fish industry, with the result that it is only possible for the time being to give an extremely brief description of the working conditions and the major problems concerning the working environment in the fish industry.

What is typical of the fish industry is that the places of work are wet and cold, the raw material is wet and cold, and the work is done at a high tempo. Interviews conducted in Denmark¹⁾ and Norway²⁾ enable the following main causes to be identified as adverse factors in the fish industry:

- noise, draughts, lighting, cold, fluctuations in temperature, lifting and carrying heavy weights, working position, work rate, risk of falling and changes in hours of work.

The main sources of noise in the fish industry are the cutting machines, the handling of boxes, including the handling of aluminium trays, and the handling of freezing frames. The Notice of July 1976 issued by the Directorate of Employment places the fish industry under an obligation to reduce the noise level to 90 dB. Only two filleting factories

were able to meet this requirement in an inspection carried out in 1977.

The main problem area in connection with the working environment in the fish industry concerns draughts, cold and large fluctuations in temperature. The Esbjerg survey revealed that between 50% and 75% of employees suffered from these conditions, depending on where within the firm their work was situated. The problems arise mainly as a result of the large quantities of water which are consumed, the frequent transport of goods in and out of the premises, the low temperature of the product being processed, and the large number of chilling and freezing plants. This means that conditions such as inflammation of the uterus and lack of sensation in the fingers are common in going on for half the female workers in

the fish industry. The Factories Inspectorate has laid down regulations in respect of temperature conditions which require the temperature to be maintained at more than 16°C, no work stations to be located in the immediate vicinity of chilled and cold stores or chilling and freezing plants, and no work stations to be located at points where there is a risk of major discomfort being caused by cold and draughts. However, no limits have been laid down in respect of discomfort caused by draughts or fluctuations in temperature, which are the most serious problem. According to a survey conducted by the SID, only a few firms were able to meet the requirements at the end of 1977.

The high tempo of work in the fish industry is associated with the extensive use of piece-work. In the Esbjerg survey, about half the workers stated that they found the tempo too high, and a large proportion of workers also indicated that they were suffering from inflammation of the synovial sheath. Nevertheless, neither official nor internal company limits have been set in respect of the working tempo.

Uncomfortable working positions are found in all departments of the firms, partly as the result of wrongly installed machinery, partly as the result of poorly positioned tables and chairs, and not least as the result of the high working tempo. Approximately one-half of those questioned in the Esbjerg survey stated that they had back trouble.

As has already been mentioned, the Esbjerg report referred to above is the only investigation of the working environment in the fish industry to have been carried out in Denmark. The report, which dates from 1974, is not a scientific investigation, but rather, as stated in the introduction to the report, 'a rapid record of a group of people's own assessment of their situation as regards their work and health'. Care must therefore be exercised when drawing general conclusions regarding working conditions in the fish industry from this report. It should be noted, however, that a survey conducted by the SID at the end of 1977³⁾ into 66 firms found that only three of the firms had complied with all the Regulations issued by the Factories Inspectorate in respect of working conditions in the fish industry, and that most of the firms had done very little or nothing in order to meet the requirements.

The extremely high level of criticism of working conditions in the fish industry is reinforced by a series of accident statistics produced by the Dansk Arbejdsgiverforening (the Danish Employers' Association) in June 1979. These statistics show that the accident frequency (i.e. the number of injuries per million hours worked) amongst female piece-workers in the fish filleting industry is five times higher than the national average for female piece-workers. The accident frequency amongst hourly-paid female workers in the fish industry was also higher than the national average, although lower than the frequency for piece-workers. As far as concerns absenteeism, referred to in the statistics as 'hours lost per 1 000 working hours', female piece-workers in the fish industry are more than twice the national average, whereas male piece-workers and hourly-paid men and women in the fish industry are at the same level or lower than the national average. These statistics are based on a modest number of firms, however, and care must therefore be exercised when using them.

Notes to Section 2.5.1.6

- 1) The Semi-skilled Workers' Association and the Association of Female Workers in Esbjerg: Life - respect and welfare in the Esbjerg fish industry, 1974.
- 2) State Institute of Technology: Working conditions in the fish industry. Narvik, 1974.
- 3) Jensen, Martin: The fish industry cares little for the environment. Fagbladet, No. 20, 1977.

2.5.2 Fish-meal and fish-oil industry

2.5.2.1 Structure and ownership

According to a list issued by the Danish Ministry of Fisheries, there were 25 fish-meal and fish-oil factories in Denmark in 1978. A list published by Danmarks Statistik shows that there were 16 firms with more than six employees in 1978, all of which were on Jutland. For technical reasons concerned with statistical analysis, the following description will be based on these 16 firms.

Table 2.5.22 shows the regional distribution and the distribution by size of the Danish fish-meal factories. It will be seen that the Jutland fish-meal industry is concentrated in the North Jutland and West Jutland regions; the North Jutland administrative district is where half of the firms are based, with the rest of the firms being distributed evenly in the administrative districts of Viborg, Ribe and Ringkøbing.

TABLE 2.5.22

The fish-meal and fish-oil industry in Denmark and in the Jutland regions, by size based on the number of employees, 1979. (Firms with more than six employees).

	Number of employees						Total
	6-19	20-49	50-99	100-199	200-299	300-499	
DENMARK ¹⁾	4	8	3	1	0	0	16
JUTLAND	5	6	4	1	0	0	16
=====							
NORTH JUTLAND	3	6	1	0	0	0	10
N. Jutland ad. d.	2	4	1	0	0	0	7
Viborg admin. d.	1	2	0	0	0	0	3
EAST JUTLAND	0	0	0	0	0	0	0
Århus admin.d.							0
Vejle admin.d.							0
Sønderjylland							0
WEST JUTLAND	2	0	3	1	0	0	6
Ringkøbing ad.d.	2	0	1	0	0	0	3
Ribe admin. d	0	0	2	1	0	0	3

1) = 1978.

Source: Danmarks Statistik: Special extract from Industristatistikken.

As may also be seen from Table 2.5.15, the Danish fish-meal industry consists mainly of small and medium-sized firms with less than 100 employees.

The distribution of the fish-meal industry by type of ownership may be seen in Table 2.5.23. The totally predominant

TABLE 2.5.23

Fish-meal and fish-oil industry in Denmark and the Jutland regions, by type of ownership, 1979. (Firms with more than six employees).

	Limited liability companies	Coops.	Coop. socs.	Total
DENMARK				
JUTLAND	7	3	6	16
=====	=====	=====	=====	=====
NORTH JUTLAND	5	2	3	10
North Jutland admin. d.	4	1	2	7
Viborg admin. district	1	1	1	3
EAST JUTLAND				0
Århus admin. district				
Vejle admin. district				
Sønderjylland admin. d.				
WEST JUTLAND	2	1	3	6
Ringkøbing admin. d.	0	1	2	3
Ribe admin. distr.	2	0	1	3

Source: Danmarks Statistik, Special extract from Industristatistikken.

forms of ownership in the fish-meal industry are limited liability companies and cooperatives, which are to be found in 7 and 6 respectively of the 16 firms on Jutland. In addition to this, it may be stated that one of the limited liability companies in the North Jutland administrative district has been taken over recently by one of the existing cooperative societies. Table 2.5.24 shows the fish-meal industry divided up by size and form of ownership. The cooperatives are exclusively small firms with less than 20 employees, whereas the limited liability companies and the cooperative societies are mainly medium-sized firms with 20 - 100 employees. The statistical data do not provide any

TABLE 2.5.24

Fish-meal and fish-oil industry according to size and form of ownership, 1979. (Denmark - Jutland).

	number of employees					Total
	6-19	20-49	50-59	100-199	200-299	
Limited liability companies	1	3	3			7
Cooperatives	3					3
Cooperative societies	1	3	1	1		6
Total	5	6	4	1		16

Source: Danmarks Statistik: Special extract from Industristatistikken.

details of turnover for each form of ownership, although a report published by the EEC (Forms of Cooperation in the Fishing Industry, Brussels 1976) estimates that the five largest cooperatives account for approximately 75% of the total Danish production of fish-meal.

It is difficult to assess the situation in 1979, although when viewed in relation to the distribution by size of firm (Table 2.5.17) it appears not unlikely that between 50% and 75% of Danish fish-meal production is accounted for by cooperatives.

Members of the cooperatives are active fishermen, and the cooperatives are under an obligation to take members' fish.

The fishermen, on the other hand, are only under an obligation in certain cases to supply their own cooperatives, and the firms are not in a position to control the landings made by the fishermen, and in so doing their supplies of raw materials. In practice, however, by far the majority of shareholders do supply their own firms with the fish which they land. Similarly, the shareholders in six out of the seven limited liability companies are by far the major suppliers of raw materials.

2.5.2.2 Supply of raw materials and production

The supply of raw materials to the fish-meal industry is made up to a very great extent of the landings of Danish fishermen in Danish ports. As may be seen from Table 2.5.25, imports of industrial fish are insignificant in relation to the total supply. The statistics also reveal insignificant exports of raw materials, which consist mainly of Danish

TABLE 2.5.25

Supplies of industrial fish to Danish ports, 1973-78.
1 000 tonnes.

YEAR	1973	1974	1975	1976	1977	1978	1979
DANISH	1166	1546	1446	1539	1431	1384	1340
FOREIGN	48	38	34	68	44	69	53
TOTAL	1214	1584	1480	1607	1474	1453	1393

Source: Ministry of Fisheries, Fisheries Report, various years and provisional figures.

fishermens' landings in foreign ports. Table 2.5.25 shows that the supply of raw materials to the fish-meal industry has been at a level of about 1.5 million tonnes for a number of years, although there has been a continually falling trend from 1974 until 1979.

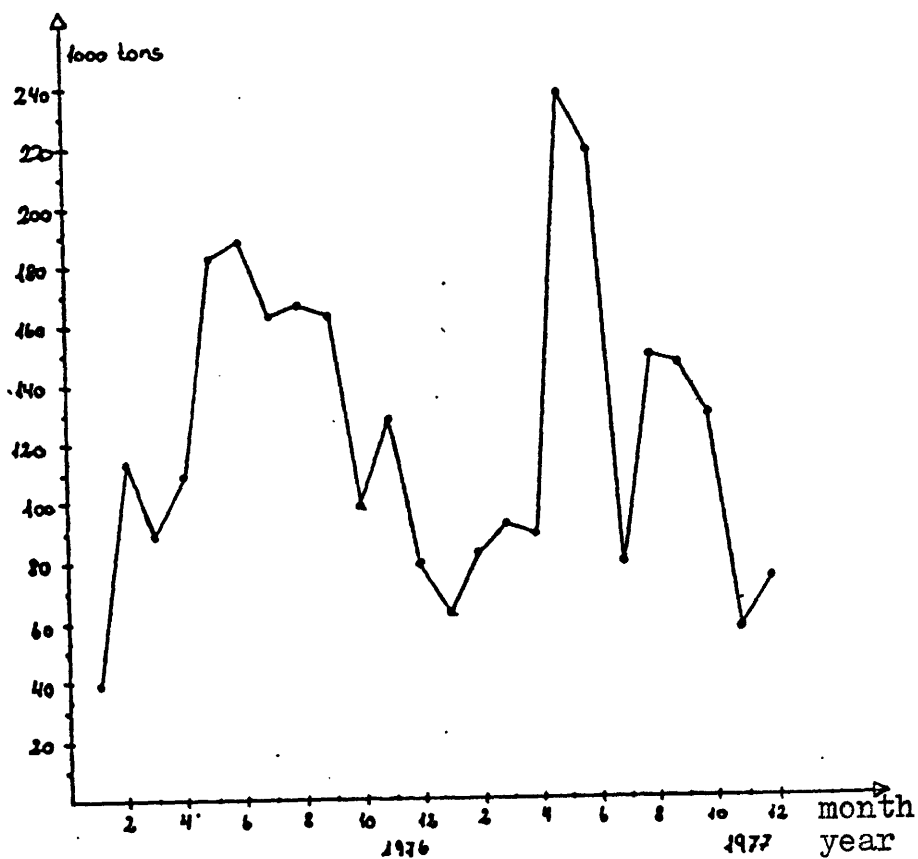
The most important species of industrial fish are, as has already been shown in Figure 2.3.3 (Section 2.3), sand eels, sprats and Norway pout, which represent more than three-quarters of the supplies of raw materials to the fish-meal industry. Certain relative changes have taken place in the supplies of these species, which apparently are due mainly to biological variations in the basic catch (cf. Figures 1.16 - 1.18, Section 1.1), and secondly to the regulation of fishing for these species.

The three species are landed at different seasons, with the result that sand eels are landed mainly in the months of

April to June, whilst Norway pout and sprats are landed mainly in the period between August and February. Thus the high season for the fish-meal industry, as shown in Figure 2.5.6, is the period between April and October; 74% of the total quantity of industrial fish was landed during these seven months in 1977.

FIGURE 2.5.6

Danish supplies of industrial fish during the year in 1976 and 1977. 1 000 tonnes.



Source: Ministry of Fisheries: Fisheries Report, 1977.

This situation brings the fish-meal industry in line with the consumer fish industry as far as regards utilization of capacity, since the production apparatus is dimensioned to cope with the high season, and is therefore used only at low capacity during the six winter months.

The processing capacity and its utilization over the year may be seen from Table 2.5.26. Esbjerg has approximately 40% of the total production capacity, as well as the highest

TABLE 2.5.26

Production capacity and degree of utilization in the fish-meal and fish-oil industry.

	Production capacity (1)	Utilization of capacity (100 = max. utilization)				
		1st quarter	2nd quarter	3rd quarter	4th quarter	Whole year
Esbjerg	5050	43	79	64	47	58
Hvide Sande Thyborøn Hansthalm	3250	18	63	63	26	43
Hirtshals Skagen	3750	38	38	37	31	36
Total	12050					

(1) Production capacity indicated in tonnes of raw materials per day.

Source: Association of Danish Fish-Meal and Fish-Oil Industries.

average utilization of capacity, at 58%. This is in spite of the fact that Esbjerg (cf. Table 2.5.23) is the location for only 3 of the total of 16 firms. Hirtshals and Skagen, which are the location for a total of 7 firms, have only about 30% of the total production capacity, which is utilized at only 36% on an annual basis. The firms in North Jutland are all smaller than the firms in Esbjerg, although it is not possible to provide a direct explanation of the regional differences with regard to utilization of capacity as shown in Table 2.5.26.

The production of fish-meal and fish-oil is naturally reflected in the aforementioned seasonal variations in the supply of raw materials; thus approximately two-thirds of total production falls within the second and third quarters. Annual production of fish-meal and fish-oil is shown in Table 2.5.27. A significant reduction has taken place in production, especially between 1977 and 1978, although also from 1976 to 1977. Thus, in terms of weight, the total fall in production of fish-meal from 1976 to 1978 amounts to 17%, although on the whole the value of the quantity produced has remained unchanged throughout the period. Similarly, the fall in oil production has been 24% by weight

TABLE 2.5.27

Production of the fish-meal and fish-oil industry (sales of own products), 1975-78, tonnes.

	Fish-meal		Fish-oil	
	weight	value	weight	value
1975	314 815	530 739	107 179	211 088
1976	328 339	760 117	96 870	201 298
1977	306 968	929 091	95 967	250 417
1978	272 536	769 990	78 278	182 954
1979	329 085	823 469	83 150	180 709

Source: Danmarks Statistik: Commodity statistics.

and 9% by value. The figures shown in Table 2.5.27 do not include any fluctuations in stocks. The increase in sales after 1978 is not therefore due to increased production, but rather to sales from the stocks of the previous year. In addition to its production of fish-meal and fish-oil, Denmark also produces small quantities of fish-based animal feed to the extent of between 10 000 and 20 000 tonnes per year. The feed is used mainly within Denmark as feed for mink.

2.5.2.3 The market

By far the major proportion of Danish fish-meal and fish-oil production is exported. Fish-meal accounted for 90% of total production in 1978, with the corresponding figures in 1976 and 1977 being 81% and 86% respectively. The same applied to fish-oil. Exports of fish-meal and fish-oil may be seen

in Table 2.5.28. The major customers are England, the Netherlands, Italy, Sweden and Switzerland. Exports to individual markets vary from year to year, which must presumably be viewed in the light of the fact that fish-meal is an international standard product which competes with other, protein-rich feedstuffs such as soya protein. The market for fish-meal is thus less stable than the market for consumer fish products.

TABLE 2.5.28

Danish exports of fish-meal and fish-oil, by country, tonnes.

	Fish-meal						Fish-oil					
	1974		1976		1978		1974		1976		1978	
West Germany	19 329	8%	26 131	9%	11 892	5%	27 510	37%	40 975	48%	29 838	45%
England	56 517	23%	101 370	36%	64 472	26%	31 412	42%	26 630	31%	21 927	33%
Netherlands	8 301	3%	20 977	7%	17 973	7%	4 969	7%	14 122	16%	7 261	11%
France	3 318	1%	4 863	2%	6 656	3%						
Belgium	9 402	4%	10 868	4%	8 151	3%						
Italy	13 192	5%	7 205	3%	13 483	5%						
Sweden	20 363	8%	13 196	5%	13 614	6%						
Switzerland	12 729	5%	27 045	10%	44 153	18%						
Jugoslavia	9 706	4%	8 707	3%	11 756	5%						
Greece	3 841	2%	7 484	3%	10 031	4%						
Poland	30 629	12%	10 178	4%	15 956	6%						
Hungary	20 532	8%	12 185	4%	11 317	5%						
Finland	10 492	8%	5 083	2%	4 790	2%						
Total tonnes	247 895	100%	284 562	100%	246 598	100%	74 143	100%	85 861	100%	66 076	100%
Kr 1 000	703 484		650 220		697 923		223 153		172 058		154 043	

Source: Danmarks Statistik. 'Quarterly foreign trade statistics'.

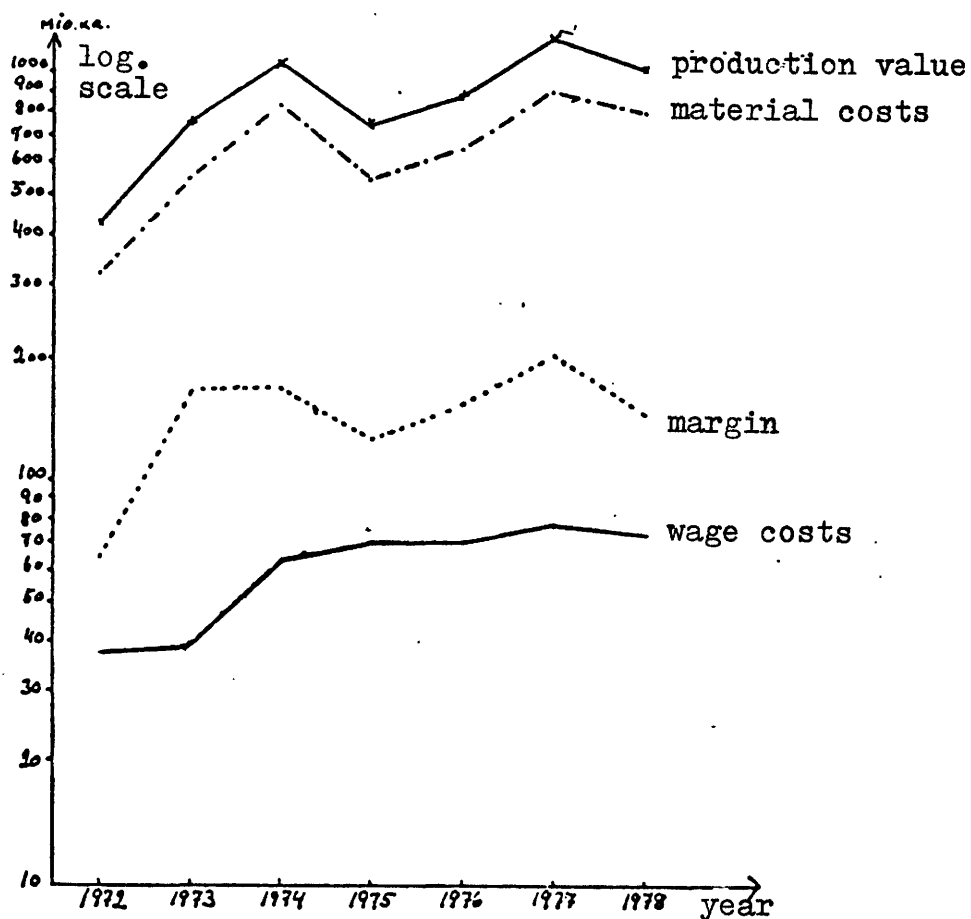
2.5.2.4 Economy of the fish-meal industry

Figure 2.5.7 shows the production value, raw materials costs, wage costs and margins of the fish-meal and fish-oil industry, and Figure 2.5.8 shows the relative importance of raw materials costs, wage costs and margins in relation to the production value. Developments in production value and raw materials costs have taken place largely in parallel in

the period under review. Stagnating wage costs are therefore the reason why the margins in the years 1976-78 moved in line with the development in production value, i.e. rising until 1977 and then falling. It will be noted, however, that the margin in 1978 did not only fall in absolute terms, but also relative to the production value, which is attributable to the relative rise in the significance of the raw material costs (particularly energy and fuel) and to the relative rise in the significance of the wage costs. The steep fall

FIGURE 2.5.7

Fish-meal and fish-oil industry: production value, raw materials costs, wage costs and margin (= production value less raw materials costs and wage costs), 1972-1978.

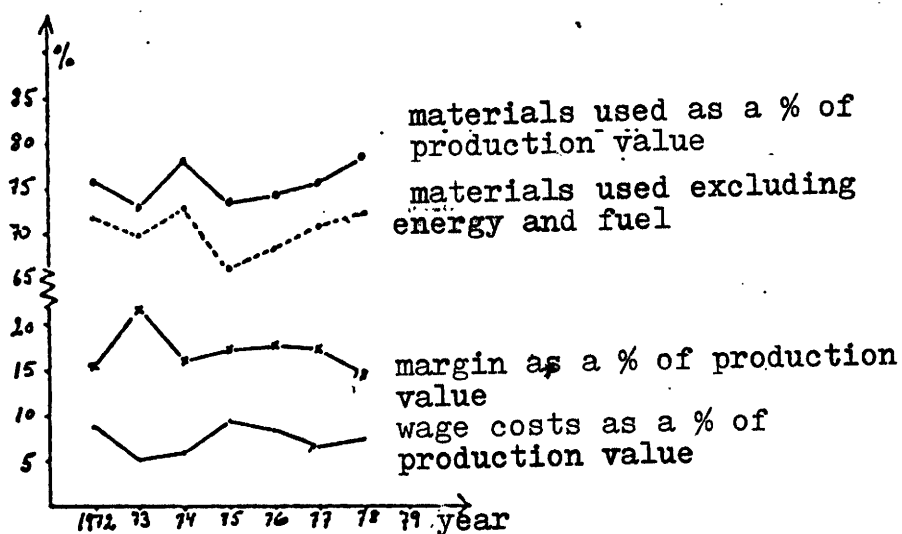


in the production value and raw materials costs in 1975 is due mainly to a major fall in the price of both raw materials and finished products (Figure 2.5.9). The subsequent increase until 1977 is in turn due to an increase in price, since the

weight of goods produced (Table 2.5.20) has exhibited a falling trend. The steep fall in both production value and consumption between 1977 and 1978 must presumably be regarded principally in conjunction with the significant drop in the quantity produced and with the stagnation in prices (Figure 2.5.9). The stagnation in wage costs is observed in the form of a fall in the level of employment and an increase in the hourly wage.

FIGURE 2.5.8

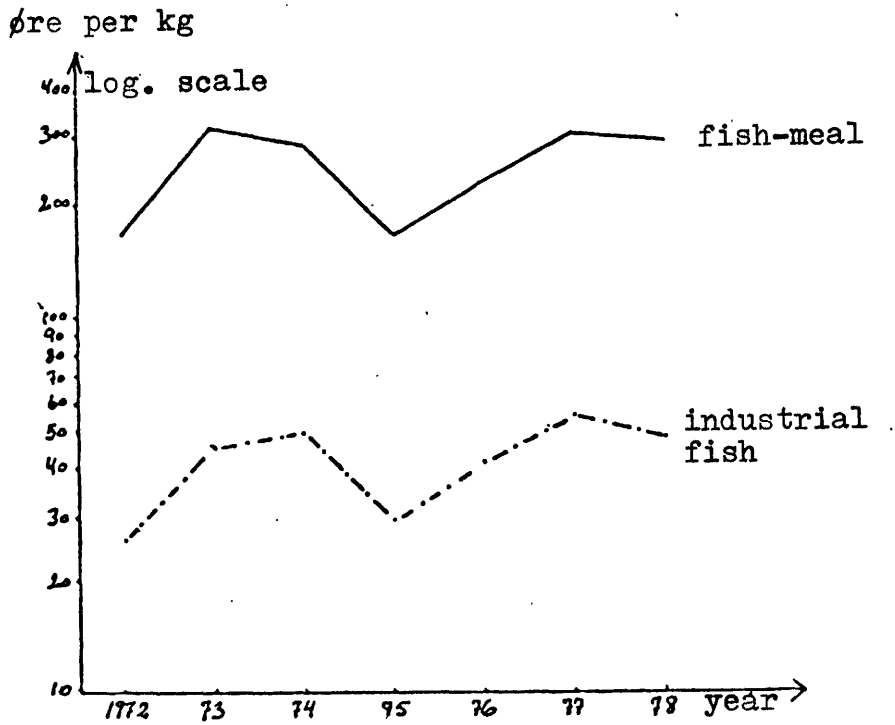
Fish-meal and fish-oil industry: raw material costs, wage costs and margins in relation to total production value. 1972-1978.



Source: Danmarks Statistik: Industristatistikken for various years.

FIGURE 2.5.9

Price movements for industrial fish and fish-meal in the period 1972-1978.



Source: Ministry of Fisheries, Fisheries Report for various years.

Danmarks Statistik: Quarterly foreign trade statistics for various years.

No differentiation between the economy of the fish-meal industry in North Jutland and in West Jutland has been possible as far as concerns the information available for 1978, although a survey made in 1977 showed that there were no significant differences in the accounts of firms in the north and west regions of Jutland; a tendency was observed, however, for the wage costs in North Jutland to represent a lower proportion of total costs, and for the consumption of materials to represent a higher proportion. The situation is due to nothing more, however, than the fact that sales of commodities are at a much higher level in North Jutland than in West Jutland (9% and 3% respectively).

The same 1977 survey showed that just under one-third of the turnover of the Danish fish-meal industry was produced in the North Jutland region, with the remainder being produced in the West Jutland region.

Investment in the fish-meal and fish-oil industry

Investments in the fish-meal and fish-oil industry in recent years may be seen from the Table 2.5.29. A typical feature is that the very high level of investment at the beginning of the 1970s has fallen since 1976 to a relatively modest annual level of between Kr 20 million and Kr 30 million. By far the major proportion of investments was made in operating equipment (production equipment), with only a modest amount being invested in fixed assets. Investments in operating equipment, etc., included certain investments

required by law in the form of measures for the protection of the environment, which amounted to approximately Kr 33 million in the period 1974-78 (cf. Part II, Section 2.6).

TABLE 2.5.29

Investment in the fish-meal and fish-oil industry in firms with more than 20 employees, 1974-1978. Kr million.

	1974	1975	1976	1977	1978
Total investments	92.4	107.2	22.1	20.1	32.0
of which:					
in fixed assets	17.8	26.6	2.2	0.7	1.0
in operating equipment, etc.	74.5	80.7	19.9	19.4	21.0

Source: Danmarks Statistik: Special extract from Industristatistikken.

2.5.2.5 Employment

Unlike employment in the consumer fish industry, the level of employment in the fish-meal industry has been falling regularly over the last few years; cf. the employment index for the fish-meal industry shown in Table 2.5.30. The division between salaried employees and workers was as

TABLE 2.5.30

Employment index for the fish-meal industry, 1974-78.
Firms with more than six employees. 1974 = 100.

	1974	1975	1976	1977	1978
JUTLAND ¹⁾	100	98	91	89	85

Note: 1) Jutland = Denmark.

Source: Danmarks Statistik: 'Industristatistikken'.

follows in 1978: Workers: 497 (77%); Salaried employees: 153 (23%); Total: 650 (100%). The proportion of salaried employees in the workforce is very much greater in the fish-meal industry than in the consumer fish industry, and it will also be seen that considerably fewer persons are employed in the fish-meal industry in relation to the production value than in the consumer fish industry.

2.6 Other associated industries

Apart from the fish exporting sector and the fish processing industry, the other industries associated with fisheries include a wide range of service companies and suppliers which are difficult to define precisely. This is due to the fact that, on the one hand, not all the sectors concerned have equally strong links with the fisheries, and on the other hand to the fact that it is difficult to determine the extent to which individual firms are totally dependent on their fisheries business.

On the basis of the input-output data produced by the statistical survey of the national economy, it is possible to form some idea of the value of the services purchased by the fisheries sector from other sectors. Table 2.6.1 shows the average value of such services for the most important sectors in the period 1970-1974, together with the percentage distribution in relation to the total production value of the fisheries sector.

TABLE 2.6.1

Production value of the fisheries sector and extent of services purchased from other major sectors, in Kr million and as a % distribution. Average for 1970-74.

Total production value of fisheries sector Kr 1 214 million	100 %
Services provided to fisheries sector by:	%
Mineral oil industry	5.4
Shipyards (steel vessels), marine engine suppliers	4.0
Shipyards (wooden vessels), ship's supplies	3.2
Wholesale trade	3.0
Ropemakers, fishing net manufacturers	1.5
Total goods and services	31.4

Source: Danmarks Statistik, 'Statistical survey of the national economy'.

The Table includes the purchase of repair and maintenance services, but not new investments, for which reason it does not show a true picture of the extent to which the fisheries sector makes use of the services provided by other sectors. With regard to repairs and maintenance, however, it is clear from the Table that the shipyards and the oil companies are the major suppliers to the fisheries sector. See also Section 2.9.

As has already been mentioned, the degree of dependence on the fisheries sector by its suppliers varies considerably. The closest links are to be found in those sectors which supply fishing equipment exclusively, together with services aimed directly at the fisheries sector, such as seine makers, boat yards and ice manufacturers, etc.

Being closely linked to a particular sector will mean that any fluctuations in the economic conditions within that sector will be reflected in the associated sector, which in turn will present the firms concerned with problems in respect of the utilization of capacity in terms of both labour and machinery.

In order to provide some indication of the extent of the firms used by the fisheries sector and of the effect on employment in those firms produced by the fisheries, the following paragraphs contain a selection of the sectors which have traditionally served the maritime and fisheries sectors.

By consulting the yellow pages in the telephone directories and by scanning the lists of advertisers in fisheries trade publications and yearbooks, we were able to find most of the firms which might be considered to have close links with the fisheries sector. Finally, by questioning individuals who were familiar with the conditions existing in the major fishing ports, we were able to correct the information which

we had already obtained in respect of the number of firms on Jutland, and to make an estimate of the level of employment in these firms. Table 2.6.2 shows the result of our 'ferreting out' of the firms. It must be pointed out immediately that the number of firms is presumably less than the actual number, since the method used makes it impossible to produce a complete picture of the extent of the firms involved.

The largest number of firms was found to be in the area of fishing equipment manufacture and shipbuilding. These types of business are over-represented in East Jutland in relation to the firms in the other categories.

TABLE 2.6.2

Number¹⁾ of service companies and suppliers directly associated with the fisheries sector, by main sector.

	Fishing equipment Trawl and seine makers (manufacture and repairs)	Ice Cold stores Ice-houses	Engines (manufacture repairs sales)	Electronics (manufacture repairs installation)	Shipbuilding Shipyards Slipways Ship smths	Ship's chandlers	Other
JUTLAND	59	10	37	44	63	35	28
North Jutland	23	5	15	19	26	15	12
West Jutland	24	5	19	20	23	16	14
East Jutland	12	0	3	5	14	4	2

1) see text.

The total level of employment in these firms shows considerable variation over the year, since the level of activity in many of the firms is directly related to the level of activity in the fisheries sector. In view of the aforementioned reservations in respect of the extent to which the companies are covered and in respect of the reliability of the data relating to employment, Table 2.6.3

TABLE 2.6.3

Estimated level of employment in service companies and suppliers and public institutions associated with the fisheries sector.

	in the ports		Other service companies and suppliers	Public institutions
	Processing of fish	Shipyards		
	(1)	(2)	(3)	(4)
North Jutland	650	400	1100	225
West Jutland	425	225	600	200
Includes those employed in:				
(1) Landing of fish, fish auctions, collection centres, ice manufacture, cold stores, ice-houses, etc.				
(2) Shipyards, repair yards, slipways, shipsmiths, etc.				
(3) Manufacture of fishing equipment, mechanical and engine workshops, ship painters and shipwrights, electronics, ship's chandlers, clothing suppliers, etc.				
(4) Port authorities, Fisheries Inspectorate, Weights and Measures Department, lifeboat service, customs, etc.				

shows the estimated level of employment in the service companies and suppliers and in the public institutions associated with the fishing ports in North Jutland and West Jutland. No attempt has been made to estimate the level of employment in East Jutland, due to the high degree of uncertainty attaching to the fact that the fishermen in this region make use of a large number of small firms which are often involved very much more in trading with groups other than fishermen, for instance with anglers and amateur sailors, with other sectors of the shipping industry, or with other sectors of industry as a whole.

2.7 Organization

2.7.1 Fisheries organization

Danish fishermen are associated with two main organizations, Dansk Fiskeri Forening (DFF) (Danish fisheries association) and Danmarks Havfiskeriforening (DH) (Danish sea fisheries association). The latter represents the fishermen in the largest West Jutland ports, i.e. approximately 40% of Danish fishermen, whereas the Dansk Fiskeri Forening represents the remainder of the Danish fishermen.

The main organizations have as their members the individual local associations, of which there are 127 in all; 113 of these are represented in the DFF, with the remaining 14 being associated to form the Danmarks Havfiskeriforening. As far as the Dansk Fiskeri Forening is concerned, the local associations are organized into 11 central associations, which act as coordinating bodies between the local associations and the Council and Committee of the DFF.

The supreme body of the Dansk Fiskeri Forening is the Congress, which meets every second year, whilst the supreme body of Danmarks Havfiskeriforening, the General Assembly, meets annually. The local associations are members of the supreme bodies in both Associations; each individual member carries a number of votes equivalent to the number of members in the local association.

The day-to-day work of the Dansk Fiskeriforening is looked

after by a Secretariat in Copenhagen, and that of Danmarks Havfiskeriforening by a Secretariat in Esbjerg. Both Secretariats employ a small number of qualified staff who act as advisors to the members, although both call upon the paid services of 'external consultants' to a certain extent in conjunction with the solving of special problems.

The income of the Associations comes partly from sales of the joint newspaper 'Dansk Fiskeritidende' (Danish fisheries' newspaper) and partly from membership subscriptions which are paid mainly in the form of a levy on the gross catch of

individual members. This works out on average at a subscription of approximately Kr 200 per person per year.

Both Associations are represented on EUROPECE, which is an association of fisheries organizations within the European Communities. Through this organization the Associations are also represented on the Fisheries Committee and on a Committee with equal representation of parties concerned with social matters, both of which act as advisory committees to the Commission. The Associations are also represented (cf. Section 4.2) on the § 2 Committee, the Fisheries Commission, and on various advisory committees to the Ministry of Fisheries.

Local fisheries associations

The fishermen at each point where landings are made are organized in local associations, the size of which ranges from approximately 1500 members in Esbjerg to less than 25 members in many cases. Danmarks Havfiskeforening has, as has already been mentioned, 14 local associations on the west coast of Jutland, whilst the Dansk Fiskeri Forening has 113 local associations, of which 52 are on Jutland. Half of all the fishermen in the Dansk Fiskeri Forening are represented in the local associations on Jutland.

The local associations are first and foremost professional associations, since membership is open to both self-employed

fishermen and partners in fishing firms. The associations look after members' interests at main organization level, although in recent years the larger associations in particular have begun to employ both financial and technical consultants to assist the local fisheries businesses. Quite a large proportion of the large associations also provide services in the ports, in the form of, for example, banking facilities, ice factories, fish landing companies and truck firms.

Trade unions

In addition to being represented in the local associations, a proportion of the partners in fishing firms are organized in the Specialarbejderforbundet i Danmark (the Danish Association of Semi-skilled Workers) or in the Fiskernes Forbund (the fishermens' association). The Dansk

Fiskeri Forening and Danmarks Havfiskeriforening have signed agreements with the Specialarbejderforbundet in respect of wages and working conditions. The Specialarbejderforbundet has about 4000 members who are fishermen, whilst the Fiskernes Forbund has about 1700 members.

Danish fishermen's Producers' Organization (PO)

There is only a single producers' organization in Denmark, unlike most of the other European Community countries. This organization was recognized by the European Communities in 1974.

The PO has approximately 2800 members, which, according to the information provided by the organization itself, represents a level of association of approximately 90%. This figure does, however, conceal a number of variations, since the level of association is low on Bornholm, for example, where many of the fishermen sell their fish through cooperatives. The level of association is also low in certain areas on the west coast of Jutland, where consumer fish of such high quality is landed that it never falls below the minimum price. The Danish PO does not have exclusive recognition (cf. Section 1.4.3).

The supreme body of the PO is the Council of Members, which is elected for a period of three years. The Dansk Fiskeri Forening and Danmarks Havfiskeriforening each appoint 15 members, with the remaining 5 places being reserved for other organizations.

According to its constitution, the most important task of the Danish fishermen's producers' association is to apply the European Communities' price control system for fish products, i.e. to purchase any fish which has not made the minimum price. The PO is financed partly by grants from the EAGGF and partly by a levy paid by the fishermen on their landings. The landing levies totalled Kr 2.3 million in 1978, which was equivalent to approximately Kr 800 per member.

2.7.2 Fishing industry organizations

The Danish fishing industry is organized into three large associations:

Danmarks Fiskeindustri- og eksportforening (the Danish fish industry and fish export association), founded in 1975, is the trade association for Danish fish exporters, filleting factories and fish processing companies. The Association is

the trade association only, and the individual members have signed agreements with the Kvindeligt arbejderforbund (the Association of female workers) and the Specialarbejderforbund (the semi-skilled workers' association) either themselves, through local groups, or through membership of an employers' association (e.g. Industrifagene).

The supreme body of the association is the General Assembly, in which each member has one vote. The General Assembly elects a Council, which is fixed in its composition as far as concerns the representation of the individual regions and sectors of industry. The Council in turn elects a Committee of 7 members. The day-to-day management is the responsibility of a Director appointed by the Committee and a small secretariat.

The Association has 125 members, corresponding to a level of association of approximately 85%.

The Association (cf. Section 4.2) is represented on the § 2 Committee, the Fisheries Commission and in various other advisory committees to the Ministry of Fisheries, as well as on AIPCEE (Association of Fish Industries of the EEC).

Foreningen af Danmarks Fiskekonservesindustri (the Association of the Danish fish preserving industry) is a small organization with 7 or 8 members out of the 14 or 16 firms in the sector; some of the members are also members of Danmarks Fiskeindustri- og eksportforening. The Association

is mainly an employers' organization and has negotiated agreements with the Kvindeligt arbejderforbund (Association of female workers).

The Association is also (cf. Section 4.2) represented on the § 2 Committee, the Fisheries Commission and a number of the advisory committees to the Ministry of Fisheries.

Foreningen for Danmarks Fiskemel- og olieindustri acts as a trade association for all firms, and as an employers' organization for 12 of the firms, in which capacity it has entered into agreements with the SID (Danish Association of Semi-skilled Workers).

The Association has a number of sector-related activities, such as the research fund which has been set up and through which finance has been provided for a couple of major research projects concerned, amongst other things, with the quality and product development of fish-meal and fish-oil. At the present time, a study is also being conducted into the setting up of a consultancy service in conjunction with the Copenhagen secretariat.

The Association is (cf. Section 4.2) represented on the § 2 Committee, on the Fisheries Commission and on a number of the advisory committees to the Ministry of Fisheries.

The aim of all three associations is to represent the sector in external questions relating to the sector. On the other hand, internal cooperation between the individual members of the organizations is at a modest level; for example, the possibility of providing joint marketing and sales facilities under the control of the associations has been discussed in all three associations, although until now no high level of agreement on such matters has been reached.

Local employers' associations

In a large proportion of Danish ports, including the major fishing ports, most of the firms involved in trading and transport within the ports, i.e. the fish auctions, the materials handling companies and the wholesalers, are organized into a local port employers' association. These

associations are members of the 'Sammanslutning af Havne- og Købmandsorganisationer' (Federation of port and merchants' organizations), which has entered into a national agreement with the Specialarbejderforbund on wages and working conditions in the ports. In addition to this, the local associations have entered into various agreements with the SID in respect of specific local working conditions.

2.8 Training and research

2.8.1 Basic training

2.8.1.1 Training provided for fishermen

The fisheries industry has no formal professional training system, unlike most of the other industrial sectors in the country.

The professional training of fishermen takes place mainly at sea through working on board a fishing vessel; in recent years, however, simple theoretical courses aimed specifically at the fishing trade have been provided by various bodies. Nevertheless, there are still no official requirements for such courses to be taken. On the other hand, the legislation in respect of seamen and the manning regulations (cf. Section 4.1.3) do impose certain requirements in respect of training, particularly with regard to navigation, rules of the road at sea, etc., of skippers and second mates on fishing vessels of more than 20 tonnes.

Instruction in the aforementioned areas is provided in the State Maritime Colleges, the Masters' Training Schools and in certain Training Schools for semi-skilled workers. The overall administration of these courses is partly the responsibility of Direktoratet for Søfartsuddannelser (the Maritime Training Department) of the Ministry of Industry and of Direktoratet for Arbejdsmarkedsuddannelser (the Vocational Training Department) of the Ministry of Labour.

The following is a brief survey of the trades and the training facilities covered by the three types of institution referred to above.

State Maritime Colleges

Denmark has 6 State Maritime Colleges, of which 3 are on Jutland. The overall administration of these colleges is the responsibility of the Direktoratet for Søfartsuddannelser. The Maritime Colleges are the only institutions to offer training in fisheries and navigation for young people under 18 years old.

The colleges provide basic maritime vocational training which, by means of a basic course lasting five months, a lengthy period of practical experience and then theoretical courses, possibly at special schools, provides all the general maritime instruction required, including the fishing vessel master's examination referred to below.

The basic five-month course touches on fisheries, although special fisheries courses can be provided if sufficient numbers of students are interested. After spending a minimum of 19 months gaining practical experience on a fishing vessel, theoretical training may then be continued with courses at the Masters' Training Schools leading to the fishing vessel master's examination, as described below.

In recent years the Maritime Colleges have begun to offer an additional basic five-week course for fishermen, which covers nets, fishing, fish biology and fishing vessels, etc. These courses are organized in conjunction with the State schools and have met with great success. 139 students attended the courses in 1979.

However, the number of fishermen taking the basic training courses at the Maritime Colleges is extremely low.

Masters' Training Schools

Denmark has 6 Masters' Training Schools, of which 5 are on Jutland. The Masters' Training Schools are mainly private institutions which first and foremost offer instructional courses in line with statutory requirements which apply to the skippers and second mates on fishing vessels of more than 20 tonnes.

The overall administration of these courses is the responsibility of the Direktorat for Søfartsuddannelser.

The fishing vessel master's examination may be taken at three levels, as follows:

- a) Fishing vessel master's examination, 3rd Class, entitling the holder to command fishing vessels of up to 500 tonnes in certain waters (duration 20 weeks);
- b) Fishing vessel master's examination, 2nd Class, entitling the holder to command fishing vessels of more than 500 tonnes in certain waters (duration 10 weeks);
- c) Fishing vessel master's examination, 1st Class, entitling the holder to command fishing vessels of more than 500 tonnes in all waters (duration 10 weeks).

See also Section 4.

Instruction is given on: navigation, rules of the road at sea, engines, fire fighting, use of instruments, fisheries legislation and administration, meteorology, safety at sea and practical seamanship, plus, in the case of the 2nd Class and 1st Class examinations, languages, the Law of the Sea, fish biology and fisheries. Fish biology and fisheries together account for 100 hours out of the total of 700 hours' instruction provided for the 2nd Class and 1st Class examination courses. Entrance requirements for the course are 2 years' practical experience in the fishing fleet after the age of 16, plus, in the case of the 2nd Class and 1st Class examinations, successful completion of the 3rd Class and 2nd Class examinations respectively.

The Masters' Training Schools produced 78 3rd Class fishing vessel masters, 31 2nd Class masters and 33 1st Class masters in 1979.

Alongside their formalized training courses, the individual Masters' Training Schools also offer short, specialized courses on subjects such as searching for fish, radio telephony and the use of radar, in addition to which the Masters' Training Schools also offer the basic five-week courses referred to above in the State Maritime Colleges section.

Training schools for semi-skilled workers

The training schools for semi-skilled workers in Denmark are

mainly private institutions which operate in conjunction with the manpower authorities and in certain cases with individual firms to offer short vocational training courses in all areas of the business. Thus four of the training schools for semi-skilled workers, in Esbjerg, Thisted, Frederikshavn and Rønne (on Bornholm), offer courses for professional fishermen. The courses are the responsibility of the Direktorat for Arbejdsmarkedsuddannelser (Vocational Training Department), although in practice they are organized and coordinated by the Brancheudvalg for uddannelse af erhvervsfiskere (Sector committee for the training of professional fishermen), which is made up of equal numbers of representatives from the employers' and employees' sides.

The training schools for semi-skilled workers provide three courses for professional fishermen: a deckhand's course of three weeks' duration, a second mate's course of five weeks'

duration, and a basic course of one week's duration. The deckhand's course and the second mate's course include tuition in the handling of gear, handling the catch, vessels and navigation, and safety precautions. The second mate's course places particular emphasis on commanding a vessel, engine maintenance and care of gear, and has an entrance requirement of at least one year's practical experience as a professional fisherman. The courses are available only to those aged 18 and above.

Financing of training provided for fishermen

The Masters' Training Schools are private schools operated on 100% State grants. Tuition at these schools and at the State Maritime Colleges is thus provided free of charge to students, although students must pay for their own accommodation and books, etc. These costs can be met by State grants to students, depending on their own income and that of their parents, in line with the general regulations which apply to educational grants.

As has already been mentioned, the training schools for semi-skilled workers are mainly private institutions; however, financial support for their operation is provided partly in the form of State grants (85%) and partly in the form of grants from the communes (5%) and from trade associations/trades unions whose members use the schools (10%). Tuition is free of charge, therefore, and students

are also entitled to receive a daily allowance (about 90% of their wage) whilst attending a course. This entitlement to receive a daily allowance applies only to wage-earners, of course, and not to any self-employed persons who may be admitted to the courses. Self-employed fishermen must therefore finance their participation in courses for semi-skilled workers themselves, whereas fishermen who are wage-earners are entitled to receive a daily allowance whilst attending a course.

2.8.1.2 Training provided for other staff in the fishing industry

As has already been seen from Section 2.5.1.5, the fishing industry on the whole uses only unskilled labour, which is also reflected in the training facilities provided for staff in the fishing industry. As in the case of the primary fisheries sector, no formalized training is provided. However, within the last 5 - 10 years in the food industry, all-round food technology courses have been introduced, which are aimed specifically at the food industry. The

theoretical level of these courses is completely basic on the one hand, corresponding to the traditional trade apprenticeship, and on the other hand provides additional training to intermediate technician level. The courses prepare participants for work as skilled men, foremen, work study engineers and quality controllers, etc., within the food industry. Nevertheless, little emphasis is placed on providing instruction in the technical aspects of fishing during the theoretical part of the course, and in view of the fact that it has also been difficult to secure the necessary jobs offering practical experience within the fishing industry, these courses have not, for the time being, been used to any great extent by the fishing industry.

Further training for the staff in the fishing industry is provided to a limited extent in the same training schools for semi-skilled workers which offer courses to fishermen, as well as at the Research Laboratory of the Ministry of Fisheries. The courses offered by the training schools for semi-skilled workers are aimed at ordinary employees only and mainly provide experience in a variety of operating processes. The courses are often arranged in close cooperation with individual firms, so that quite specific needs may be met. The courses are normally open to persons of 18 years and above, and in some cases 17 year-olds. The courses are the responsibility of the Direktorat for Arbejdsmarkedsuddannelser, although in practice they are organized and coordinated by the Fiskeindustriens Brancheudvalg (sector

committee for the fishing industry, which is made up of equal numbers of representatives of employers and employees.

Further training for senior staff in the fishing industry is provided to a limited extent by the Research Laboratory of the Ministry of Fisheries which, a couple of times a year and on its own initiative, holds short courses and conferences which are financed by the participants themselves; also, two three-week courses for engineering students are held each year, which are often attended by other people, such as senior staff in the fishing industry.

2.8.2 Further training

No further training aimed specifically at the professional functions of the fisheries sector is provided in Denmark. Nevertheless, a number of further training courses and

educational institutions do offer the possibility, through separate courses, special examinations and periods spent gaining practical experience, etc., of specializing in the areas of naval architecture, fish biology, fisheries economics, product development and fish processing technology. On the other hand, areas such as fish catching technology, fishing equipment and searching for fish, etc., offer only limited possibilities for academic study, although efforts are being made to change this situation at present.

2.8.3 Fisheries research

2.8.3.1 Government institutions

Denmark has two Government institutions which are involved in research of direct relevance to the fisheries sector.

1) Danish Institute for Fishery and Marine Research, Charlottenlund, Copenhagen, is responsible to the Ministry of Fisheries and is involved in conducting research into and in providing advice on biological and physico-chemical conditions in the sea and in fresh water areas. Research is conducted into the ten areas listed below:

1. Theory of fisheries biology (eco-system models, etc.);
2. Assessment (evaluation of size of stocks, etc.);
3. Fish biology (collection of data relating to fish biological conditions);
4. Marine pollution;

5. Fresh water conditions (living conditions and production conditions for fish in fresh water, etc.);
6. Experimentation (in conjunction with the aquarium facilities at the Institution);
7. Economics and statistics (fisheries statistics and biological data);
8. Hydrography;
9. Fish farming;
10. Fishery conditions in the Faroes.

In addition to the laboratory at Charlottenlünd, the Institute also operates a fresh water laboratory and an experimental fish farm on Jutland, together with a number of small laboratories in the major fishing ports. The Institute also has four research vessels, of which one is under construction.

2) Ministry of Fisheries Research Laboratory, Lyngby, Copenhagen, is responsible, as the name suggests, to the Ministry of Fisheries, and is involved in undertaking research, development and advisory work in conjunction with the storage and processing of fish and fish products. The Laboratory also runs a variety of courses for Danish engineering students and for overseas students from developing countries with which Denmark is involved in development cooperation.

Research and development work in recent years has fallen within the following areas:

- 1) Handling of the catch and dealing with the fish once it is on board;
- 2) Storage of raw materials ashore;
- 3) Product development aimed at improved utilization of our fish stocks.

2.8.3.2 Fisheries research conducted by non-Government organizations

In addition to the two Government institutions referred to above, one other institution is involved in research and development connected with the fisheries sector; this is the Shipbuilding Laboratory, Lyngby, Copenhagen. The Laboratory is a private institution within Akademiet for de Tekniske Videnskaber (the Academy of Sciences). The Laboratory conducts its own research and development programmes in the areas of shipbuilding and off-shore structures in the widest

sense, in addition to which the Laboratory operates a service to shipowners which will accept commissions to conduct experiments and analyses. In 1977 the Laboratory initiated a programme of development in conjunction with the shipbuilding industry, which includes the design of fishing vessels and inspection vessels, etc.

Apart from the institutions referred to above, recent years have seen the formation, on local initiative and in various locations, of research and project groups in order to provide information relating to specific fisheries problems. The following are worthy of mention: 1) South Jutland University Centre in Esbjerg, which, financed by the State, the administrative districts and the communes, has been host for a couple of years now to a joint project with the Ministry of Fisheries Research Laboratory and the Danish Institute for Fishery and Marine Research entitled 'Future prospects for Danish deep-sea fisheries'.

- 2) Fisheries and Maritime Museum in Esbjerg, which, financed by the commune, has been engaged for a couple of years in the collection, recording and publication of experiences gained in large-scale fisheries experiments.
- 3) Administrative District of North Jutland, which, with the support of the Ministry of Education and the Aalborg University Centre, has provided finance for one year now for a project group concerned with investigating what development possibilities exist for the fisheries industry in North Jutland.
- 4) North Sea Centre at Hirtshals, which, in partnership with the Hirtshals Fisheries Association, the commune of Hirtshals and the Hirtshals Citizens' Association, has established itself as a private institution with the aim of setting up and running a Danish centre for professional development and training and research within the fisheries sector. The plans for the centre include the provision of facilities for the local branches of the aforementioned State institutions, although final approval for this has not yet been given by the Danish Government. The centre has been established with financial assistance from the Regional Development Fund of the European Communities.
- 5) Aalborg University Centre, which in 1979-80 has been working on a proposal for the introduction of a fisheries engineering course and a fisheries economics course alongside the traditional engineering and economics courses.

2.9 Significance of the fishing industry to the national economy

This section will examine the significance of the fishing industry to the national economy on the basis of the most recently published input-output tables for the Danish economy. These tables relate to 1974.

Input-output tables are a method used for the presentation of statistics relating to the national economy in order to record the real flow of goods between the productive sectors of the national economy, and between the productive sectors and those sectors which will finally use the goods. The Danish input-output tables are based on 130 industrial sectors and 79 groups of final users, and include more than 4000 items.

On the basis of production statistics relating to the purchases and sales of goods by individual sectors of industry, it is possible to compile a table showing supplies to and from each of the 130 industrial sectors and to each of the groups of final users.

The compilation of input-output tables requires Danmarks Statistik to undertake very extensive calculations based on a wide range of primary statistical data. This is the reason why the input-output tables undergo considerable delays (of 3 - 4 years) before appearing, and why it is also necessary to point out that the data may contain inaccuracies.

The input-output tables express the value of the real flow of goods in the national economy in a given year - in this case 1974. Since the relative flow of goods between the individual industrial sectors varies from year to year - due to changes in production methods and alterations to the product ranges - it is important to point out that the use of the relative supply of goods between the various sectors of industry shown in the input-output tables for a given year for the purpose of making predictions for subsequent years may lead to serious errors. The probability of such errors occurring increases the further one moves away from the financial year covered by the table.

TABLE 2.9.1

Total input of goods and services into the fishing industry,
by major suppliers, 1974; Kr million.

	Inter-industry inputs into the fishing industry Kr million								Output coefficient for output to fishing industry I)							
	WITHOUT competing imports				WITH competing imports				WITHOUT competing imports				WITH competing imports			
	Fisheries and fish farms	Consumer fish industry	Fish-meal and fish-oil industry	TOTAL	Fisheries and fish farms	Consumer fish industry	Fish-meal and fish-oil industry	TOTAL	Fisheries and fish farms	Consumer fish industry	Fish-meal and fish-oil industry	TOTAL	Fisheries and fish farms	Consumer fish industry	Fish-meal and fish-oil industry	TOTAL
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
Fisheries and fish farming	19.0	451.4	550.8	1021.3	26.2	622.7	759.9	1408.9	1.8	42.1	51.4	95.3	1.8	42.2	51.5	95.5
Fish industry	5.3	122.0	40.6	168.0	7.9	181.0	60.3	249.1	2.1	47.2	15.7	65.1	2.1	46.8	16.0	66.2
Fish-meal and fish-oil industry	-	-	-	-	-	-	-	-	-	1.7	-	2.4	-	2.0	-	2.8
Ropemakers and net makers	10.8	-	-	10.9	28.3	-	-	28.3	8.4	-	-	8.4	8.4	-	-	8.4
Wood industry	6.3	-	-	8.9	13.0	5.3	-	18.3	-	-	-	-	-	-	-	-
Paper and paper goods manufacturers	-	16.5	9.4	26.3	0.6	27.0	15.8	43.3	-	-	-	2.1	-	-	-	2.1
Primary plastics industry	-	4.7	-	8.4	5.9	6.9	-	14.6	-	-	-	-	-	-	-	-
Oil manufacturers	-	-	-	-	-	5.0	-	5.0	-	-	-	-	-	-	-	-
Mineral oil industry	53.4	1.7	16.0	71.1	149.7	4.8	44.8	199.3	2.6	-	-	3.5	2.6	-	-	3.5
Glassworks	-	-	-	-	-	5.4	-	5.4	-	-	-	-	-	-	-	-
Tin can manufacturers	-	25.9	-	26.0	-	30.8	-	30.8	-	3.8	-	3.8	-	3.3	-	3.3
Other iron and metal industries	-	-	-	-	6.2	1.9	0.9	9.0	-	-	-	-	-	-	-	-
Other mechanical engineering	-	-	-	-	-	-	-	7.8	-	-	-	-	-	-	-	-
Smiths and engineering shops	15.4	-	-	19.9	15.4	-	-	19.9	-	-	-	1.8	-	-	-	1.8
Cables and electronics	-	-	-	-	-	-	-	5.5	-	-	-	-	-	-	-	-
Shipyards (steel vessels) and marine engine mfrs.	31.3	-	-	31.4	68.7	-	-	69.0	5.2	-	-	5.2	5.1	-	-	5.1
Shipyards (wooden vessels) and ships' fittings	35.0	-	-	35.0	54.8	-	-	54.8	37.4	-	-	37.4	37.5	-	-	37.5
Car repair shops	-	-	-	5.2	-	-	-	5.2	-	-	-	-	-	-	-	-
Plastic manufacturers	-	6.4	-	8.9	-	9.0	-	12.7	-	-	-	-	-	-	-	-
Building and construction firms	5.2	5.0	-	11.7	5.1	5.0	-	11.7	-	-	-	-	-	-	-	-
Electricians	-	9.7	9.9	19.6	-	9.9	10.1	20.0	-	-	-	1.5	-	-	-	-
Wholesale trade	39.1	89.7	6.6	135.5	39.1	89.7	6.6	135.5	-	-	-	1.6	-	-	-	1.6
Railways and buses	-	-	-	5.6	-	-	-	5.6	-	-	-	-	-	-	-	-
Other land transport	5.1	11.0	7.0	23.2	5.1	11.0	7.0	23.2	-	-	-	-	-	-	-	-
Shipping	-	-	-	7.9	-	-	-	7.9	-	-	-	2.4	-	-	-	2.4
Shipping service	23.9	-	-	23.9	23.9	-	-	23.9	15.9	-	-	15.9	15.9	-	-	15.9
Other transport service	63.5	20.3	-	85.2	63.5	20.3	-	85.3	2.3	-	-	3.1	2.3	-	-	3.1
Post, telegraph, phone	6.3	-	-	12.9	6.3	-	-	12.9	-	-	-	-	-	-	-	-
Commercial services	16.3	10.8	6.4	33.6	16.3	10.8	6.4	33.6	-	-	-	-	-	-	-	-
Hotels & restaurants	-	-	-	7.0	-	-	-	7.0	-	-	-	-	-	-	-	-
TOTAL INPUT 2)	374.8	838.9	683.2	1900.9	580.7	1116.5	955.9	2752.7								

1) Calculated as output (input) to the fishing industry as a % of total output.

2) Total input is not equal to the sum of the figures in the column, since only the largest inputs have been included in the column.

- = total output (input) is less than Kr 5 million or output coefficient is less than 1.5%.

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2.9.1 Significance of the industrial structure of the fishing industry

The total input into the fishing industry in the form of supplies of goods and services from other sectors is shown for the year 1974 in Table 2.9.1.

Columns 1 to 4 in the Table do not include competing imports, i.e. they simply show the supplies which were made internally within the country, and columns 5 to 8 include competing imports, thus indicating the total level of supplies. In columns 9 to 12 and 13 to 16, the inputs to the fishing industry are shown in the form of output coefficients (as percentages), from which the relative importance of the sectors of the fishing industry as customers for goods and services from the supplying sectors may be seen. The output coefficients are also shown without (columns 9 to 12) and with (columns 13 to 16) competing imports.

As far as the primary fishing industry is concerned, column 5 of the table shows that the mineral oil industry, as the largest supplier of inputs to the sector, accounts for approximately 25% of the total input of raw materials into the sector. The next largest suppliers are the shipyards for steel vessels and the marine engine manufacturers, with 12% of total supplies, followed by the transport services (11%), the shipyards for wooden vessels and the producers of ships' fittings (9%), the wholesale trade (7%), and the ropemakers and net makers (5%). A comparison of the columns showing the figures respectively with and without competing imports

(columns 1 and 5) will reveal that approximately 35% of the input of raw materials into the primary fisheries is in the form of competing imports. Competing imports are particularly characteristic of the supplies made by the mineral oil industry and the shipyards, etc., as well as those made by the ropemakers and net makers.

An examination of the relative importance of the fishing industry to its suppliers (columns 9 and 13) reveals that the fisheries are of noticeable importance to the shipyards for wooden vessels and the producers of ships' fittings (approximately 37% of their total output), and that the

fisheries are also of great importance to the shipping services and ropemakers and net makers (with 16% and 8.5% respectively of their total output). The primary fishing industry takes less than 1.5% of the production of all other sectors.

As far as the consumer fish industry is concerned, it is not surprising to find that the major proportion of the input of raw materials into this sector comes from the fisheries sector (approximately 56%) and, in the form of semi-manufactured goods, from other firms in the fish industry (approximately 16%). Then come the wholesale trade (8%), the manufacturers of packaging materials (5%) and the transport services (3%), as important suppliers of inputs.

A comparison of the columns showing the figures respectively with and without competing imports (columns 2 and 6) will reveal that approximately 25% of the total supplies of inputs into the consumer fish industry is in the form of competing imports. Apart from foreign supplies of raw materials in the form of fish, competing imports are particularly characteristic of the supplies made by the manufacturers of packaging materials (glass, plastic, paper and board packaging materials) and of the supplies made by the mineral oil industry.

As may be seen from column 14, the consumer fish industry is of considerable importance as a customer for supplies from the primary fisheries sector and from within the industry itself (supplies of semi-manufactured goods), with 42% and

49% respectively of total input supplies going to the consumer fish industry. Furthermore, the consumer fish industry is of some significance to the manufacturers of tin cans, with approximately 3.5% of the production of that sector being supplied to the fish industry. The consumer fish industry takes less than 1.5% of the total output of all other suppliers.

Supplies from the primary fisheries predominate within the fish-meal and fish-oil industry, accounting for almost the entire production input (80%). There then follow supplies from the consumer fish industry (fish waste) (6%), from the mineral oil industry (4%) and from the manufacturers of paper and board packaging materials (2%).

Approximately 30% of the total input supplies into the fish-meal and fish-oil industry are in the form of competing imports.

The fish-meal and fish-oil industry plays a very important part as a customer for supplies made by the primary fishing industry, taking approximately 51% of its total supplies. The fish-meal and fish-oil industry also plays an important part as a customer for raw materials from the consumer fish industry. The fish-meal and fish-oil industry is of low relative importance to suppliers in other sectors.

Taking the fisheries industry as a whole (columns 4 and 8), the total level of inputs in 1974 was just less than Kr 2800 million, of which more than 30% was in the form of imports. Imports mainly included fish products, oil products, ships' fittings and packaging materials.

An actual input-output table for the Danish fisheries sector is shown in Table 2.9.2.

Columns 1 - 3 show the 1974 production value of the fisheries industry in relation to raw materials input (consumption of materials supplied by all sectors), wages (consumption of paid labour), other factors affecting income (labour input by the self-employed, interest on capital, depreciation) and small items such as levies, subsidies and non-competing imports.

Lines A - C show the production of the fisheries industry in

1974 in relation to the use made of said production. As may be seen from the separate lines, the production of the individual sectors is used partly as input (raw materials) into other sectors and within the sector itself, and partly for domestic consumption, for export and for holding in store.

Thus line A shows that ^{of}the total output of the fisheries and fish farms (including foreign landings and other imports of raw materials) in 1974, 29% was used as inputs into the consumer fish industry, 35% as inputs into the fish-meal and fish-oil industry, 6% for domestic consumption and 26% for export.

Line B shows that in 1974, 55% of the output of the consumer fish industry went for export, 23% was used for domestic

		INPUT				FINAL USE				
FROM	TO	Fisheries and fish farms	Consumer fish industry	Fish-meal and fish-oil industry	Fixed investments	Transferred to stock	Private and public consumption	Exports	Final value of consumption	
		1.	2.	3.	4.	5.	6.	7.	a)	b)
INPUTS OF RAW MATERIALS	Fisheries and fish farms	26.2 (7.2)	622.7 (171.3)	759.9 (209.1)	0	2.1	126.2 (.)	563.1 (.)	2166.7 (438.6)	1728.1
	Consumer fish industry	7.9 (2.6)	181.0 (59.0)	60.3 (19.7)	0.6 (.)	- 2.2 (.)	399.7 (.)	934.6 (.)	1708.7 (247.2)	1461.5
	Fish-meal and fish-oil industry	0.1 (0.05)	3.4 (1.1)	1.1 (0.4)	0	101.0 (.)	8.7 (.)	926.3 (.)	1203.2 (56.1)	1147.1
	Other sectors	546.4 (196.1)	309.4 (46.2)	134.6 (43.5)						
PRIMARY INPUTS	Non-competing IMPORTS	9.0	1.5	0.5						
	Wages	250.2	252.3	66.3						
	Other factors affecting income	897.6	95.1	122.7						
	Indirect levies and subsidies	- 1.6	- 3.9	1.7						
	PRODUCTION VALUE	1728.1	1461.5	1147.1						

Note: Figures in parentheses indicate the proportion of the input

coming from competing imports, i.e. the input which the Danish sectors could in principle have supplied themselves.

Points in parentheses indicate that the proportion of the figures represented by competing imports is not known.

a) of Danish + competing foreign products from the sector

b) of Danish products (production) in the sector

TABLE 2.9.2

INPUT-OUTPUT table for production by the Danish fisheries sector and for inputs of competing imports into the production of the Danish fisheries sector, 1974.
Kr million.

consumption, 11% was used as inputs (semi-manufactured goods) into the consumer fish industry itself, with most of the remainder being in the form of supplies to other sectors, including the fish-meal and fish-oil industry (fish waste).

Line C shows that 77% of the output of the fish-meal and fish-oil industry went for export, 8% was used to build up stocks and that the remainder was used mainly as inputs into other sectors (agriculture).

2.9.2 Significance of the employment provided by the fishing industry

The significance of the fisheries sectors as providers of employment may be regarded from two angles. As has been done elsewhere in this report, the level of employment may be listed specifically for the individual sectors of the fishing industry. A presentation of this kind does not, however, provide any idea of the employment-related interaction between individual sectors of the national economy, or, to put it another way, does not show the relative dependence of the various sectors of industry as regards employment.

On the basis of information relating to employment in each individual sector of industry, and using the data contained in the input-output tables relating to the output of the individual sectors and the use of such output as inputs into other sectors, it is possible to calculate the overall level

of direct and indirect employment associated with the amounts produced by the individual sectors for final use. Table 2.9.3 has been drawn up on the basis of such calculations.

The numbers employed directly in fisheries is very much lower in Table 2.9.3 than in the listing by sector. The reason for this is that the quantity of fish processed by the industry includes a large number of fishermen who are only indirectly employed in the fish industry. This also means that some of the persons who are actually indirectly employed in the fisheries (shipbuilders and net makers, etc.) are shown as being indirectly employed in the fish industry, since their production for the fisheries is finally used only after the raw material in the form of fish has been processed by the fish industry.

More than 22 000 persons were employed either directly or indirectly by the fisheries sectors in 1974. Of these, one-half were involved in production within the consumer fish industry, either as direct employees (45%) or as indirect employees (55%). One-quarter were involved in production within the fish-meal and fish-oil industry, of which 13% were directly employed and 87% indirectly employed. The remaining one-quarter were involved in that part of the production of the primary fisheries sector which is either consumed or exported without further processing; of these, 75% were directly employed and 25% indirectly employed.

TABLE 2.9.3

DIRECT AND INDIRECT EMPLOYMENT IN THE FISHERIES SECTORS

	Employment in the sectors ¹⁾	Total direct and indirect employment ²⁾		
		Total	of which: direct ³⁾	of which: indirect ⁴⁾
Fisheries and fish farms	10 965	5 489	4 167	1 320
Consumer fish industry	5 874	10 788	4 836	5 951
Fish-meal and fish-oil industry	824	5 757	728	5 029
TOTAL	17 663	22 033	9 731	12 300

- 1) i.e. the number employed in the production of 'raw materials' (inputs) to other sectors, exports and consumption.
- 2) i.e. the total number directly or indirectly employed in the production of output for final use.
- 3) i.e. the labour required for production which goes directly for consumption or for export.
- 4) i.e. the labour required for the production of essential raw materials and services in other sectors.

The 22 000 or so employed in the fisheries sectors are not, however, an indication of the overall significance of the fisheries sectors from the employment point of view. The incomes created in the fisheries sector are used amongst other things for private consumption, which also provides employment. Against the background of information relating

to the level of employment in all sectors of industry and of the data contained in the Danish input-output tables relating to the distribution by sector of the overall national level of private consumption by sector, it is possible to calculate the effect of consumption on total employment (in all sectors of industry). On the basis of the input-output tables for 1974, it is thus possible to calculate that each Kr 1 million creates domestic employment for 10.36 persons. On the assumption that the average level of private consumption in 1974 of each of the approximately 22 000 employees in the fisheries industries was Kr 30 000, then approximately Kr 660 million of Danish consumption in 1974 may be attributed to the fisheries sectors. In accordance with the above, the corresponding level of employment is just less than 7000 persons.

Against the background of the fisheries sectors' supplies for domestic consumption, which represented 0.4% of total national consumption in 1974, it may be estimated that approximately 3300 of those employed either directly or indirectly in the fisheries sectors are involved in production for domestic consumption. The remaining 19 000 or so (approximately 85%) are involved in producing supplies for other sectors and for export.

In summarizing this section it may be concluded that, even if the fisheries sector makes only a limited direct and indirect contribution to the total Danish national product

and to the overall national level of employment, the status of the fisheries sector as a producer of exports and thus its significance to Denmark's balance of payments are of considerable importance to the national economy. Furthermore, the fisheries sectors are located predominantly in outlying areas, where they make a fundamental contribution to regional and local employment and to the creation of incomes; cf. Section 3.

3. IMPORTANCE OF FISHERIES TO THE SUB-REGIONS

Figure 3.1 shows the names of the fishing ports referred to in this description, in addition to which the smaller landing places are also shown.

The description of the importance of fisheries in the individual ports presents a number of problems with respect to the statistical base. Thus it has not been possible to produce uniform information for all regions and ports, just as some of the information is also subject to a certain degree of unreliability.

A certain degree of unreliability also attaches to the figures produced by Danmarks Statistik in respect of the fish processing sector. The majority of the processing firms are also involved to a not inconsiderable extent in the export and wholesaling of fish and fish products. Where the added value from the wholesaling business exceeds the added value from the production side, then that firm will be categorized by Danmarks Statistik as a wholesaling business. The data do not therefore include a number of fish processing firms. This is less important in the larger geographical areas, where the majority of the processing activities take place in the registered processing firms, although it may give rise to not insignificant errors when evaluating the extent of fish processing in individual communes.

A certain degree of uncertainty is also associated with the

data relating to the number of service companies and suppliers to the fisheries and the level of employment within those firms. The information is based on the survey described in Chapter 2.6. The uncertainty which attaches to the reliability of the data which have been collected is particularly true of the description of individual ports. Special difficulty was encountered in obtaining information concerning certain of the larger fishing ports and also the very small fishing ports.

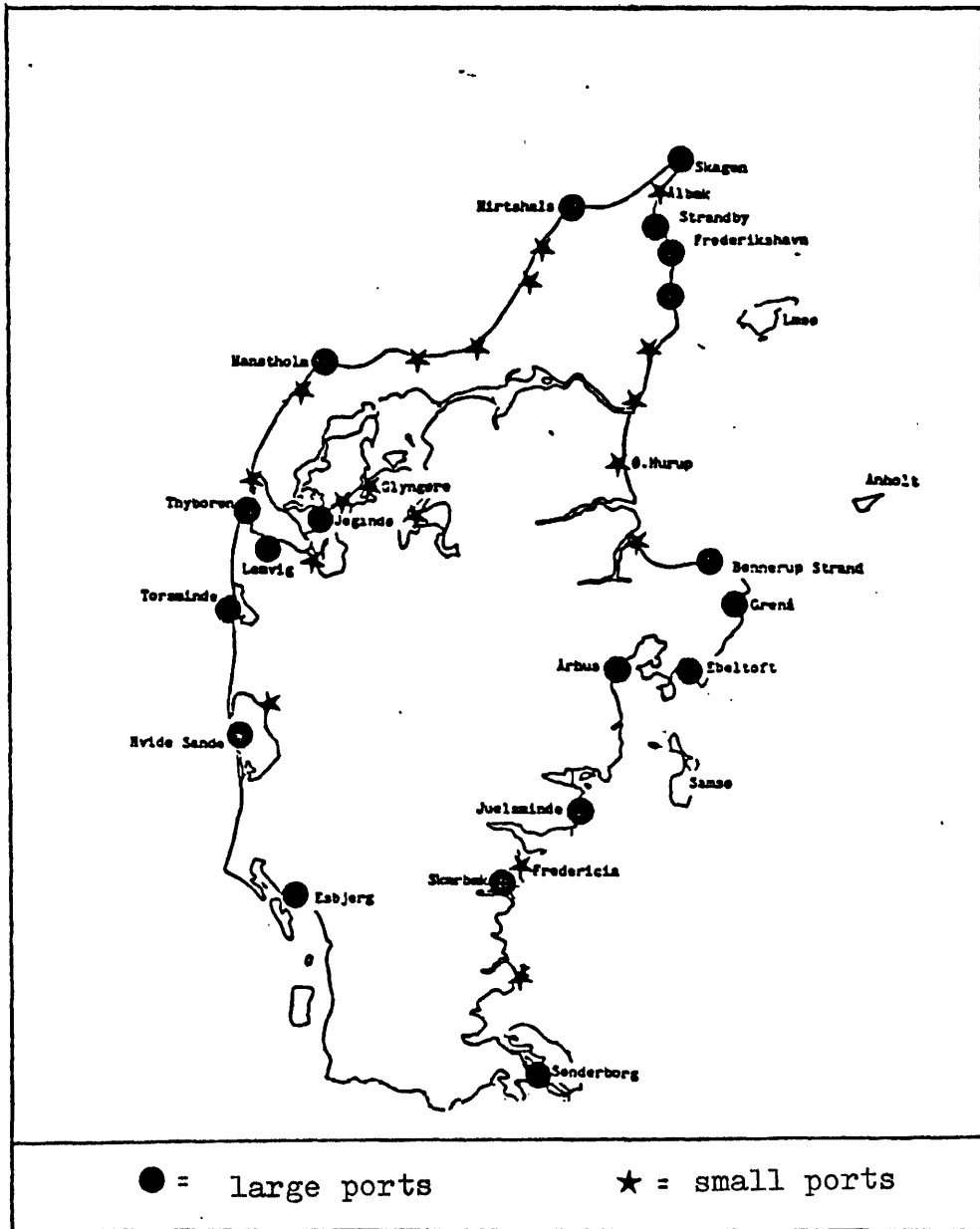
In those cases in which it was possible to check the reliability of the information, such a level of agreement was found that the information was felt, within a certain

margin of error, to provide a reasonably reliable view of the service companies and suppliers to the fisheries in the individual ports.

Finally, a certain level of uncertainty surrounds the number of vessels indicated in Thyborøn, Lemvig and Torsminde. These ports are combined in the register of vessels maintained by the Ministry of Fisheries. The division in this report has been made on the basis of the details contained in the register of vessels in respect of the place of residence of the owner, which is not always the same as the port of registration of the fishing vessel.

FIGURE 3.1

Jutland, showing the major fishing ports and landing places.



3.1 North Jutland

The North Jutland fisheries are concentrated mainly in the large towns of Hanstholm, Hirtshals, Skagen, Strandby and Frederikshavn. There are a further 15 small landing places along the coast, from which mainly inshore fishing is done from the open beach using small boats. The number of fishermen operating out of these villages ranges from 4 to 50 or thereabouts. Although the fisheries still have an important part to play in the continuing existence of many of these, as a rule small communities, recent years have nevertheless seen a significant decline in the numbers of people engaged in fishing. Young people fish out of the large ports, and other sources of income, such as tourism, have grown in importance. These small fishing villages are almost totally absent from the overall picture of the significance of the fisheries to North Jutland, and the following listing will therefore be limited to the four large fishing communes of Hanstholm, Hirtshals, Skagen and Frederikshavn.

Hanstholm

Hanstholm is the most recent of the fishing towns on North Jutland. The port was opened in 1967, and fisheries have developed strongly in the meantime; total landings have doubled in weight since 1970, from 91 000 tonnes to approximately 190 000 tonnes in 1978. Small and medium vessels predominate in Hanstholm; the chart shows that

almost one-half of the 109 boats are of less than 20 g.r.t., although there has been a relatively steep increase in the number of boats of more than 50 g.r.t. (from 16 to 35) in the period 1973-1978. In 1978, 12% of the vessels were of more than 140 g.r.t., corresponding to 43% of the total tonnage.

In 1978, Danish landings in Hanstholm consisted of approximately 60% consumer fish and 40% industrial fish, in terms of weight. Consumer landings have doubled in the last ten years, and at the same time there has been a major expansion in industrial fisheries. The most important consumer species are the gadoids, and the expansion has

COMMUNE	FISHING VESSELS OVER 5 g.r.t.			LANDINGS 1978			ASSOCIATED SECTORS 1979				EMPLOYMENT 1976					
	Number 1978	Average g.r.t. 1978	Average year built 1978	tonnes	Kr 1 000	Processing		Most important consumer raw material and production	Service companies & suppliers	All persons in employment	In fisheries sectors		Number employed in fisheries sectors as a % of all persons in employment	Unemployment total 3)	no. out of work 4	
						No. of firms 1)	Consumer				Fishing	Processing				Service & suppliers 2)
SKAGEN: including Skagen and Aalbæk	Total 283 Less than 20 g.r.t. 120	59	1959	Total consumer: of which herring: cod: dark coalfish: Total industrial: Total foreign:	27 926 14 536 3 866 3 076 54 488 66 864 28 817	2	9	Mixed fillets including herring; preserved fish, in particular herring, sprats, mackerel and shellfish	35	6 408	840	700	750	36%	17.3%	SID: 26% KAP: 20%
FREDERIKSHAVN: Strandby + Frederikshavn	Total 220 Less than 20 g.r.t. 142	20	1944	Total consumer: of which plaice: cod: Total industrial:	5 431 2 685 1 547 53 063 29 304	0	5	Fillets of gadoids and flatfish; various kinds of preserved fish	see text	15 682	Strand- by: 272 Frdhavn: 308	663	see text	max. 10%	11.7%	SID: 16% KAP: 15%
HIRTSHALS:	Total 208 Less than 20 g.r.t. 58	108	1956	Total consumer: of which mackerel: herring: plaice: Total industrial: Total foreign:	31 941 12 495 5 602 5 317 132 304 70 544 48 342	4	11	Fillets of herring and mackerel; preserved fish, in particular herring and mackerel	45	6 488	740	592	950	34%	18.9%	SID: 32% KAP: 26%
HANSTHOLM:	Total 109 Less than 20 g.r.t. 50	57	1958	Total consumer: of which cod: plaice: dark coalfish: Total industrial: Total foreign:	19 162 7 833 2 916 142 683 28 846	2	3	Fillets of gadoids and ready-to-serve fishes	29	2 490	327	385	300	40%	14.8%	SID: 36% KAP: 25%

1) With more than 6 employees
2) Estimated figures for 1979,
including public employees,
but not including fish traders
and exporters.

3) Number out of work as a % of those insured,
average Jan-Sept 1979.

4) Numbers out of work in the Association of semi-skilled
workers (SID) and the Association of female workers (KAP)
as a % of all those out of work. Average for the months
of January, April, August and September 1979.

CHART 3.1 NORTH JUTLAND

concerned cod and dark coalfish in particular, whereas the haddock and plaice fisheries, which are also of considerable importance, have remained largely unchanged over recent years. Foreign landings represented approximately 30% by value of Danish landings in 1978; the majority were fish for direct consumption, in which considerable expansion has also taken place in recent years. Most of the foreign landings of consumer fish were cod, dark coalfish and plaice.

Processing in Hanstholm is limited to three consumer fish firms with 75-150 employees, plus two small fish-meal factories. The consumer fish firms are all filleting firms with a greater or less degree of reprocessing; one of the firms mainly produces highly processed products, including ready-to-serve dishes. The three firms are highly dependent on landings from other ports and on commercial imports. All the consumer firms are also involved in the wholesaling of both finished and semi-manufactured products.

The service companies and suppliers at Hanstholm consist of 29 large and small firms. The largest firms are those which are involved directly in the handling and selling of fish in the ports, i.e. the collection centres and materials handling companies, etc.; five firms employ a total of approximately 140 persons in these areas, whilst the rest of the firms are small service companies, for example trawl manufacturers, boat-builders and mechanical and electronics workshops, etc., which together employ approximately 100 persons. Public institutions, including the Port Authority,

employ approximately 35 persons.

A total of approximately 1 000 persons are employed in the commune of Hanstholm in fisheries, the processing of fish and in the firms which provide services to the fisheries, representing approximately 40% of the number of people in work in the commune.

Hirtshals

Hirtshals is the home port for the majority (55% in all) of vessels of more than 140 g.r.t. in North Jutland; 35% of the vessels at Hirtshals, corresponding to 75% of the tonnage, were of more than 140 g.r.t. in 1978. Only a small proportion of the vessels is in the middle group of 50-140 g.r.t., whereas one-half are small boats of between 5 and 50 g.r.t. Major changes in both numbers and sizes of vessels have taken place since 1973 with regard to vessels of more than 140 g.r.t. Thus in 1973 only 25% of the vessels, corresponding to 56% of the tonnage, were of more than 140 g.r.t. The average tonnage of this group rose from 174 g.r.t. to 233 g.r.t. during the period. Hirtshals is the only Danish port out of which seine boats operate. In 1980 there were 10 seine boats registered in Hirtshals.

As far as landings are concerned, Hirtshals is the largest fishing town in North Jutland, where approximately 40% of North Jutland landings, in terms of both weight and value, were made in 1978. Danish landings of consumer fish in Hirtshals have doubled since the beginning of the 1970s, due to the steep increase in landings of herring and mackerel. Hirtshals is the only Danish port where mackerel are landed, and between 1975 and 1977 Hirtshals was also the major port for Danish landings of herring for direct consumption, of between 15 000 and 20 000 tonnes per year. There was a considerable change in this situation, however, in 1978 and 1979, when by far the major proportion of North

Jutland landings of herring for direct consumption was made in Skagen. Hirtshals is also the major port in North Jutland for foreign landings, although in 1978 landings fell considerably in relation to previous years; apart from 1975, when foreign landings at Hirtshals were only 66 000 tonnes, foreign landings between 1973 and 1977 were at a level of approximately 90 000 tonnes. Foreign landings at Hirtshals are mainly in the form of herring and mackerel for direct consumption, and the fall which occurred between 1977 and 1978 is attributable mainly to the steep fall in landings of herring.

Industrial fisheries out of Hirtshals have remained more or less at a constant level of between 250 000 and 270 000 tonnes since 1974, whereas the level at the beginning of the 1970s was approximately 150 000 tonnes per year.

The fish industry in Hirtshals in 1979 consisted of 11 consumer fish firms and five fish-meal factories. Only two of the consumer fish firms have more than 100 employees, and one of these has more than 300 employees, whilst the rest are small and medium-sized firms with between 6 and 100 employees. In terms of the numbers employed, the fish-meal factories are small firms employing between 20 and 50 persons. The two largest consumer fish firms are respectively involved principally in the production of fresh and frozen fillets of herring and mackerel and fully-preserved and semi-preserved herring and mackerel products. The remaining consumer fish firms are also involved to a very great extent in the processing of herring and mackerel, although like the large firms they do produce a certain quantity of fillets of gadoids and flatfish and are also involved in wholesaling.

The service companies and suppliers associated with the port of Hirtshals total approximately 45 firms; ten of these, employing a total of 390 persons, are involved in the handling and selling of fish, whilst the remaining 35 firms are small and medium-sized service companies, such as trawl and seine makers, shipbuilders and boat-builders, and radio and electronics workshops, etc.; only four of these firms have more than 30 employees, with the rest employing between

2 and 30 persons; a total of approximately 550 persons is employed by these firms. All the firms referred to here only provide a service to the fisheries sectors. The public institutions, including the Port Authority, employ a total of approximately 50 persons.

All the fisheries firms in Hirtshals together employ approximately 2230 persons, corresponding to approximately 34% of the total number employed in the commune.

Skagen

The commune of Skagen includes the port of Skagen and the port of Ålbæk, which lies approximately 15 km to the south of the town of Skagen. Ålbæk is the home port for 42 of the vessels registered in the commune of Skagen. The number

of vessels and the total gross registered tonnage has remained constant during the period 1973-1978, and the average gross registered tonnage has also remained constant on the whole, since only minor relative changes have taken place between the individual size categories. In 1979, the number of vessels had fallen by 10% in relation to 1978, to a total of 252. Like Hanstholm, Skagen is dominated by small and medium-sized boats. In 1978, only 17% of the vessels, corresponding to 50% of the total tonnage, were of more than 140 g.r.t., and only 6% of the vessels, corresponding to 12% of the tonnage, were in the size range of 100-140 g.r.t.

Throughout the 1970s, Danish landings of consumer fish at Skagen have been around 20 000 - 25 000 tonnes per year, and have even increased slightly to a level of 28 000 tonnes in 1978. This increase can be put down to a considerable increase in the landings of herring, which in previous years had been within the range of 6 000 - 8 000 tonnes, at the same time as the price of herring rose steeply between 1977 and 1978 (cf. Section 2.5.14), thereby producing an increase of 26% in the value of the total landings of consumer fish at Skagen between 1977 and 1978. There has been a falling trend in the landings of industrial fish at Skagen; landings of industrial fish fluctuated between 150 000 and 200 000 tonnes per year during the period 1970-1976, but with only 130 000 tonnes being landed in 1977; as may be seen from the chart, this trend continued in 1978. Like Hirtshals, Skagen has also been affected by a steep fall in foreign

landings. At the beginning of the 1970s, foreign landings at Skagen ranged from 75 000 tonnes to approximately 100 000 tonnes annually, but with a falling trend since 1974, with the result that foreign landings in 1978 represented 17% (by weight) of total landings, as against 43% (by weight) in 1970; the corresponding figures in terms of value were 32% and 54% respectively, with most of the foreign landings being in the form of herring for direct consumption.

Processing at Skagen takes place in two large and seven medium-sized and small consumer firms, and in two medium-sized fish-meal factories. Half of the consumer firms are involved in the manufacture of preserved products from herring in particular and from mackerel and shellfish, as well as in the manufacture of smoked products, whereas the remaining firms are involved mainly in the production

of fillets, with two of the firms mainly producing fillets of herring.

The service companies and suppliers at Skagen consist of 35 firms which, together with the public institutions, employ approximately 750 persons. Of these, five firms with a total of approximately 150 employees are involved in the handling and selling of fish in the port. Approximately 30 firms with approximately 500 employees are involved in other service activities (seine makers and trawl makers, engine repair shops, shipyards and boat-builders, etc.) which are directly associated with the fisheries. Only two of these firms employ around 100 people (one shipyard and one seine makers), with the others employing between 5 and 15 persons each. All the firms generally speaking provide a service only to the fisheries sector. The public institutions, including the Port Authority, the State lifeboat 'Nordjylland' and the State training ship 'Lars Kruse' provide employment for approximately 100 persons in Skagen.

Approximately 2300 persons in Skagen are employed either directly or indirectly in the catching, processing and selling of fish, corresponding to approximately 36% of the number in work in the commune.

Frederikshavn

With regard to fisheries, the commune of Frederikshavn includes the port of Frederikshavn and the port of Strandby, which lies immediately to the north of Frederikshavn. In

addition to being a fishing port, the port of Frederikshavn is also the major cargo port on North Jutland. As far as fisheries are concerned, however, the two ports are to all intents and purposes a single port, and will be treated as such in the following section.

The ports of Frederikshavn and Strandby are dominated by small vessels. In 1978, only 10 of the total of 302 vessels, corresponding to approximately 17% of the total tonnage, were of more than 50 g.r.t., and the average tonnage for all vessels in 1978 was 20 g.r.t. The picture was very much

the same in 1973.

Of the total landings made in Frederikshavn and Strandby in 1978, approximately three-quarters, both by weight and by value, were made in Strandby and the rest in Frederikshavn. These figures, however, conceal a more or less constant level of turnover in Frederikshavn and a steep increase in turnover in Strandby in the last five years. In terms of value, landings in both ports were more or less equally divided between consumer fish and industrial fish. The most important consumer species for many years in both ports have been plaice and cod.

Fish is processed only in Frederikshavn, which has three large and two medium-sized consumer firms. The largest firms are on the one hand a factory producing preserved fish and on the other hand a filleting factory producing ready-to-serve dishes. The other firms are on the one hand a small factory producing preserved fish and on the other hand a number of filleting factories for plaice and gadoids.

In view of the importance of Frederikshavn as both a cargo port and a naval port, the service industry in the port is directly associated with the fisheries to a much smaller extent. Furthermore, Frederikshavn is also the headquarters of the National Port Authority (cf. Section 2.1.5), which employs 50 persons. It is therefore not possible to indicate the number of firms, let alone the number of employees, which are dependent on the fisheries in the service sector.

It is estimated, however, that approximately 200 people in the service companies and suppliers in Frederikshavn are dependent on the fisheries sector. It must also be pointed out that Frederikshavn has a total of five firms which together employ approximately 20 people engaged in the handling and selling of the fish. The port of Strandby has a total of approximately 35 persons employed partly in the handling and selling of fish and partly in a couple of small seine makers and engine repair firms.

Fredrikshavn is the only fishing port on North Jutland which has a large number of firms and jobs which are not dependent on the fisheries or which are dependent only to a small extent.

Two large shipyards and a large engine factory in fact dominate Frederikshavn in terms of the numbers which they employ. Thus in the overall employment situation in Frederikshavn, the fisheries sector is only of minor significance. The numbers employed in fisheries and in the fish industry represent approximately 8% of the total number employed, and the numbers employed in the service industry is, as indicated above, highly uncertain, although a maximum of 10% of the working population of Frederikshavn is employed in work which is directly associated with the fisheries sector.

3.2 West Jutland

The West Jutland fisheries, from the Liim Fjord in the north to the Danish-German border in the south, operate mainly from three large fishing ports, Thyborøn, Hvide Sande and Esbjerg, and from two small ports, Torsminde and Lemvig.

Thyborøn

The port of Thyborøn, which was built in 1917, lies in the Liim Fjord at the point at which it opens into the North Sea.

Just under 200 vessels fish out of Thyborøn, of which approximately 10% are of between 5 and 20 g.r.t. Apart from the trawl fisheries, the Thyborøn fisheries are characterized by their high proportion of Danish seiners.

Total landings in Thyborøn have doubled since 1969-70, and amounted to 230 000 tonnes in 1978, with a value of Kr 220 million, which represents just under 30% of the total landings in the region. During the 1970s, foreign landings have accounted for between 1% and 4% of the value of the total landings in Thyborøn.

The value of the landings is divided about equally between consumer fish and industrial fish, although with consumer fish having a slight advantage. The main consumer species are cod and plaice.

Thyborøn has a single consumer fish firm and a single

cooperatively owned fish-meal and fish-oil factory. These two firms together employ approximately 80 persons.

The service companies and suppliers associated with the fisheries in Thyborøn consist of about 25 firms which, together with the public institutions, employ approximately 475 persons. Approximately 150 people are employed in the handling and selling of the fish at the port by the auctions, the collection centres, the ice manufacturers and the loading firms.

Approximately 280 people are employed in other service companies (shipyards, engineering firms and seine makers and trawl makers, etc.); of these, about 10 are employed at the only slipway in Thyborøn.

COMPANY	FISHING VESSELS OVER 5 g.r.t.		LANDINGS 1978		... ASSOCIATED ...		SECTORS 1979		EMPLOYMENT 1976					
	Number	Average g.r.t.	Average year built	tonnes		No. of firms 1)	Most important consumer raw material and production	Service companies & suppliers		All persons in employment	In fisheries sectors		Number employed in fisheries sectors as a % of all persons in employment	Unemployment 4) no. out of work
				1978	1978			No. of firms	No. of firms		Fishing	Processing			Service and suppliers 2)
THYBORØN - HARBØRE Port of Thyborøn	Total 194	-	-	Total consumer: 25 224	1	Platice	24 of which 2 gear yards engine & electr. 10	2 114	733	80 x	475	61	15.6%	STD: 42% KAP: 13%
	Less than 20 g.r.t.	-	-	of which 6 gear yards engine & electr. 10	1									
	Total 196	29	1960	Total consumer: 25 741	1									
HOLMSLUND Hvide Sande	Less than 20 g.r.t.	-	-	of which 3 gear yards engine & electr. 8	1	Fillets of cod and platice	56 of which 15 gear yards engine & electr. 18	37 021	1 544	886	650	8	12.9%	STD: 30% KAP: 16%
	Less than 20 g.r.t.	-	-	of which 3 gear yards engine & electr. 8	3									
	Total 427	87	1959	Total consumer: 25 209	11									
ESBJERG Esbjerg	Less than 20 g.r.t.	-	-	Total consumer: 11 801	0	16 of which 3 gear yards engine & electr. 3	12 617	356	90	100	4	12.7%	STD: 27% KAP: 16%	
	Less than 20 g.r.t.	-	-	of which 6 gear yards engine & electr. 10	1									
	Total 55	-	-	Total consumer: 11 801	1									
LEAVIG and ULFBORG-VENE Leavig	Less than 20 g.r.t.	-	-	Total industrial: 507 696	0	Total industrial: 22	Total industrial: 22	Total industrial: 22	Total industrial: 22	Total industrial: 22	Total industrial: 22	Total industrial: 22	Total industrial: 22	Total industrial: 22
	Less than 20 g.r.t.	-	-	Total industrial: 22	0									
	Total 40	-	-	Total industrial: 22	0									
Forsminde	Less than 20 g.r.t.	-	-	Total industrial: 22	0	Total industrial: 22	Total industrial: 22	Total industrial: 22	Total industrial: 22	Total industrial: 22	Total industrial: 22	Total industrial: 22	Total industrial: 22	Total industrial: 22
	Less than 20 g.r.t.	-	-	Total industrial: 22	0									
	Total 40	-	-	Total industrial: 22	0									

1) With more than 6 employees.
 2) Estimated figures for 1979, including public employees, but not including fish traders and exporters.
 3) Number out of work as a % of those insured, average Jan-Sept 1979.
 4) Numbers out of work in the Association of semi-skilled workers (STD) and the Association of female workers (KAP) as a % of all those out of work. Average for the months of January, April, August and September 1979.

CHART 3.2 WEST JUTLAND

About 40 civil servants are employed by the Port Authority, on the life boat stationed at Thyborøn and in the Fisheries Inspectorate.

Including the 730 or so fishermen, the number employed in the fisheries sector in the commune of Thyborøn is just under 1300 persons, or approximately 60% of the total number employed in the commune.

Hvide Sande

Hvide Sande is situated on the west coast of Jutland, about 80 km to the south of Thyborøn. The harbour at Hvide Sande was brought into use in 1931 and is the home port for just under 200 fishing vessels (1978), of which about half are of more than 20 g.r.t. The total number of vessels has increased by 33% in relation to 1973, whilst the number of vessels of more than 20 g.r.t. has doubled. There are no vessels of more than 100 g.r.t., however. A characteristic feature of the Hvide Sande fisheries is the relatively large number of net-fishing vessels.

Total landings at Hvide Sande during the 1970s have fluctuated either side of 60 000 tonnes annually. About 70 000 tonnes were landed in 1978; with their value of just under Kr 160 million, landings at Hvide Sande represented 20% of total landings in the region.

The value of the landings of consumer fish in 1978 accounted for 87% of total landings. The most important species in

terms of value are cod, plaice, sole and turbot.

Two fish processing firms are located at Hvide Sande. One of these produces filleted plaice and other flatfish, and the other is a fish-meal and fish-oil factory. The two firms employ about 35 persons in all.

The service companies and suppliers to the fisheries employ approximately 275 persons. The largest firms are two shipyards with approximately 100 employees. The fish auction has approximately 30 employees, whilst all the other firms have less than 15 employees each.

The Government harbour and the Fisheries Inspectorate employ about 15 persons.

The total number employed at Hvide Sande, including the 950 or more fishermen, in work which is directly associated with the fisheries is approximately 1270, which represents a good 60% of the total number employed in the commune of Holmsland.

Esbjerg

The fishing port of Esbjerg is the most southerly of the major fishing ports. The first harbour installations were constructed in 1874 to help Danish exports of agricultural produce to Great Britain. In addition to its function as an export port, which is still one of its most important functions, Esbjerg was also the home port for the continually increasing fisheries; the port was extended in 1901 to provide a proper fishing harbour.

In 1978 there were 427 fishing vessels registered in Esbjerg, of which only 8 were of less than 20 g.r.t. The number of vessels has fallen by 11% in relation to 1973. The number of vessels of more than 140 g.r.t. has increased considerably, however, from 37 in 1973 to 102 in 1978, with the result that the average size of the entire fleet rose from 62 g.r.t. in 1973 to 87 g.r.t. in 1978.

Landings in Esbjerg, which were made almost exclusively by Danish vessels, were 400 000 tonnes in 1970. Landings had risen to 615 000 tonnes by 1976, and in 1978 535 000 tonnes were landed with a value of Kr 350 million, corresponding to 44% of total landings in the region.

In terms both of the size of the fishing fleet and of the size of the catch, Esbjerg is thus the largest of the fishing ports in the region.

A characteristic feature of the fisheries in Esbjerg is the dominant position of the industrial fisheries. The value of

the landings of industrial fish throughout the 1970s has been two to three times greater than the value of the landings of consumer fish.

The importance of the industrial fisheries is the basis for three fish-meal and fish-oil factories. Esbjerg also has 11 consumer fish firms, whose production is dependent to a very great extent on supplies of fish from other ports. A total of about 890 persons are employed in the fish processing industry in Esbjerg.

About 650 persons are employed in the service companies and suppliers which are directly associated with the fisheries. Of these, approximately 200 are employed in the port on the loading, transport and sale of the fish. About 50 are employed at the State Ports Authority, in the Fisheries

Inspectorate and in the lifeboat which is stationed at Esbjerg, with the remainder being employed in shipyards, engineering firms, seine makers and trawl makers, and in other firms involved in the installation and repair of equipment for fishing vessels.

A total of more than 3000 persons, including 1544 fishermen, are employed in the fisheries in Esbjerg, which represents more than 8% of the total number employed in the commune of Esbjerg.

The modest proportion of those employed in the fisheries in Esbjerg in relation to the other major fishing ports is due in part to the fact that the port of Esbjerg is also a port for the exports of considerable quantities of Danish agricultural produce to England, in addition to which it is a major cargo port, and in part to the fact that Esbjerg commune has a number of firms connected with agriculture, mechanical engineering, transport vehicle manufacture, textiles and clothing.

Lemvig and Torsminde

Lemvig is situated in the western part of the Liim Fjord, and Torsminde is on the west coast of Jutland between Thyborøn and Hvide Sande.

Approximately 55 vessels are registered in Lemvig, and 40 in Torsminde. Almost all the vessels in Lemvig are of more than 20 g.r.t., with the opposite being true of Torsminde.

This situation is due to the fact that the Torsminde fisheries make exclusive use of stationary nets close to the coast, whereas the Lemvig fisheries are almost exclusively in the form of seine fishing.

Landings in each port have been around 5 000 tonnes per year throughout the 1970s. A total of just under 12 000 tonnes with a value of just under Kr 64 million were landed in the two ports in 1978, representing approximately 8% of the value of all landings in the region.

Consumer fish is landed almost exclusively in the two ports, and is sold via the local auctions. The most important species are cod and plaice.

Both ports have slipway facilities, ice manufacturers, net makers and mechanical workshops. Together with the auctions and the other service companies, these firms employ about 100 persons.

Lemvig also has two consumer fish firms with just under 100 employees.

Including the fishermen, the fisheries businesses in the two towns employ just under 550 persons, corresponding to only 4% of the total number of persons in employment in the two communes.

3.3 East Jutland

True fishing communities are to be found in only a few places along the east coast of Jutland. Those communes with the most involvement in fisheries are included in the chart. Together they cover by far the major proportion of the East Jutland fisheries.

The fisheries in this region are based almost exclusively on inshore fishing in the Kattegat, the Belt Sea and the western Baltic. Fishing is done using small vessels, including many of less than 5 g.r.t. (not shown in the chart).

The largest fishing towns are Grenå and Bønnerup, which in 1978 together accounted for a good half of the catches landed in this region, in terms of both weight and value. The nature of the fisheries in the two towns, in terms of the composition of the fleet and of the landings, is similar, and the majority of the East Jutland fishing vessels of more than 20 g.r.t. are registered in these two ports. Fishing is done mainly in the Kattegat with Danish seine nets and trawls. As is the case almost everywhere in the region, cod followed by plaice are the two main species of consumer fish.

The commune of Grenå contains a number of firms associated with the fisheries, which are of more than regional significance. These are a filleting factory, which uses mainly plaice brought in from many parts of the country,

and two large engine and deck equipment factories. These firms bring the proportion of those in work in the commune who are engaged in activities related to the fisheries up to 7 - 8 %.

One of Denmark's largest filleting and finished goods factories is located in Fredericia. This factory, too, uses raw materials from most parts of the country.

Only Grenå and Århus have fish auctions in East Jutland. Landings of fish are normally transported to the closest fish auction, for example from Bønnerup and Ebeltoft to Grenå, although at the majority of landing places fish is bought by regular purchasers who come once every day.

COMMUNE	FISHING VESSELS OVER 5 G.R.T.			LANDINGS 1978			ASSOCIATED			SECTORS 1979				EMPLOYMENT 1976				Unemployment Total 3) no. out of work 4)
	Number 1978	Average G.R.T. 1978	Average year built 1978	tonnes			No. of firms 1) Meal & oil	Consumer	Most important consumer raw material and production	Service companies & suppliers No. of firms	All persons in employment	In fisheries sectors		Number employed in fisheries sectors as a % of all persons in employment				
				Total landings: of which:	plaice:	herring:						Fishing	Processing and suppliers 2)					
<u>NR. DJURS</u> Bønnerup	64 Less than 20 G.R.T. 60	15	1978	Total landings: of which:	4 655	16 376	0	0		2	3 456	107	0	about 10	13.5%	SID: 34% KAP: 8%		
<u>GRØNÅ</u> Grønå	83 Less than 20 G.R.T. 72			Total consumer: of which:	5 866	27 327	0	2	plaice fillets	9	8 326	129	290	about 170	10.8%	SID: 25% KAP: 1%		
<u>EBELTOFT</u> Ebeltoft	15 Less than 20 G.R.T. 14			1953	Total industrial: Total consumer: Total industrial: Total:	5 386 721 1 587 2 308	3 210 7 617 3 850	0	0		6	5 166	24	0	13.7%			
<u>ÅRHUS</u> Århus	41 Less than 20 G.R.T. 37	19	1950	Total consumer: of which:	1 837	7 617	0	3		9	116 622	84	16		10.7%	SID: 4% KAP: 10%		
<u>JUELSPINDE</u> Juelspinde + Snaptun	24			Total industrial: Total consumer: Total industrial: Total:	2 194 520 1 161 1 681	1 184 2 399	0	0		0	6 890	53	0		7.7%	SID: 34% KAP: 5%		
<u>FREDERICIA</u> Fredericia + Skarbak	27 Less than 20 G.R.T. 27			Total landings: of which	1 063	2 496	0	2	plaice and gadoids for ready-to-serve dishes	3	21 171	41	552		9.2%	SID: 24% KAP: 6%		
<u>SANDERBORG</u>	26 Less than 20 G.R.T. 25	12	1953	Total landings: of which	1 588	4 703	0	1		2	13 554	36	0	9.0%	SID: 11% KAP: 15%			

1) With more than 6 employees.
 2) Estimated figures for 1979, including public employees, but not including fish traders and exporters.
 3) Number out of work as a % of those insured, average Jan-Sept 1979.
 4) Numbers out of work in the Association of semi-skilled workers (SID) and the Association of female workers (KAP) as a % of all those out of work. Average for the months of January, April, August and September 1979.

CHART 3.3 EAST JUTLAND

Industrial fish accounted for the major proportion of the quantities landed in 1978 in a number of the East Jutland towns. These included Ebeltoft, Århus, Snaptun and Juelsminde (in Juelsminde commune) and Skærbæk and Fredericia (in Fredericia commune). This industrial fish is generally sold directly for feed (in fish farms and fur farms).

The developments which took place in the fisheries in East Jutland in the 1970s are characterized by the even rise in the number of fishing vessels in all ports and - which is remarkable when viewed in relation to the rest of the country - by a slight fall in the average gross tonnage. This situation is found in almost all the ports in the region.

The pattern of the catch exhibits major fluctuations from one year to the next, although with an overall rising trend until 1976. In 1977-78, several landing places experienced a sharp fall in the quantities landed. This affected Grenå, Århus, Snaptun, Juelsminde, Skærbæk and Sønderborg.

3.4 Liiim Fjord

Fisheries take place from a large number of small, both communally and privately owned, harbours and landings around the entire Fjord.

The largest fishing vessels involved in the fisheries in Liiim Fjord are of between 5 and 8 g.r.t., with the largest boats operating almost exclusively outside the Fjord, in the Kattegat during the winter and in the North Sea during the summer. Apart from the professional fishermen, the Liiim Fjord also has a large number of part-time fishermen and a large number of anglers. In many cases the boats which fish outside the Fjord land their fish at one of the ports in the Fjord. Thus the North Sea provides the major proportion of the fish supplied to the auctions at Lemvig, Glyngøre, Jegindø and Hvalpsund.

Fishing takes place throughout the entire Fjord, although most of the activity is in the extensive broads in the western part. The total weight of the catch, including molluscs, taken in the Liiim Fjord in 1978 represented about 3% of the total weight caught by the Danish fisheries, corresponding to approximately 1% of the value.

The dredging of common mussels is that part of the fisheries which produces the greatest yield in terms of weight. By far the major proportion of the catch is supplied on contract to local processing firms. The 1970s have seen a considerable increase in mussel fisheries, which in recent years have

accounted for approximately 80% of the weight of the catch taken from the Liim Fjord. There has been a decline in the yield from most of the other fisheries during the same period. This is particularly true of the herring fisheries which previously took place on a large scale, but which are now almost insignificant, due in part to severe overfishing. There has also been a sharp decline in the flounder and plaice fisheries. The eel fisheries are now the most important in terms of value, representing more than 50% of the total revenue, in spite of the fact that only 317 tonnes were caught in 1978. Apart from the salt-water fish, small quantities of fresh-water fish were also caught.

COMMUNE	FISHING VESSELS OVER 5 g.r.t.		LANDINGS 1978		ASSOCIATED SECTORS 1979			EMPLOYMENT 1976					
	Number	Average g.r.t.	Average year built	1978	1978	Processing		Service companies & suppliers	All persons in employment	In fisheries sectors		Number employed in fisheries sectors as a % of all persons in employment	Unemployment Total 3) no. out of work 4)
						No. of firms 1)	Meal & Consumer Oil			Fishing	Processing			Services and suppliers 2)
LIIM FJORD Includes about 23 communes	137 Less than 20 g.r.t. about 80	-	1952	tonnes Kr 1 000	45 007	17 658	3 x in three communes	6 in six communes	-	240	about 800 of which about 500 in four communes in North Jutland and about 500 in four communes in Viborg admin. district	.	.
					Total consumer: of which common mussels: eels: herring: Total industrial:	45 007 17 658 40 410 317 211 3 203					preserved herring, mackerel and crustaceans and molluscs		

1) With more than 6 employees.
2) Estimated figures for 1979, including public employees, but not including fish traders and exporters

3) Number out of work as a % of those insured, average Jan-Sept 1979.
4) Numbers out of work in the Association of semi-skilled workers (SID) and the Association of female workers (KAF) as a % of all those out of work. Average for the months of January, April, August and September 1979.

. = calculations not possible
- = no data available
x = including one feedstuff centre, which does not supply fish-meal.

CHART 3.4 LIIM FJORD

Finally, oyster fisheries also take place to a limited extent in the Liim Fjord. The oyster beds are State-owned, and the right to dredge oysters is leased out. The annual yield since 1970 has been of the order of 0.5 million oysters.

Several large fish processing firms are based in the Liim Fjord area. The processing of mussels is the only activity which is dependent on raw materials from the Fjord. The other firms are entirely dependent on raw materials supplied from other areas. The most important products are preserved mussels, herring and mackerel.

3.5 The island communities

Læsø

Læsø is dominated by primary industries, and the fisheries are now the main industry on the island. Just under a fifth of the working population on the island were fishermen in 1976.

The island has two communally-owned ports, Østerby and Vesterø, of which the former is the more important in terms of fisheries. It is predominantly the smaller vessels (of less than 20 g.r.t.) which are involved in the Læsø fisheries, and the average age of the vessels is high, being 42 years in 1978. Fishing is done mainly in the Kattegat, in the waters around Læsø, although fishing grounds in the Baltic and in the Skagerrak are occasionally used.

The fisheries have been successful, with turnover having increased more than threefold since 1970. The relatively large proportion of valuable species such as Norway lobsters and sole in the catches lifts the average price to a high level; this was about Kr 9 per kg in 1978. The island has only one fish company. This is jointly owned by the fishermen, all of whom supply the company with fish, and the company is in turn under an obligation to accept all the fish which it is offered. There is therefore no fish auction on the island.

Anholt

Although the total yield produced by the fisheries on Anholt is not great, nevertheless one-quarter of the working population of the island is employed in the fisheries.

The structure of the fisheries is marked by fishing for valuable consumer species in the Kattegat, by trawling from small boats.

There has been no major change in the size of the catches in the 1970s, and turnover has remained in line with the general movement in prices.

COMMUNE	FISHING VESSELS OVER 5 g.r.t.		LANDINGS 1978		ASSOCIATED SECTORS 1979			EMPLOYMENT 1976					
	Number 1978	Average g.r.t. 1978	Average year built 1978	tonnes Kr 1 000		Processing		Service companies & suppliers No. of firms	All persons in employment	In fisheries sectors		Number employed in fisheries sectors as a % of all persons in employment	Unemployment no. out of work Total 3)
				Total landings:	of which:	No. of firms 1) Meal & Consumer oil	Most important consumer raw material and production			Fishing	Processing and suppliers 2)		
<u>LESØ</u> Vesterå + Østerby	82 Less than 20 g.r.t. 73	18	1936	2 547	22 625	0	1	3	1 099	186	about 45	.	24.5%
<u>ANHOLT</u> under Grenå commune	7 Less than 20 g.r.t. 7	16	1948	495	4 083	0	0	1	70	18	-	3-5	.
<u>SAMSØ</u>	8 Less than 20 g.r.t. 8	14	1954	835	2 903	0	0	0	2 229	32	-	-	11.1%

1) With more than 6 employees.

2) Estimated figures for 1979, including public employees, but not including fish traders and exporters.

3) Numbers out of work in the Association of semi-skilled workers (SIL) the Association of female workers (KAF) as a % of all those out of work. Average for the months of January, April, August and September 1979.

4) Number out of work as a % of those insured. Average Jan-Sept 1979.

. = Calculations not possible.

- = No data available

CHART 3.5 THE ISLAND COMMUNITIES

Samsø

The fisheries on Samsø are not of any great significance. Only a small proportion of the population is involved in the actual fisheries, and there are no associated firms.

Fishing takes place in the northern part of the Belt Sea, using a variety of tackle such as trawls, nets, pound nets and traps, from small vessels.

4. DANISH FISHERIES POLICY, OBJECTIVES AND RESOURCES

4.1 Aims of Danish fisheries policy

In 1975 the Minister of Fisheries appointed a Commission to produce a series of guidelines on the basis of which future Danish fisheries policy should be laid down. The work of the Commission was completed in 1979.

The Fisheries Commission, which was made up of representatives of the Ministry of Fisheries, the Danish Institute for Fishery and Marine Research, the Ministry of Fisheries Research Laboratory, the fisheries sector, the Danish Association of semi-skilled workers and the Consumers' Advisory Council, compiled three reports dealing with the following areas:

1. Activities of the Fisheries Bank ('Fiskeribank') of the kingdom of Denmark, published on 25.09.1977;
2. Adaptation of the capacity of the Danish fishing fleet to suit present and future potential catches, published on 24.10.1978;
3. Use of catches, product development and structure of the fish industry, including measures to promote the sale of fish products, published on 02.11.1978.

1. Section of the Report by the Fisheries Commission dealing with the activities of the Fisheries Bank.

A change in the structure and lending activities of the Fisheries Bank was introduced in Law No. 54 of 17.02.1978 relating to the Fisheries Bank of the kingdom of Denmark.

This Law, which is based largely on the recommendations contained in the Report, is described in greater detail below.

2. Section of the Report by the Fisheries Commission dealing with the adaptation of the capacity of the Danish fishing fleet to suit present and future potential catches. The Report considers on the one hand how the best possible utilization of the limited potential fisheries may be achieved using the existing fishing fleet, and on the other hand how the fleet may be adapted to suit changes in fishing conditions. The Report considers a

variety of licensing measures for the control and regulation of the fisheries, although it stresses that any strict government control and control by the issue of special licenses of the Danish fisheries will be of questionable value, taking into account the need for flexibility within the fisheries. It is pointed out that control by licensing may be appropriate to certain areas of the fisheries which are of special nature.

The Report recommends that a limit be placed on the number of vessels admitted to the fishing fleet. Attention is drawn to the fact that a reduction in the number of fishing vessels will be necessary, and that any reduction in the size of the fishing fleet should be permanent. Also stressed are the problems in connection with employment within the fisheries which any cut-back in the size of the fishing fleet would produce. As a temporary measure, it is recommended that the arrangements introduced in June 1978 in respect of the provision of grants for the temporary laying-up of vessels should be extended, and that measures should be introduced to provide financial assistance in the event of fishing vessels ceasing to operate within the fisheries.

The Report also points to the opportunities for catching new or non-traditional species, and it is recommended that the necessary finance should be made available for experimental fisheries and that an experimental fisheries working group should be established. The need for improvements in the organization and equipment of the Danish fishing fleet

is stressed, both generally and in conjunction with the actual experimental fisheries. It is recommended that the existing law relating to temporary assistance for the implementation of structural measures should be extended and improved.

In order to achieve an even distribution of the fisheries over the year, it is recommended that seasonal quotas should be introduced wherever necessary. The Minister of Fisheries introduced a system of quarterly quotas in 1979, and this arrangement has been continued during the first quarter of 1980.

Finally, attention is drawn to the fact that the Danske Fiskeres Producentorganisation (Danish Fishermens' Producers' Organization) (the PO) will only be able to exert a controlling function if membership of the organization is made compulsory.

3. Section of the Report by the Fisheries Commission
dealing with the use of the catches, product development
and the structure of the fish industry.

By way of an introduction, attention is drawn to the fact that it is not possible to draw up a set of fishery policy objectives, but simply to indicate a number of guidelines. It is also stressed that it is important to preserve the level of supply of raw materials to the fish industry, and that in view of the reduction in the supply, all fish which is suitable for direct consumption should be used for consumer purposes. The Report stresses the importance of investigating the opportunities which exist for supplying the industry with new and non-traditional species of fish, since it is recognized that the fish-meal and fish-oil industry may be subjected to supply difficulties as a result of the limits imposed on the size of the catch.

It is also emphasized that the opportunities for importing raw materials for the fish industry should be made as easy as possible. As far as the improved utilization of production capacity is concerned, in particular for the filleting of roundfish, attention is drawn to the need for improved control of the supply of fish and for the extension of cold storage capacity.

On the basis of the above considerations, the following recommendations were submitted to the Minister of Fisheries:

1. That concrete proposals should be worked out for the provision of financial assistance in support of the production of whiting fillets;
2. That Law No. 124 of 27.03.1978 in respect of the provision of grants for structural measures should be extended;
3. That facilities should be provided for financial support to be made available for the marketing of fish and fish products;
4. That proposals should be worked out for a Bill in respect of State guarantees for operating loans to the consumer fish industry.

The following survey of the legislation in respect of support for the fisheries and for the fish industry shows that points 2 and 4 of the recommendations have been followed up in subsequent legislation. Furthermore, a Bill has been introduced in respect point 1. (This Bill became law by the Act of 24 June 1980).

4.2 Danish fisheries legislation

4.2.1 General legislation

The framework for the Danish fisheries is laid down in the following four Laws:

1) Law No. 195 of 26.05.1965, with subsequent amendments,

in respect of salt-water fisheries contains general regulations in respect of fisheries conducted in Danish waters, including regulations in respect of permission to engage in fisheries and the protection and promotion of fish stocks. The Law allows the Minister of Fisheries, after negotiations with the principal fisheries organizations and after consultations with the Danish Institute for Fishery and Marine Research, to introduce additional regulations, if required, particularly in respect of the protection and promotion of fish stocks.

2) Law No. 210 of 19.05.1971 in respect of international

control measures stipulates that the Minister of Fisheries, when drawing up regulations in accordance with international agreements relating to fisheries, shall consult with the Danish Fisheries Association and with the Danish Deep-sea Fisheries Association.

3) Law No. 562 of 21.12.1972, with subsequent amendments,

in respect of the application of the Directives of the European Economic Community relating to the establishment of a common structural policy for the

fisheries sector and to common marketing arrangements for fish products empowers the Minister of Fisheries to lay down such Regulations and implement such measures as are necessary for the application of the Directives of the EEC in respect of a joint structural and marketing policy for the fisheries sector in Denmark.

4) Law No. 221 of 23.05.1979 in respect of the control of fisheries is intended to ensure that Danish fish resources are used in accordance with an overall plan, with emphasis being placed on:

- the preservation and regeneration of fish resources;
- the utilization of the resources;
- the interrelation between the extent of the resources and the capacity of the fisheries sector;

- economic and employment considerations within the fisheries, the processing industry and other associated businesses, both generally and specifically in the individual geographic regions.

The Minister of Fisheries may, with regard to the administration of the resources, implement such measures as are necessary for the control of the fisheries. The Law refers to a series of measures which indicate the nature of the regulations which may be considered in the coming years.

The following measures are referred to:

- 1) dividing up the available catches by period and by fishing ground;
- 2) full or partial interruption of fishing for and landing of certain specified species;
- 3) allocation of available catches by means of specifically defined quotas for groups of vessels, for individual vessels or for types of gear;
- 4) allocation of available catches with regard to their eventual use, including use for feedstuffs or for human consumption;
- 5) rules in respect of maximum fishing time, number of landings and permissible catch per landing; and
- 6) special quotas relating to fish caught unintentionally.

It is also recommended that the Minister of Fisheries should, as part of the aforementioned measures, make the permission to engage in fisheries subject to the granting of a licence.

The following special conditions should apply to licences:

- licences may be granted only to active professional fishermen;
- the licence may not be transferred without the approval of the Minister of Fisheries;
- the Minister of Fisheries may withdraw the licence of any holder who breaks the licensing conditions.

As a means of adjusting the capacity of the fishing fleet to suit the available fish stocks, the Minister of Fisheries is empowered by the Law to require approval to be given for

fishing to take place from vessels which have not previously been registered as fishing vessels. Such approval may be conditional upon fishing only being done for specified species, or upon a fishing vessel of a precisely defined type being withdrawn from use in connection with fishing.

Advisory committees have been appointed (cf. Section 4.3) to assist the Minister in the application of the latter two Laws.

4.2.2 Legislation in respect of short-term assistance to industry

Recent years have seen the introduction into the fisheries sector of industrial assistance legislation. Before 1978, the assistance to industry provided by the Ministry of Fisheries was of limited extent and was restricted to grants of very modest size and to the provision of loans by the Fiskeribanken (Fisheries Bank).

In view of the increasingly severe intervention in the fisheries in recent years, partly as the result of international agreements, a financial support policy was introduced in 1977 with the specific aim of amending the structure of the fisheries businesses.

Subsidies

Subsidies totalling Kr 48 million in support of the fisheries industry were approved between April and December 1978. The sum approved in 1979 was Kr 115 million.

Fisheries

Law No. 261 of 08.06.1977 permits subsidies to be paid for modifications to or the replacement of boat engines when such modification or replacement would result in a considerable improvement in the use of energy. The subsidy available is up to 40% of the costs associated with the energy-saving measure. Approval was given in the financial year 1977/78 for subsidies to a value of Kr 10 million, to be carried forward to the following financial year.

Law in respect of supplementary grants for the financial year 1977/78 (Employment subsidies, etc.). This Law enables grants to be paid for research into fisheries in new fishing grounds, or for as yet unexploited stocks or with as yet untried methods and gear. Kr 5 million were approved for this purpose in 1978, and the approval was extended under the Finance Act for 1979.

Law No. 113 of 29.03.1978 enables grants to be paid in respect of consultancy fees incurred by the fisheries organizations. Approval was given for the payment of Kr 1.5 million in each of the years 1978, 1979 and 1980.

Law No. 271 of 08.06.1978 and Law No. 23 of 07.02.1979 enables financial assistance to be provided for the temporary laying-up of fishing vessels. Kr 25 million was approved in 1978, with a further Kr 25 million in 1979.

Law No. 177 of 03.05.1979, which is an extension of Law No. 255 of 08.06.1977, enables grants to be paid in respect of investments in fishing vessels which will increase the level of productivity when handling the catch, including investments made with the aim of increasing the use of the catches for consumer purposes. Grants may also be paid in respect of consumer fishing for fish stocks which have been utilized only to a limited extent for consumer purposes. Grants are available to cover up to 25% of the costs approved by the Minister of Fisheries. Approval was given for the

payment of Kr 20 million in 1979 and for the payment of Kr 19 million in 1980.

Law No. 179 of 03.05.1979 enables grants to be paid in respect of the breaking up or sale for other purposes, or to a country which does not fish in EEC waters, of fishing vessels built before 1966. Kr 50 million were approved in 1979.

Law in respect of supplementary grants for the year 1980.

This Law provides a maximum facility of Kr 23 million to cover certified additional costs incurred in connection with alternative fishing for Norway pout in the period 1 October 1979 to 31 January 1980.

Fisheries and the fish industry

Authorization resulting from comments on the Finance Act for 1979. The Finance Act of 1979 makes available a maximum facility of Kr 1.3 million (Kr 3.7 million in 1978) to enable grants to be paid in respect of measures to increase productivity in the fisheries and in the fish industry for which no State funds had been provided.

The fish industry

Law in respect of supplementary grants for the financial year 1977/78 (Employment subsidies, etc.) enables financial support to be paid for consultancy services within the consumer fish industry. Kr 0.5 million were approved for this purpose in 1979, and Kr 0.5 million in 1980.

Laws No. 124 of 29.03.1978 and No. 9 of 09.01.1980 enable financial support to be provided for the development and rationalization of the consumer fish industry and for sales promotion measures in respect of processed fish products. Grants of up to 25% of the cost of the project are available. When allocating grants, account is taken of the availability of grants from the EAGGF in accordance with Council Directive 355/77. Kr 13 million were approved in 1978, and Kr 12 million in each of the years 1979 and 1980.

Loans and guarantees

Law No. 388 of 26.06.1975, with subsequent amendments, enabling the Minister of Fisheries to issue guarantees for

loans to professional fishermen within a limit of Kr 35 million in the financial years 1975-76 and 1976-77, in view of the fact that professional fishermen had encountered financial problems due to the drop in the price of fish. In the 1978 financial year, the State assumed responsibility for debts totalling Kr 0.6 million, and a similar amount is budgetted for 1980.

Similar legislation has been in force for the consumer fish industry. In 1979 the Minister of Fisheries was able, pursuant to Law No. 22 of 07.02.1979, to issue guarantees within a ceiling of Kr 50 million. Any part of the sum guaranteed which is not used in 1979 may be carried forward to the following year.

Law No. 270 of 08.06.1978. Pursuant to this Law, the Minister of Fisheries is empowered to make available in 1978 State financial assistance for the partial repayment of interest on loans made available by the Fisheries Bank of the kingdom of Denmark, within a ceiling of Kr 50 million. The loans were made available to fishermen who had been faced by financial problems due to the restrictions imposed on catches. The level of assistance provided by the State under this arrangement was Kr 2.1 million in 1979.

See also the Section relating to the Fisheries Bank of the kingdom of Denmark.

For details of general public assistance measures, see the Appendix and Part II, Section 2.6.

4.2.3 Other legislation

Quality legislation

The Law in respect of the quality control of fish and fish products of 12.05.1965, with subsequent amendments, stipulates:

- That fish intended for human consumption, both landed by Danish fishermen and imported fish, shall not be spoilt, contaminated or in any other way unfit for human consumption;
- That fish for human consumption shall not be offered for sale under conditions which may mislead the purchaser;
- That premises used for the storage, transport and processing of fish and fish products for human consumption shall be kept clean and in good repair;
- That equipment, implements and packaging of all kinds shall be clean and in good repair, and easy to keep clean;
- That individuals involved in the processing of fish and fish products shall observe adequate standards of cleanliness with regard to their personal hygiene and clothing;
- That the wholesaling of fish and fish products may take place only after an application to engage in wholesaling has been approved by the Minister of Fisheries;
- That the commercial processing and cold storage of fish and fish products shall take place only in a firm which has been authorized by the Minister of Fisheries, and that such authorization shall be given only to firms which are

equipped in such a way as to comply with the above requirements in respect of premises, etc.;

- That the Minister of Fisheries shall be empowered, after having consulted with the quality committee (see p. 206), to draw up Regulations (Orders) requiring compliance with the above stipulations.

Pursuant to this Law, Orders have been published in respect of the following, amongst other points:

- The handling of fish and fish products on board fishing vessels;
- The addition of preservatives to fish used for animal feedstuffs;
- The refrigeration of raw materials for the fish-meal and fish-oil industry;

- The storage and transport on land of fresh fish and fresh fish products;
- The sorting of fish for sale on the domestic market.

Laws in respect of the manning, building and equipping, etc., of fishing vessels.

Law in respect of the manning of ships of 02.04.1965, with subsequent amendments, and the Merchant Shipping Act of 26.06.1979, contain regulations relating to the size and training of the crew on board fishing vessels.

The Law in respect of the manning of ships contains stipulations relating to the size of the crew on fishing vessels and to the training of the crew. The Merchant Shipping Act lays down those requirements which apply to the content of the training provided for members of the crew. In accordance with the Law in respect of the manning of ships, no regulations apply to vessels of less than 20 g.r.t. The skipper and second mate(s) on vessels of more than 20 g.r.t. shall be in possession of the maritime trading certificates indicated in Figure 4.1.

No regulations exist in respect of the size and training of the rest of the crew, although the Minister of Trade may stipulate that any person who signs on as a seaman on board a fishing vessel shall have attended one of the vocational training courses approved by the Minister.

FIGURE 4.1 Manning levels on fishing vessels.

Size of vessel in tonnes	Vessels operating east of lat. 4°W and south of long. 6°N, and in the Faroes and the Faroes Bank	Atlantic Ocean north of lat. 35°N		Vessels operating in all waters.
		East of long. 30°W and in the adjacent part of the Arctic Ocean	West of long. 30°W and in the adjacent part of the Arctic Ocean	
20 and above, but not exceeding 50	Skipper 3rd Class. Second Mate with navigational certificate	Skipper 2nd Class. Second Mate to have passed 3rd Class skipper's exam.	Skipper 1st Class. Second Mate to have passed 2nd Class skipper's exam.	Skipper 1st Class. Second Mate to have passed 1st Class skipper's exam.
Over 50, but not exceeding 500	Skipper 3rd Class. Second Mate to have passed 3rd Class skipper's exam.	Skipper 2nd Class. Second Mate to have passed 3rd Class skipper's exam.	Skipper 1st Class. Second Mate to have passed 2nd Class skipper's exam.	Skipper 1st Class. Second Mate to have passed 1st Class skipper's exam.
Over 500	Skipper 2nd Class. Two Second Mates, each having passed 3rd Class skipper's examination.	Skipper 1st Class. One Second Mate to have passed 2nd Class skipper's exam. One Second Mate to have passed 3rd Class skipper's exam.	Skipper 1st Class. One Second Mate to have passed 1st Class skipper's exam. One Second Mate to have passed 2nd Class skipper's exam.	

Source: Law in respect of manning, Section 26.

The principal Law relating to the building and equipping of ships is the consolidate Act No. 336 of 31.08.1965 in respect of the Law relating to the inspection of ships.

This Law applies only to vessels of more than 20 g.r.t. In the case of vessels of less than 20 g.r.t., the Minister of Trade will determine whether and to what extent the provisions of the Law shall be applied. The following applies to vessels of more than 20 g.r.t.:

- The hull and machinery, etc., shall be of adequate strength and shall be in good condition;
- The vessel shall exhibit the necessary stability and manoeuvrability for safe navigation;
- The vessel shall be equipped with the necessary navigational instruments and, as a safety measure, shall be equipped with adequate radio facilities;
- Adequate measures shall have been taken to guard against accidents and fire, and the vessel shall be fitted with the necessary safety equipment;
- The vessel shall be provided with accommodation for the crew in accordance with the precisely defined guidelines, and shall carry the prescribed medical supplies.

Inspection to ensure compliance with the provisions of the Law and with the stipulations laid down pursuant to the Law is the responsibility of Statens Skibstilsyn (Government Ships' Inspectorate), which reports to the Ministry of Trade.

Each and every vessel shall have a trade certificate which

indicates the voyages for which the vessel may be used (i.e. the waters in which the vessel may sail). The certificate is valid for 12 years, on condition that the vessel is inspected at regular intervals. The Minister of Trade is empowered to lay down stipulations relating to compliance with the provisions of the Law.

For the purpose of defining the provisions of the Law, Orders have been published in connection with measures to counter the health risk associated with cargoes of industrial fish and in connection with the accommodation provided for the crew on fishing vessels, together with regulations relating to the building and equipping of vessels, etc.

Insurance against industrial accidents

The Law in respect of insurance against industrial accidents of 08.03.1978 places the employer under an obligation to insure any person whom he employs for more than 400 hours per year against industrial accidents. The employer is also under an obligation to report any industrial accidents which involve claims for services to be provided in accordance with the Law, or which result in absence from work of more than five weeks, to the Health Insurance Department of the Ministry of Social Affairs or to the insurance company of the person concerned, which will then assume responsibility for making the report. Any diseases resulting from the execution of his duties by the worker must also be reported.

4.3 Administration

The administration of the legislation relating to fisheries is the responsibility of the Ministry of Fisheries. The net cost to the Treasury budgetted in the 1980 Finance Act for the Ministry of Fisheries totalled Kr 111 million.

The Ministry of Fisheries consists of a Department which is divided into three Offices and a number of associated Institutions and Boards.

Ministry of Fisheries

The duties of the Ministry of Fisheries (the Department) include organization and staff, the administration of the

fisheries legislation and the quality control legislation, the participation by Denmark in international fisheries agreements, fisheries statistics, the conditions under which the fisheries industry operates and other commercial policy interests, as well as membership of international economic organizations such as the European Communities, the FAO, the OECD and GATT. The Department is also responsible for the budget and the accounts of the Ministry and its Institutions.

The expenditure of the Department is budgetted at Kr 10 million for 1980, which mainly represents the salaries paid to about 60 full-time employees.

Institutions and Committees, etc., of the Ministry of Fisheries

Fisheries Attachés

Fisheries Attachés are stationed in Bern, Brussels and New York to promote the export of Danish fish and fish products. The 1980 Finance Act contains an appropriation of Kr 1.6 million to cover their activities.

Fisheries Research

The Danish Institute for Fishery and Marine Research. The 1980 Finance Act contains an appropriation of Kr 13 million in respect of the activities of the Institute, of which Kr 9 million represent the salaries paid to 74 full-time employees. Further details of the duties and activities of the Institute appear in Section 2.8.3.

A new marine research vessel is currently being built at a cost of Kr 86 million for the Ministry of Fisheries. The ship is expected to be ready at the beginning of 1981.

The 1980 budget of the Ministry of Fisheries Research Laboratory is Kr 3.5 million, of which Kr 2.8 million represent the salaries of the full-time staff of 24. Further details of the duties and activities of the Laboratory appear in Section 2.8.3.

Inspection and control measures

A total of Kr 17 million were approved for inspection and

control measures. Of this sum, Kr 15 million was for the Fisheries Inspectorate and Kr 2 million for the factories inspectorate of the Ministry of Fisheries.

Fisheries Inspectorate

The job of the Fisheries Inspectorate is to check compliance with the provisions of the Law relating to salt-water fisheries, the Law relating to fresh-water fisheries, the Law relating to the quality control of fish and fish products, the Law relating to coastal protection and the Law in respect of watercourses as far as concerns the pollution of fishing grounds.

A total of 122 persons were employed on a full-time basis in 1980 in order to execute the duties of the Fisheries Inspectorate.

The Fisheries Inspectorate is divided up into four regional fisheries inspectorates. The fishing ports in North Jutland and East Jutland come under the Inspector of Fisheries in Frederikshavn.

The fishing ports on the west coast of Jutland to the south of the Liim Fjord and on the island of Fyn come under the Inspector of Fisheries in Esbjerg.

There are also Inspectors of Fisheries in Copenhagen and in Godthåb on Greenland. Staff from the Fisheries Inspectorate are stationed in each of the major fishing ports.

For the control of fisheries at sea, the Fisheries Inspectorate has at its disposal five small patrol vessels plus the fisheries control vessel 'Havørnen', which carries out controls in the waters off Skagen, and the fisheries control vessel 'Havsmågen', which carries out controls in the home waters this side of Skagen.

Factories inspectorate of the Ministry of Fisheries

The expression 'factories inspectorate' shall be understood to mean the inspection of the firms which have been approved by the Ministry of Fisheries and the quality control of the fish products manufactured by these firms. The factories inspectorate is also responsible for the inspection of imported fish products.

The factories inspectorate also coordinates the involvement of the Fisheries Inspectorate in the execution of its control and inspection duties. The Factories Inspectorate will have 13 full-time employees in 1980.

Lifeboats

The Ministry of Fisheries has four lifeboats, stationed at Esbjerg, Thyborøn, Skagen and Nexø. These vessels also perform a certain amount of fisheries inspection work.

The Fisheries Bank of the kingdom of Denmark

The Bank is a legally constituted private institution, in respect of which the most recent legislation is contained in Law No. 54 of 17 February 1978.

The aim of the Fisheries Bank is to provide loans in support of Danish fisheries and firms which process and sell fish and fish products.

The Bank is managed by a Board of five directors, four of whom are appointed by the Minister of Fisheries and one by the Minister of Finance. Represented on the Board are the Ministry of Fisheries, the Kongeriket Danmarks Hypotekbank (the Mortgage Bank of the kingdom of Denmark), the Danish Fisheries Association, the Danish Deep-sea Fisheries Association and the Danish Association of semi-skilled workers.

The Fisheries Bank acts as a credit bank for the fisheries sector in a similar manner to the other real property mortgage institutions, and receives no operating subsidies from the Government. Nevertheless, the Government does guarantee the interest and repayments on the debentures issued by the Fisheries Bank. A ceiling on the total amount which may be lent is fixed each year in the Finance Act and was Kr 200 million in 1980.

Loans of up to 85% of the contract price are provided for the purchase of fishing vessels, with a repayment period of 20 years. In addition to investment loans, the Fisheries Bank also makes available loans to pay debts owed to suppliers, loans to cover exchange losses and re-financing loans.

The fish industry is able to take loans of up to 75% of the cost of building work and of up to 60% of the cost of machinery, etc. The repayment periods are 30 and 10 years respectively.

A special Order was introduced in 1978, pursuant to which the Fisheries Bank is able to make cash advances at low rates of interest (10%). Such loans are repayable over 10 years and may, within a ceiling of Kr 60 million for 1980, be advanced on the one hand to enable investments to be made in the fish industry in order to promote exports and on the other hand to enable engines and other equipment on board fishing vessels to be renewed.

Committees, etc.

Quality Committee and Appeals Board

The Quality Committee and the Appeals Board have been established pursuant to the Law in respect of quality.

Quality Committee

The purpose of the Committee is to assist the Minister of Fisheries in all matters relating to the quality control of fish and fish products, and the Committee is made up of six representatives of the industry, one representative of the National Health Service and one representative of the Ministry of Fisheries.

Appeals Board

The purpose of the Board is to act as an appeals authority with regard to decisions taken by the authorities responsible for inspection affecting products other than fresh fish and fish products, fish puree, boiled and fried fish products, and products with similar keeping properties. The Appeals Board is made up of one representative of the Ministry of Fisheries, one representative of the Ministry of Fisheries Research Laboratory and three representatives of the industry, of whom two are appointed by the local association concerned by the matter in question.

§-2 Committee

To assist the Minister in drawing up regulations pursuant to Law No. 562 of 21.12.1972 in respect of the application of the Directives of the European Economic Community relating to the control of fisheries, a Committee has been appointed in accordance with Section 2 of said Law (the §-2 Committee) consisting of two representatives of the Ministry of Fisheries and 14 representatives of the industry and of consumers.

Committee appointed pursuant to the Law in respect of the control of fisheries (§-9 Committee).

To assist the Minister in the application of the provisions of Law No. 221 of 23.05.1979 in respect of the control of fisheries, an advisory committee has been appointed made up of one representative of the Ministry of Fisheries, one

representative of the Danish Institute for Fishery and Marine Research and eight representatives of the industry.

Experimental Fisheries Committee

To assist the Minister in the allocation of subsidies for experimental fisheries, a Committee has been appointed, made up of representatives of the Ministry of Fisheries, the Ministry of Fisheries Research Laboratory, the Danish Institute for Fishery and Marine Research, the trade associations of the fisheries sector and the Danish Association of semi-skilled workers.

Appendix I

Specific Orders providing financial assistance

	Kr million	
	1978 (Apr.-Dec.)	1979
Experimental fisheries, Finance Acts of 1978 and 1979	5.0	5.0
Consultancy subsidies to the fisheries, Law No. 113 of 29.03.1978	1.5	1.5
Laying-up of vessels, Law No. 271 of 08.06.1978 and Law No. 23 of 07.02.1979	25.0	25.0
Structural grants to the fisheries, Law No. 117 of 03.05.1979	0.0	20.0
Breaking-up of vessels, Law No. 179 of 03.05.1979	0.0	50.0
Productivity subsidies, supplement to the Finance Acts of 1978 and 1979	3.7	1.3
Consultancy subsidies to the fish industry, Finance Acts 1978 and 1979	0.0	0.5
Structural grants to the consumer fish industry, Law No. 124 of 29.03.1978 and Law No. 9 of 09.01.1980	13.0	12.0
	<hr/> 48.2	<hr/> 115.3

Appendix II

General legislation in Denmark in respect of assistance
to industry

Ministry of Fisheries 1978

Order	Reference	Purpose	Nature of assistance	Limits	Conditions	Administration
Technological service	Law No. 142 of 21 March 1973	Exploitation of technological advances	1) Loans 2) Grants	Annual appropriation to the Technology Committee of about Kr 150 million	Results of projects to be made available to the public	Technology Committee, Bredgade 31
Government subsidies for product development	Law No. 470 of 14 Sept. 1977	Stimulation of employment by promotion of exports or production to compete with imports	Grants	A total of Kr 127.5 million for 1977 and the following three years	Up to 40% of certified additional costs for product development, of Kr 50 000 and above	Secretariat for the Technology Committee and the State Technical Testing Board, Bredgade 31
Employment subsidies for the long-term unemployed	Law No. 298 of 8 June 1978	To assist the long-term unemployed to escape from unemployment, thereby preventing their working capacity from being lost to society	Grants of Kr 20 per hour worked for the first 3 months, Kr 15 for the next 3 months, and Kr 10 for the final 3 months, after which grants are no longer paid	Kr million '78 '79 State 90 670 Communes 60 670	Unemployed under the age of 60, who are members of approved unemployment funds and who are just over the limit for payment of a subsistence allowance	Commune of residence
Youth employment grants to private firms	Law No. 488 of 14 Sept. 1977 and Ministry of Employment circular of 15 November 1977	To provide unemployed young people with rapid access to active employment	Grants of Kr 10 per hour worked for up to six months		Available to private firms which increase the number of employees in the period of the grant, and which give at least 3 months work to a young unemployed person	Job Centres and Employment Boards. The commune comes to a decision on the application and notifies the firm of the outcome of the matter

Order	Reference	Purpose	Nature of assistance	Limits	Conditions	Administration
Loans for energy-saving purposes	Law No. 170 of 4 April 1973	To provide loans for energy-saving investments, reducing the dependence on oil as a fuel	Loans at 3/4 of normal interest rate	Approx. Kr 400 million (of which Kr 200 million has been used)	Own capital of 1/3 of sum invested is generally required, but each case is assessed individually, based on creditworthiness of firm	Finansieringsinstituttet for Industri & Håndværk (Industrial & Trade Finance Company)
State subsidies for energy-saving measures connected with industrial processes	Law No. 261 of 8 June 1977	To provide subsidies for firms in the trade & industry sectors for altering processes to achieve very much better use of energy	Subsidies (the Order is valid until 31.12.1980)	Kr 80 million, of which Kr 10 - 15 million have been used	a) for investments over Kr 100 000 : up to 40% subsidy, to a maximum of Kr 800 000 b) for investments under Kr 100 000 : up to 40% subsidy, to a maximum of Kr 40 000	Secretariat for the Technology Committee and the State Technical Testing Board
State subsidies for energy-saving measures relating to industrial buildings	Ministry of Housing consolidate Act No. 498 of 14 Sept. 1977	To promote employment and energy-saving	Subsidies	1978 Kr 75 million	30% of approved costs; min. Kr 1 000 ; max. Kr 100 000	Commune of residence

Order	Reference	Purpose	Nature of assistance	Limits	Conditions	Administration
Regional development	Law No. 219 of 7 June 1972 and item of 3 February 1976 in Ministerial Bulletin No. 21, p.63	To provide assistance for industrial and other commercial development in areas of the country where this is important for general social and cultural progress	1) Loans at 7.5% annual interest 2) Subsidies 3) Guarantees	1977/78: 1) Loans Kr 145 million 2) Subsidies Kr 60 million 1978: 1) Kr 118.5 million 2) Kr 51.5 million	1) Loans of up to 90% of installation costs 2) Subsidies of up to 25% of installation costs	Regional Development Directorate, Silkeborg
K-Loans	August Balance II August 1977	To reduce the cost of installation finance by means of exchange stabilization loans without risk of exchange losses, borne by the State in 1978 and 1979	Loans (exchange stabilization loans are 'mixed' with cash loans and are made available at an average interest rate of about 13%	1978: Kr 220 million 1979: Kr 110 million (For industry) The Order will be extended in 1979 and 1980 by 1 000 million kroner in each year for each sector	Financing of fixed asset investments in trade and industry	Finansieringsinstituttet for Industri og Håndværk A/S
Promotion of exports	Law No. 145 of 21 April 1965, with subsequent amendments	Assistance for collective measures to promote exports	Subsidies	1977/78: Kr 75 million, of which Kr 46 million is unused	Collective export support to at least 3 financially unconnected firms, with participants paying a min. of 50% of cost	Eksportfremmerådet Danmarks Erhvervsfond (Export Promotion Board, Danish Economic Fund

Order	Reference	Purpose	Nature of assistance	Limits	Conditions	Administration
Export credit	Law No. 145 of 21 April 1965, with amendments; most recent Law No. 237 of 12 June 1975	1) to provide guarantees to companies against losses on export deals 2) to stand surety for loans for export purposes	-	Kr 22 000 million, which may be increased as required	Depends on the nature of the guarantee or surety	Secretariat of the Export Credit Board
M-Loans (Export and Environmental Loans)	Law No. 170 of 4 April 1973	To facilitate the financing of investments directed at exports or at competing with imports	Loans at a rate of interest of about 12%, with a period of repayment of 4 - 8 years	A total of Kr 400 million	Establishment of new, or extension of existing production facilities, reorganization or promotions in new markets and special investments in existing markets	Finansieringsinstituttet for Industri og Håndværk (Industrial and Trade Finance Company)
European Investment Bank	Articles 129 and 130 of the Treaty of Rome and associated protocol relating to the regulations	To contribute to the balanced and even development of the EEC. Mainly regional development	1) Individual loans 2) Global loans	Total loans from EIB in 1977 to EEC countries: 1352.5 mill ERE = about Kr 9467.5 million. To Denmark 32.7 million ERE = about Kr 228.9 million. Of the loans to Denmark, Kr 145.6 million is a global loan for small and medium-sized firms	1) Loan of up to a max. of 50% of total investment; minimum loan Kr 3.5 million 2) Determined respectively by Regional Development Directorate and Industrial and Trade Finance Company.	1) European Investment Bank, Luxembourg 2) Regional Development Directorate and Industrial and Trade Finance Company.

Order	Reference	Purpose	Nature of assistance	Limits	Conditions	Administration
Loans for environmental purposes	Law No. 170 of 4 April 1975	Loans for environmental purposes at suitable rates of interest	Loans at 3/4 of normal interest rate	A total of Kr 400 million	Fixed investments within trade and industry. Own capital of 1/5 of sum invested usually required	Finansieringsinstituttet for Industri og Håndværk (Industrial and Trade Finance Company)
Assistance for environmental investments (Expires on 31.12.1980)	Law No. 682 of 23 Dec. 1975, with associated consolidate Act of 16 March 1976	To help firms in business since 1 Oct 1974 to comply with the provisions of the Environmental Protection Act, without impairing competitiveness	1) Guarantees (for up to 90% of sum invested) 2) Subsidies 3) Reduced interest	Approximately Kr 45 million annually	Considerable reduction in pollution of surrounding areas	Miljøkreditrådet Miljøstyrelsens 11. kontor. (Environmental Credit Board, Office 11 of the Environment Board)
Development Fund (a fund to promote technical and industrial development)	Law No. 104 of 20 March 1970	Development of new products	1) Loans (free of interest during development period, after which interest is charged at bank rate) 2) Possibly other forms of assistance	Fund as at 1 April 1977: Kr 81 million	Reasonable technical innovation value and likelihood of profitable future industrial production in Denmark	Udviklingsfondet, Nyropsgade 28 (The Development Fund)

1. Frame of reference for the analysis

Whereas Part I of this survey is an industry-related geographical and economic description of the fisheries sector on Jutland, the aim of Part II of the survey is to analyze the socio-economic situation of the fisheries sector, as it was at the end of the 1970s.

A 6 x 6 matrix has been used as the structural framework for the analysis, in which the rows of the matrix cover the fisheries sector in the form of six sub-sectors (the 'fisheries system') and the columns of the matrix cover six categories of underlying conditions for industrial activity within the sector (cf. Figure 1.1).

1.1 Structure of the fisheries sector - the 'fisheries system'.

The analysis divides up the fisheries sector on the basis of the 'flow' of raw materials into six sub-sectors, which together form the main elements of the Danish fisheries system. The fisheries system contains elements other than those referred to, for instance the administrative and organizational apparatus associated with the fisheries sector, but which have not been included as specific items in the analysis. The six sub-sectors are as follows:

- 1) Fish stocks;
- 2) Fisheries;
- 3) Service companies and suppliers in the fishing ports;
- 4) fresh fish trade;
- 5) Consumer fish industry and
- 6) Fish-meal and fish-oil industry (cf. Figure 1.1).

1) Fish stocks

The stock of fish is the primary element of the fisheries system and forms the basis of production in both the primary sector (the fisheries) and the subsequent links in the production chain (the secondary and tertiary sectors).

In line with the other EEC countries, Denmark has no claim to national ownership of the fish resources in the sea around its coastline, except in certain cases. Thus, to all intents and purposes, the 'natural basis' of the Danish fisheries at the start of each year consists of the potential catches by species/waters/quantities which are allocated to Denmark each year in the political negotiations relating to permissible catches in and outside the EEC sea. At the end of the year, the natural basis may be totalled up to give the actual catch for the year in question.

2) Fisheries

The second sub-sector of the fisheries system is the primary sector, which extracts the natural resource. This sector is made up of a large number of fisheries businesses (vessels), which, as independent units, employ a large number of persons directly in the fisheries. The living conditions of the section of the population concerned with the fisheries are governed to an overwhelming extent by the output and earning capacity of the individual vessels, due in part to the low degree of horizontal integration between the businesses (vessels) and to the predominant system of paying wages on a percentage basis (cf. Part I, Section 2.2.3).

3) Service companies and suppliers in the fishing ports

The third sub-sector of the fisheries system is made up of the service companies and suppliers to the local primary sector, whose production is determined to the very greatest extent by activities within the fisheries. This sector is, as may be seen from Part I, Section 2.6, of considerable significance to the fisheries communities as far as employment is concerned. The sub-sector is made up of a highly uniform group of trading and industrial businesses which, from the point of view of their activities, belong to a variety of industrial sectors. Due to specialization and to their close association with the fisheries sector, the firms which make up this sub-sector are more dependent on the economic situation within the fisheries sector, than

they are on the economic situation in the industrial sector in which, generally speaking, they are categorized on a statistical basis.

4) Fresh fish trade

The fourth sub-sector of the fisheries system is the fresh fish trade, by which is meant in this context the trading in fresh, chilled or frozen whole fish and cut herring. To a certain extent, the fresh fish trade is conducted as a subsidiary activity in certain areas of the fish industry, and as such is difficult to distinguish from the fish industry as a whole. The reason for identifying this activity as a separate sub-sector is its considerable significance to the sale and price level of fish in the first stage of the distribution chain, and the fact that the majority of Danish consumer fish landings are sold by wholesalers to foreign markets in fresh, unprocessed condition.

5) Consumer fish industry

The fifth sub-sector of the fisheries system is the consumer fish industry, which has been divided up in this survey into what is from the production and marketing point of view a uniform sector producing semi-manufactured goods (the filletting industry) and a more heterogeneous sector producing finished goods. The production base of the industry is essentially that proportion of the consumer fish landings in Danish ports which is not sold to the fresh fish trade plus, to a less extent, commercially imported raw materials. In terms of the employment which it provides, the consumer fish industry is of considerable importance to a number of the Danish fishing communities (mainly on Jutland).

6) Fish-meal and fish-oil industry

The sixth sub-sector of the fisheries system is the fish-meal and fish-oil industry. The sector is characterized by its homogeneous nature in terms of raw materials, finished goods, production technology and market conditions. The production base of the fish-meal and fish-oil industry is the landings of the industrial species sand eels, sprats and Norway pout, which a considerable proportion of the Danish fishing fleet has specialized in catching, and which may not be processed for consumer purposes in the traditional sense. The secondary production base is waste from the consumer fish industry. This sector differs from the consumer fish

industry in that it is much more capital-intensive, for which reason its significance in terms of employment on land, compared to that of the consumer fish industry, is relatively modest. However, because this sector turns over very large quantities of raw materials in the course of a year, it is of considerable importance for employment in the primary sector (cf. Part I, Section 2.9).

1.2. Changes in the underlying conditions for the fisheries system in the 1970s

The activities within each sector of industry take place within a framework of underlying conditions determined by society. The underlying conditions are of a general nature and are determined by the overall social system. These underlying conditions are common to several (all) sectors of industry and vary relatively little with time. Thus the overall underlying condition for the Danish fisheries

sector is a liberal market economy with, by western European standards, an unusually clear distinction between the public and the private sectors.

Other underlying conditions are more specific in nature and are associated with one single, or possibly several sectors of industry. Underlying conditions of this kind will normally vary a great deal with time.

The analysis which follows will concentrate on illustrating the socio-economic effect of those changes which have taken place in specific underlying conditions in the latter half of the 1970s.

For the purposes of analysis, the underlying conditions will be grouped together into the following six categories:

- 1) Management of resources;
- 2) Price movements on production input;
- 3) Marketing regulations and price movements relating to fish and fish products;
- 4) International market conditions;
- 5) Specific legislation in respect of assistance to industry;
- and 6) General industrial legislation (cf. Figure 1.1).

1) Management of resources

The heading 'Management of resources' covers the types of underlying conditions in which changes which have taken place in recent years have had the most far-reaching consequences for industrial activities within the fisheries sector.

Whereas the control of the fisheries in the waters around Denmark up to the middle of the 1970s had been applied only to a limited extent and with specific aims in view (technical measures), a state of affairs arose in the 1970s in which circumstances other than nature set a limit to what may be fished and where such fishing may take place. The extension of fishing limits in the north-east Atlantic, the establishment of a common EEC sea with restricted national fisheries zones, and the control of catches on the basis of biological advice and the imposition of quotas on catches have had the effect in recent years of changing considerably the conditions for the Danish fisheries as far as resources are concerned. Similarly, technical innovations or alterations to a number of points have varied the conditions under which trade is conducted by comparison with the previous state of affairs.

2) Price movements on production input

Price movements on raw materials, capital and labour are an underlying condition of considerable significance to production and revenue in all sectors of industry.

The reason for identifying price movements on the production input of the fisheries system as a specific underlying condition is that major changes in the price structure of the production input in recent years have influenced the production conditions in the sub-sectors of the fisheries and have contributed to making it more difficult to adjust to the changed conditions relating to resources.

3) Marketing regulations of the European Communities and price movements relating to fish and fish products

Membership of the European Communities involved the Danish fisheries sector in a number of changes in respect of marketing conditions, since the sector is affected by the internal and external marketing regulations of the European Communities.

The aim of the marketing regulations is to control the supply and movements in the price of fish and fish products and, to the extent to which they are applied, to represent a change in the underlying conditions for industrial activity within the fisheries sector, in particular in the conditions associated with the sale of fish between the individual sub-sectors.

4) International market conditions

The sale by the Danish fisheries sector of fish and fish products is affected not only by the marketing regulations of the European Communities, but also by a series of factors related to demand, costs, technical matters and

foreign exchange rates. Major changes in these factors in relation to the conditions which existed previously in traditional export markets have had a very considerable effect on exports of Danish fish products. Thus, in addition to the costs per unit produced which apply at any given time, the international competitiveness of the fisheries sector is also determined by technical and other barriers to trade encountered in export markets.

5) Specific legislation in respect of assistance to industry

The fifth category of underlying conditions consists of the provisional regulations relating to assistance to industry which were introduced at the end of the 1970s pursuant to national legislation and/or EEC Directives, with the direct aim of facilitating the adjustment of individual sub-sectors both to changes in the conditions affecting resources and to any specific objectives which have been set in respect of the fisheries industry.

6) General industrial legislation

Alongside the specific legislation in respect of assistance to industry, recent years have seen the introduction of a series of general regulations relating to assistance to industry, of limited or unlimited duration, in addition to which other legislation and legislation in areas of significance to industry (for instance social and environmental legislation) has brought about changes in the underlying conditions affecting industrial activity in Denmark. This report includes the legislation which has had a significant effect on the development of the fisheries sub-sectors.

1.3 Method of analysis

As mentioned in the introduction to this Chapter, the analysis was made on the basis of a 6 x 6 matrix, as shown in Figure 1.1. The rows of the matrix are the sub-sectors

FIGURE 1.1

Analysis matrix¹⁾

Underlying conditions Sub-sections	1	2	3	4	5	6
	Management of resources (Fisheries control)	Price movements on production input	EEC marketing regulations and price movements relating to fish and fish products	International market conditions	Specific legislation in respect of assistance to industry	General industrial legislation
1 Fish stocks	X					
2 Fisheries	X	X	X		X	X
3 Service companies and suppliers to the fishing ports	X			X	X	X
4 Fresh fish trade	X	X	X	X	X	X
5 Consumer fish industry	X	X	X	X	X	X
6 Fish-meal and fish-oil industry	X	X		X		X

1) The crosses represent those areas which are the subject of analysis in the sub-Sections of the report.

of the fisheries system described in Section 1.1, whilst the columns of the matrix are the categories of underlying conditions referred to in Section 1.2.

This produces 36 areas of analysis, each of which may be described individually in respect of the interaction or mutual effects between the sub-sector and the changed underlying condition. This enables central problem areas to be identified and an explanation to be offered for the cause and effect relationships. Certain areas of analysis are by their very nature empty, since no effect has taken place there or since any effect which has taken place is of indirect nature.

The analysis is done in two stages, with the interaction matrix as its basis. A 'column analysis' is done in Chapter 2, and deals with the significance of individual changes in the underlying conditions to the sub-sectors of the fisheries system. A 'row analysis' is done in Chapter 3, which adds up the overall effect on each individual sub-sector of the changes in the underlying conditions.

The interaction matrix does not seek to represent a complete problem universe, but rather an analysis chart enabling problems which are central to the fisheries sector to be appreciated.

2. Significance of changes in underlying conditions
for individual sub-sectors within the fisheries

2.1. Underlying condition 1 - Fisheries regulations

2.1.1. Fish stocks

The internal management of resources in 1978 and 1979 took place exclusively in the form of national measures, since no agreement on a common fisheries policy could be reached between the EEC countries.

Nevertheless, the Council of Ministers of the European Communities did have a decisive influence (cf. Part I, Section 1.2.2) on national measures resulting from the following decisions: 1) the implemented measures were felt to be necessary in order to preserve and manage the fish resources and should not discriminate against other member countries (regulations in 1978 and 1979); and 2) the measures should take into account the maximum permissible catches proposed by the Commission of the European Communities, as well as any agreements entered into with third countries (regulations in 1979).

The measures may be divided up into regulations which determine:

- A) permissible catches (annual quotas)
- B) other regulations (technical measures).

re A Danish quotas in 1978 and 1979 in the North Sea,
the Skagerrak and the Kattegat¹⁾

Annual quotas for the majority of the species which go to

make up the Danish fisheries were laid down in 1978 in accordance with the compromise reached in Berlin between eight EEC countries.

No annual quotas²⁾ were laid down in 1979, although it is possible to estimate 'quotas' for 1979 on the basis of the proposals for internal distribution of resources made by the Commission of the European Communities in 1978, adjusted to take into account the TACs (total acceptable catches) proposed by the Commission for 1979 and the agreements which had been reached with third countries. These estimated quotas will be used as the basis on which to calculate the potential Danish catch in 1979.

- 1) Quotas in other waters are dealt with separately.
- 2) Quotas were introduced for certain species for part of the year, however.

Danish quotas for 1978 were, on the whole, in line with those proposed by the Commission of the European Communities. As far as concerns the adjustment of the total catch to suit the limited resources, the Commission based its proposals on the TACs which had been proposed by the ICES (International Council for the Exploration of the Sea). The Commission proposed 'safe TACs' based on the 1976 catch for those species for which no TACs were proposed by the ICES due to the absence of an adequate basis for assessment.

In allocating the quotas, the Commission based its approach on the allocation which had been proposed in 1976 by the NEAFC (North East Atlantic Fisheries Commission), and, where no such proposal existed, on the distribution of the actual catch in 1976. The NEAFC key was used because broad agreement had previously been reached on this allocation of resources, and because it took particular account of the inshore fisheries and of the special requirements of certain countries.

The proposal of the Commission of the European Communities adjusted the NEAFC key to allow special allocations to be made to Ireland and to the northern part of Great Britain and in respect of those agreements which had been reached with third countries.

As far as Denmark was concerned, the quotas proposed by the Commission of the European Communities for 1978

represented an overall reduction of 12% in the potential catch in relation to the average catch for the period 1970-77. A distinction must be drawn, however, between consumer fish and industrial fish when assessing the potential catch. Consumer fish in this context includes the species cod, plaice, haddock, herring, mackerel and coalfish, and industrial fish includes the species Norway pout, sprats, sand eels and whiting¹⁾. The aforementioned reduction thus conceals an improvement of 69 000 tonnes (43%) in the potential catch of consumer fish, and a reduction of 235 000 tonnes (20%)²⁾ in the potential catch of industrial fish; cf. Table 2.1.1.

- 1) The industrial fish species blue whiting (Couch's whiting or poutassou) and horse mackerel are dealt with separately on p.22.
- 2) Certain species of fish are used for both consumer and industrial purposes. The industrial catches of haddock and mackerel, which in 1979 accounted for about 25% of said species, are included under the heading of consumer fish, since their industrial use is showing a constant decline. Whiting, on the other hand, is included under the heading of industrial fish, since this species is used almost exclusively for industrial purposes, in spite of present efforts to promote the use of whiting as a consumer fish.

TABLE 2.1.1

Danish catches in the period 1970-77 compared respectively to the Danish quotas for 1978 and the estimated 'quotas' for 1979; 1 000 tonnes,

	I	II	III	II - I		III - I	
	Average catches for the period 1970-77 in the North Sea, the Skagerrak and Kattegat for selected species. 1 000 t.	Quotas for selected species 1978	Estimated quota for selected species 1979	1000 t	%	1000 t	%
Consumer species	161 ¹⁾	230 ³⁾	185 ³⁾	+ 69	+43	+ 24	+15
Industrial species	1184 ²⁾	949 ⁴⁾	985 ⁴⁾	-235	-20	-199	-17

Notes: 1) Cod, plaice, haddock, herring, mackerel, coalfish and whiting.

2) North Sea: Cod, plaice, haddock, herring, mackerel, coalfish, Norway pout, sprats, sand eels and whiting.

Skagerrak and Kattegat: cod, plaice, haddock, herring, sprats and whiting (Norway pout and sand eels are not included, since they are not subject to quotas in the Skagerrak and Kattegat).

Consumer species have been included to the extent that they were landed as industrial fish.

3) Cod, plaice, haddock, herring, mackerel and coalfish (consumer species subject to quota).

4) Norway pout, sprats, sand eels and whiting (industrial species subject to quota).

TABLE 2.1.2

Danish catches in the period 1970-77 compared to Danish catches in 1978 and 1979 respectively; 1 000 tonnes.

	I	II	III	II - I		III - I	
	Average catches for the period 1970-77 in the North Sea, the Skagerrak and Kattegat for selected species. 1 000 t.	Catches in 1978 1)	Catches in 1979 1)	1000 t	%	1000 t	%
Consumer species	161	182	177	+ 21	+13	+ 14	+10
Industrial species	1184	1163	1095	- 21	-2	- 89	- 8

1) See Table 1, Notes 1) and 2)

Source: Supplementary Table 1.

Consumer fisheries 1978

The increase of 69 000 t in the potential catch is made up principally of improvements in the potential catch of coalfish and mackerel in the North Sea, the Skagerrak and the Kattegat, and of herring in the Skagerrak and Kattegat. The potential catch was increased by 31 000 t in the case of coalfish alone. The background to this is that the former involvement of Denmark in the fishing of considerable quantities of coalfish for industrial purposes¹⁾ has given Denmark a high quota for coalfish, which - since coalfish is included only under the heading of consumer fish in this survey - is now available to the consumer fisheries.

Cod was the only species for which the potential catch was reduced, by 13 000 t or 15%, which is attributable mainly to a pronounced re-distribution of the potential catch in favour of Great Britain and Norway; cf. Tables 2.1.3, 2.1.5 and 2.1.6.

The potential catch of mackerel was improved by 24 000 t. In this case, too, a significant reason for the increase is the previous high level of the industrial fisheries. Of greater significance, however, was the major reallocation of the potential mackerel catch in favour of the EEC as a whole. Although it was felt necessary for conservation reasons to reduce the mackerel fisheries in the North Sea and the Skagerrak by 30%, the reallocation resulted in a direct improvement of just under 25% for the EEC countries; cf. Table 2.1.3.

The herring quota involved an increase of 12 000 t in the potential catch, due simply to an increase in the potential catch in the Skagerrak and Kattegat, since herring fisheries in the North Sea were banned in 1978. This considerable increase in the potential catch must be viewed against the background of what used to be major herring fisheries for industrial purposes.

Consumer fisheries 1979

The potential catch in 1979 was reduced by 43 000 t by comparison with 1978, with the result that the potential catch was improved by only 24 000 t, or 15%, in relation to the average catch for 1970-77; cf. Table 2.1.3. The reduction affected coalfish, mackerel, herring and cod, i.e. mainly those species which had made advances in the previous year.

- 1) In spite of the fact that considerable quantities of coalfish had been landed for industrial purposes in the past, only insignificant quantities of coalfish for industrial purposes were landed in 1978 and 1979.

TABLE 2.1.3

Total catches, catches by EEC countries and Danish catches during the period 1970-77 in relation to the TACs, the EEC quotas and the Danish quotas in 1978.

		All countries	EEC	Denmark
		Changes in total potential catch 1) in 1978 in relation to 1970-77 %	Changes in EEC countries' potential catch 2) in 1978 in relation to 1970-77 %	Changes in the Danish potential catch 3) in 1978 in relation to 1970-77 %
Cod	IV	- 2	- 7	-40
Plaice	IV	-19	-20	- 8
Haddock	IV	-58	-47	-75
Herring	IV	-	-	-
Mackerel	IIIa+IV	-30	+26	+73
Coalfish	IIIa+IV	+ 8	+ 6	+ 3
Norway pout	IV	-40	+33	+ 1
Sprats	IV	+56	+26	+39
Sand eels	IV	- 7	+ 2	+ 6
Whiting	IV	+14	+ 3	-49
Herring	IIIa	-38	-56	-56
Sprats	IIIa	+83	+39	+39

- 1) Changes estimated for the average catch by 'all countries' in the period 1970-77, minus the TAC in 1978 as a %.
- 2) Changes estimated for the average catch by EEC countries in the period 1970-77, minus the 1978 EEC countries' quota as a %.
- 3) Changes estimated for the average Danish catch in the period 1970-77, minus the 1978 Danish quota as a %.

Area numbers - cf. Supplementary Table 1.

Source: Supplementary Table 1.

The potential catch of coalfish was reduced by 14 000 t, of which 9 000 t were attributable to internal reallocation between the EEC countries¹⁾; cf. Table 2.1.4.

- 1) This internal reallocation of coalfish and mackerel is due to the fact that the 1978 quotas were higher than those proposed by the Commission. An 'automatic' reallocation will result from the method of calculation used for the 1979 quotas.

TABLE 2.1.4

Changes in TACs and quotas, 1978 to 1979

		TAC 1978-79		EEC quota 1978-79		Danish quota	
		1000 t	%	1000 t	%	1000 t	%
Cod	IV	+ 11	+ 5	+ 1	0	+ 1	0
Plaice	IV	+ 25	+ 26	+ 24	+ 26	+ 6	+ 27
Haddock	IV	- 26	- 24	- 18	- 20	- 2	- 17
Herring	IV	:	:	:	:	:	:
Mackerel	IIIa-IV	- 47	- 24	- 9	- 31	- 11	- 42
Coalfish	IIIa-IV	- 30	- 13	- 19	- 15	- 15	- 37
Norway pout	IV	...	...	...	...	...	...
Sprats	IV	- 50	- 11	-330	-100	- 30	- 16
Sand eels	IV	+191	+ 48	+ 21	+ 4	+ 96	+ 24
Whiting	IV	- 83	- 49	- 69	- 48	- 18	- 46
Herring	IIIa	- 20	- 31	- 12	- 35	- 12	- 35
Sprats	IIIa	- 18	- 20	...	...	- 10	- 20

Area Numbers: cf. Supplementary Table 1

Source: Supplementary Table 1

Note: : = no catch

... = no information available

The cut in the potential catches of mackerel is due mainly to a reduced TAC for 1979, but also to a redistribution of the potential catch, on the one hand in favour of third countries and on the other hand in favour of other EEC countries; cf. Table 2.1.4. Of the fall of 11 000 t, 6 000 t may thus be attributed to conservation measures and 3 000 t to a redistribution of the catch in favour of other EEC countries, with the remainder representing redistribution to third countries.

The loss of 10 000 t in the potential catch of herring is due mainly to the TAC.

There was a possibility of a drop of 8 000 t in the catch of cod in the Skagerrak/Kattegat, with the potential catches in the North Sea remaining unchanged in relation to 1978. The reasons for the reduction are not known, since there was no TAC for cod in the Skagerrak/Kattegat in 1978.

Industrial fisheries 1978

The loss of the potential catches in 1978 was due mainly to the fact that herring, coalfish and haddock¹⁾ were no longer included in the industrial fisheries. Herring alone represents a loss of more than 200 000 t in relation to the average catches in 1970-77. In addition to this, there was a loss of approximately 36 000 t in the potential catch for whiting, due to a redistribution of the potential catch in favour of third countries and other EEC countries; cf. Tables 2.1.3 and 2.1.5. There is an additional estimated loss of approximately 130 000 t²⁾ resulting from the illegal closing of the Norway pout grounds by Great Britain in 1978.

These losses are off-set to a certain extent by the total increase of the order of 94 000 t in the potential catch for sprats and sand eels. The background to the increase of approximately 67 000 t in the potential catch for sprats was partly a considerable increase in the TAC in the North Sea, the Skagerrak and the Kattegat, and partly an internal redistribution of the catch between the EEC countries to

the advantage of Denmark. The increase in the catch of sand eels is due to an internal redistribution in favour of Denmark; cf. Table 2.1.3.

Industrial fisheries 1979

By comparison with the quotas for 1978, the estimated 'quotas' for 1979 represented an improvement of about 36 000 t in the potential catches. There was an increase of 96 000 t in the quota for sand eels. This improvement was counteracted by a total fall of 60 000 t in the potential catches for sprats and whiting as the result of reductions in the TACs.

- 1) But see also Footnote on p.9.
- 2) In relation to the base period 1974-77.

TABLE 2.1.5

Catches by selected EEC countries in the period 1970-77 and quotas in 1978 in relation to total catches in the period 1970-77 and TACs in 1978 respectively

	COD in Area IV		COALFISH in IV+IIIa		HADDOCK in IV		HERRING in IV		MACKEREL IV+IIIa	
	Catch as a % of total catch 1970-77	Quota: % of TAC 1978	Catch as a % of total catch 1970-77	Quota: % of TAC 1978	Catch as a % of total catch 1970-77	Quota: % of TAC 1978	Catch as a % of total catch 1970-77	Quota: % of TAC 1978	Catch as a % of total catch 1970-77	Quota: % of TAC 1978
DENMARK	22	14	19	14	18	11	34	0	5	11
GREAT BRITAIN	36	42	7	13	41	61	5	0	0	
WEST GERMANY	11	11	8	18						
FRANCE			16	9	3	3			1	2
NETHERLANDS	13	9	6	2		.	6	0	1	1
BELGIUM										

	PLAICE in IV		SPRATS in IV		NORWAY POUT in IV		WHITING in IV	
	Catch as a % of total catch 1970-77	Quota: % of TAC 1978	Catch as a % of total catch 1970-77	Quota: % of TAC 1978	Catch as a % of total catch 1970-77	Quota: % of TAC 1978	Catch as a % of total catch 1970-77	Quota: % of TAC 1978
DENMARK	21	23	46	39	50	84	52	23
GREAT BRITAIN	28	26	22	29	3	6	20	38
WEST GERMANY	4	5						
FRANCE							14	15
NETHERLANDS	42	37						
BELGIUM	5	5						

Note 1) TAC and quota = 0

Source: Supplementary Table 1, Notes 1 and 2

These changes in the industrial fisheries produced an overall reduction of 199 000 t in potential catches in 1979 in relation to the average for the period 1970-77; cf. Table 2.1.1; there was an additional loss of 140 000 t as the result of the illegal closing of the Norway pout grounds by Great Britain in 1979.

Fisheries in more remote waters in 1978 and 1979

In 1978-79 the industrial fisheries were able to make up for the reduction in the North Sea, the Skagerrak and the Kattegat by fisheries for blue whiting and horse mackerel

TABLE 2.1.6

Catches by the EEC and Norway in the period 1970-77 and quotas in 1978 in relation to total catches in the period 1970-77 and the TAC in 1978 in the North Sea (ICES Area IV).

	EEC		Norway	
	Catch as a % of total catch 1970-77	Quota in 1978 as a % of TAC in 1978	Catch as a % of total catch 1970-77	Quota in 1978 as a % of TAC in 1978
COD	92	87	2	13
HADDOCK	66	83	1	17
COALFISH	56	57	9	44
SPRATS	71	73	13	27

Source: Supplementary Table 1, Notes 1,2 and 4

in more remote waters. Thus the overall undistributed quota for the EEC countries in 1978 was 500 000 t of blue whiting and 230 000 t of horse mackerel ¹⁾ in the North Sea and more remote waters; cf. Table 2.1.7. Denmark had additional access to a mackerel quota of 20 000 t to the west of Great Britain and to a cod quota of 2 000 t to the south and west of Ireland and the English Channel.

TABLE 2.1.7

Catches and quotas in more remote waters, in 1 000 t.

	Danish catch		Total catch		Quota for all EEC countries 1978
	77	78	77	78	
BLUE WHITING IV, VI, VII, XIV	20	54	69	162	500
HORSE MACKEREL IV, VI, VII, VIII	0	3.6	151	97	230
MACKEREL (WEST) VI, VII, VIII	1	9	335	509	313

Source: Advance release of Tables 1-5 and k of Bulletin Statistique, Vol.62, 1977 and Vol.63, 1978.

Proposed amendments to the Council Directive (EEC), which stipulates measures to be taken in 1978 in respect of the conservation and management of fish stocks, including the introduction of quotas (EFT C 167/1, 1978).

Area Numbers: cf. Map, Part I, p.53.

1) Of which 100 000 t were reserved for Great Britain.

re B Technical measures for the conservation of fish stocks

Apart from the quotas, the national conservation measures also contain a series of technical measures in respect of 1) catches, 2) vessels and 3) gear.

Pursuant to the Berlin compromise of 1978, Denmark introduced a series of measures in accordance with the proposals by the EEC Commission, which were extended and added to in 1979. The following is a summary of the most important measures:

re 1. Quarterly quotas for cod and plaice were introduced for 1978 in order to ensure the even distribution of the catches over the year. The quotas were extended in 1979 to include herring and sprats. The system of quotas involved a number of temporary bans on fishing in certain waters in both 1978 and 1979.

The regulations in respect of unintentional catches were tightened in 1978 in such a way that the level of the unintentional catch was basically reduced from 20-25% in previous years to 10%. These regulations took particular account of limiting unintentional catches of haddock, coalfish, whiting and herring.

The ban on herring fisheries for industrial purposes in the North Sea and the Skagerrak which had been in force since 1976 was extended in 1979 to include all waters. Bans on the catching of haddock and whiting for industrial

purposes were also introduced; for haddock in all waters and for whiting in the Skagerrak and Kattegat¹⁾.

re 2. Technical measures in respect of vessels were introduced only in the form of three rather insignificant regulations relating to the inshore fisheries for cod, plaice and sole by small vessels, and to the whiting fisheries in the Skagerrak and Kattegat. At the same time, certain fisheries in the Swedish and Norwegian fisheries zones were made subject to licence on the basis of agreements with these countries.

re 3. The net size regulations for herring fisheries in the Skagerrak and Kattegat were tightened in 1978, from 16 mm to 32 mm, in order to prevent industrial fisheries, at the same time as a ban was introduced on

1) With effect from 14 August, the ban on landing whiting for industrial purposes was extended to include the North Sea.

the use of gear with a net size of less than 70 mm when fishing to the south-west of Great Britain and to the north-east of Scotland (the Norway pout grounds). Limits on the use of ring seines and trawls in the Skagerrak and Kattegat on Saturdays and Sundays were also introduced.

The Norway pout grounds

Although a ban on the use of small-mesh nets in the Norway pout grounds had already been introduced in 1978, as referred to above, (see map in Appendix I for details of Norway pout ground 1), Great Britain introduced a unilateral ban on fishing for Norway pout in the 'grounds' in 1978. During the first three quarters of the year, the ban extended to longitude 0°, although it was extended to longitude 2° east (ground 2) in the fourth quarter. The ban was continued as far as longitude 2° east in the periods 1 Jan - 31 March and 1 October - 31 December in 1979.

This ban was introduced in contravention of the regulations in force in respect of the establishment of national fisheries regulations, since it constituted a discriminatory measure aimed at preventing Danish fisheries for Norway pout in the area. Great Britain was found guilty of contravening the Hague Convention and the Treaty of Rome by the Court of the European Communities in July 1980.

On the basis of the catches of Norway pout in the 'grounds' during the period 1974-77, it has been estimated that the Danish potential catch was reduced by respectively 136 000 t and 164 000 t in 1978 and 1979 as the result of continuing the ban¹⁾. This represents about 30% of the Norway pout fisheries and about 10% of total industrial fisheries in the North Sea. These estimates do not include the yield resulting from the transfer of the fisheries activities to other waters.

1) Calculated on the basis of information supplied by the Ministry of Fisheries.

2.1.2 Importance of fisheries regulations to the fisheries

When evaluating the importance of the fisheries regulations to the economic circumstances of the fishing fleet, a distinction must be drawn between consumer fisheries and industrial fisheries, in spite of the fact that a large proportion of the fleet is engaged in mixed consumer and industrial fisheries.

As far as concerns the consumer fisheries, it is possible to identify a correlation between the management of the resources and the catches, since the improvements in the potential catches of 42%¹⁾ and 15% in 1978 and 1979 respectively in relation to the average for the period 1970-77 resulted in an increase in the catches of 13% and 9% respectively; cf. Tables 2.1.1 and 2.1.2.

As far as concerns the industrial fisheries, the correlation is less distinct. In 1978 the potential catches in relation to the average for the years 1970-77 were reduced by 20%, whereas the actual catches were reduced by only 3%. In 1979 the potential catches were reduced by 14% and the actual catches by 9%.

If the unusually large catch of sand eels in 1978 is adjusted to a normal level, the result will be an estimated fall in the catch of approximately 30%.

A more detailed analysis of the relationship between the potential catch and the actual catch in 1979 will shed

light on the correlation and will provide an indication of the extent to which it has been possible to adjust the catches to suit the available resources.

Consumer fisheries 1979

As has been seen above, the potential catch was not utilized to its full extent. A total of 26 000 t of the combined quotas were not utilized, of which 18 000 t were accounted for by the coalfish quota and 5 000 t by the haddock quota.

The main reason why the coalfish quota, which was three times greater than the traditional (1970-77) level of landings of coalfish for consumer purposes, was not used up is that there is no tradition of, and therefore no familiarity with consumer fisheries for coalfish. In view of the uncertainty surrounding stocks, only a few fishermen felt tempted to involve themselves in the relatively major investments in gear, etc., required by this form of fishing. However, the funds made available by the State for experimental fisheries were used in 1980

1) cf. Footnote 2, p.9.

to set up a major project aimed at the development of Danish consumer fisheries for coalfish.

The unused surplus in the haddock quota, which is nevertheless somewhat distorted (cf. Footnote 2, p.9), is due on the one hand to the fact that the quota was higher than the previous level of catches and on the other hand to the fact that the potential catch provided by nature was lower than normal in 1979.

The unused part of the potential catch was offset to a certain extent by the fact that certain catches exceeded the stipulated level. Thus the cod quota was exceeded by about 16 000 t in both 1978 and 1979, which must be seen in the light of the major reduction in the cod quota. The quota was exceeded in spite of a good number of periodic bans on fishing for cod. Exceeding the quota is not a particularly Danish phenomenon; cf. Table 2.1.8., which shows the quotas exceeded by the EEC countries in 1978.

Industrial fisheries 1979

Unlike the situation in the consumer fisheries, the possibility of the overall quota being exceeded was present in the industrial fisheries.

The quotas were exceeded by 172 000 t in all, with the sprats quota being exceeded by 152 000 t, and the whiting quota in the North Sea by 20 000 t. The reason for this

was that the sprats quota was considerably lower than the catches in the three previous years, and that the whiting quota had been reduced by approximately 40% in relation to the traditional level of fishing (average for the years 1970-77).

As far as the sprats quota is concerned, the North Sea was the area in which it was exceeded by the greatest amount (129 000 t out of the total 152 000 t by which the quota was exceeded), which is apparently due to uncertainty as to the actual size of the quota.

The exceeding of the sprats and whiting quotas was balanced to a certain extent by the fact that the quotas for sand eels and Norway pout were not utilized to their full extent. The reason why the sand eels quota was not fully utilized is partly the fact that the quota was very much greater than the traditional level of the sand eels fisheries, and partly the fluctuations from one year to the next in the ease with which this fish may be caught. The unused surplus in the Norway pout quota may be attributed to the closing of the 'Norway pout bank'.

TABLE 2.1.8

Quotas, catches and exceeding of quotas by EEC countries
in 1978.

	Denmark	Belgium	Netherlands	West Germany	England + Scotland	France	Ireland
<u>COD</u> IV							
Catch	41 858	17 473	48 817	37 040	101 111	11 944	o
Quota	32 365	9 489	22 138	26 282	99 320	15 350	o
% change	29%	84%	120%	40%	2%	- 22%	
<u>HADDOCK</u> IV							
Catch	8 093	1 295	857	2 588	70 605	5 122	o
Quota	11 666	1 145	3 218	2 385	67 348	3 848	o
% change	- 31%	13%	- 73%	9%	5%	33%	
<u>MACKEREL</u> IV+IIIa							
Catch	18 068	10	1 065	285	3 846	3 452	o
Quota	23 247	354	2 534	346	984	3 139	o
% change	- 22%	- 97%	- 58%	- 18%	291%	10%	
<u>PLAICE</u> IV							
Catch	21 285	6 036	28 219	4 674	31 739	750	o
Quota	22 236	4 469	33 805	4 469	24 819	1 997	o
% change	- 4%	35%	- 17%	5%	28%	- 62%	
<u>SOLE</u> IV							
Catch	465	1 728	6 749	467	627	346	o
Quota	384	960	7 360	320	752	224	o
% change	21%	80%	- 8%	46%	- 17%	54%	
<u>COALFISH</u> IV+IIIa							
Catch	10 444	44	5 135	25 982	22 712	38 202	o
Quota	43 161	2 000	7 000	57 300	39 500	27 000	o
% change	- 76%	- 98%	- 27%	- 55%	- 43%	41%	
<u>MACKEREL</u> VI, VII VIII							
Catch	8 677	1	50 556	28 873	317 044	37 801	33 165
Quota	20 000	17	30 000	25 000	173 849	56 134	25 000
% change	- 57%	- 94%	69%	15%	82%	- 33%	33%

Source: Supplementary Table 1, Notes 1 and 2.

More remote waters

The catching of blue whiting and horse mackerel in the North Sea and in more remote waters, and of mackerel in waters outside the North Sea, only began in recent years. The available stocks were utilized only to a limited extent; cf. Table 2.1.7. On the other hand, the Danish cod quota in the English Channel and in the waters to the south and west of Ireland was fully utilized.

Fisheries control (technical measures)

It is a well known fact in ^{the} theory of fisheries economics that the use of quotas as a control measure in otherwise uncontrolled fisheries (i.e. equal access by everyone to unlimited fishing of the stock in question) will affect the fisheries pattern in such a way that fisheries activities and landings will be concentrated at the beginning of the quota period, since everyone will attempt to harvest the greatest possible share of the stocks before the quota is used up. As may be seen from Figure 2.1.1., which shows the weekly catches of cod and herring in the North Sea, the Skagerrak and the Kattegat in the years 1977-79, the fisheries pattern in the Jutland fisheries in 1978 and 1979 appears to have changed to a certain extent in line with the theory. The division of the annual quotas into quarterly quotas has, to a certain extent, counteracted a very marked change in the pattern of landings, whilst the large number of bans on fishing in 1979 prove that the use of quotas as a control measure

has the effect referred to above; cf. herring in the Kattegat. It may also be seen, and this is most clearly illustrated by the ban on cod fishing in the North Sea in the fourth quarter of 1978, that as a quota is fished out in a given fishing area (resulting in a ban being imposed), then the fishing activities are transferred to other waters (the Skagerrak) where they have an effect on the traditional pattern of fisheries.

The system of quotas has thus brought about a state of competition between the firms which did not exist before, and it is reasonable to assume - although difficult to prove because the effect may not be isolated - that the cost per unit produced in the fisheries has risen as a result of this competition, since the capacity could not be used at its optimum level. In a similar way, the

unavoidable bans on fishing prevented the rational planning of the activities of the individual firms, with the result that a number of firms which had been unable to participate in the fisheries whilst they were open, found themselves in financial difficulties. The effects were counteracted to a certain extent by the fact that the quotas were exceeded.

The regulations in respect of unintentional catches which were introduced in the period 1976-79 were presumably an important factor in the marked fall in the catches of coalfish, haddock, whiting and herring for industrial purposes, which at the same time were behind the increases in the potential catches in the consumer fisheries. The industrial catches of haddock and coalfish in the North Sea, the Skagerrak and the Kattegat fell, in relation to the average for the years 1970-77, from respectively 96% and 83% of the total catches of these species, to 25% and 9% respectively in 1979.

Similarly, there was a fall in the industrial catches of herring in the Skagerrak and Kattegat from 75% (average for 1970-77) to 19% in 1979.

The decline in the industrial catches of whiting in 1978-79 was not as marked as in the case of the above species. This is presumably connected with the relaxation in 1979 of the net size regulations in the Skagerrak and Kattegat for vessels of less than 150 g.r.t. This picture

will be changed by the ban on whiting fisheries for industrial purposes introduced in 1979, which, together with the temporary State grants for the consumer processing of whiting introduced in 1980, will mean that from now on this species will be landed exclusively for consumer purposes.

The fall in the catches of mackerel for industrial purposes is not due to the regulations in respect of unintentional catches, but may be explained simply by the fact that consumer demand for mackerel has made it much more economically advantageous than before to land the catches as consumer fish.

FIGURE 2.1.1.

Weekly catches by Danish fishermen in the North Sea, the Skagerrak and the Kattegat
1976 - 79.

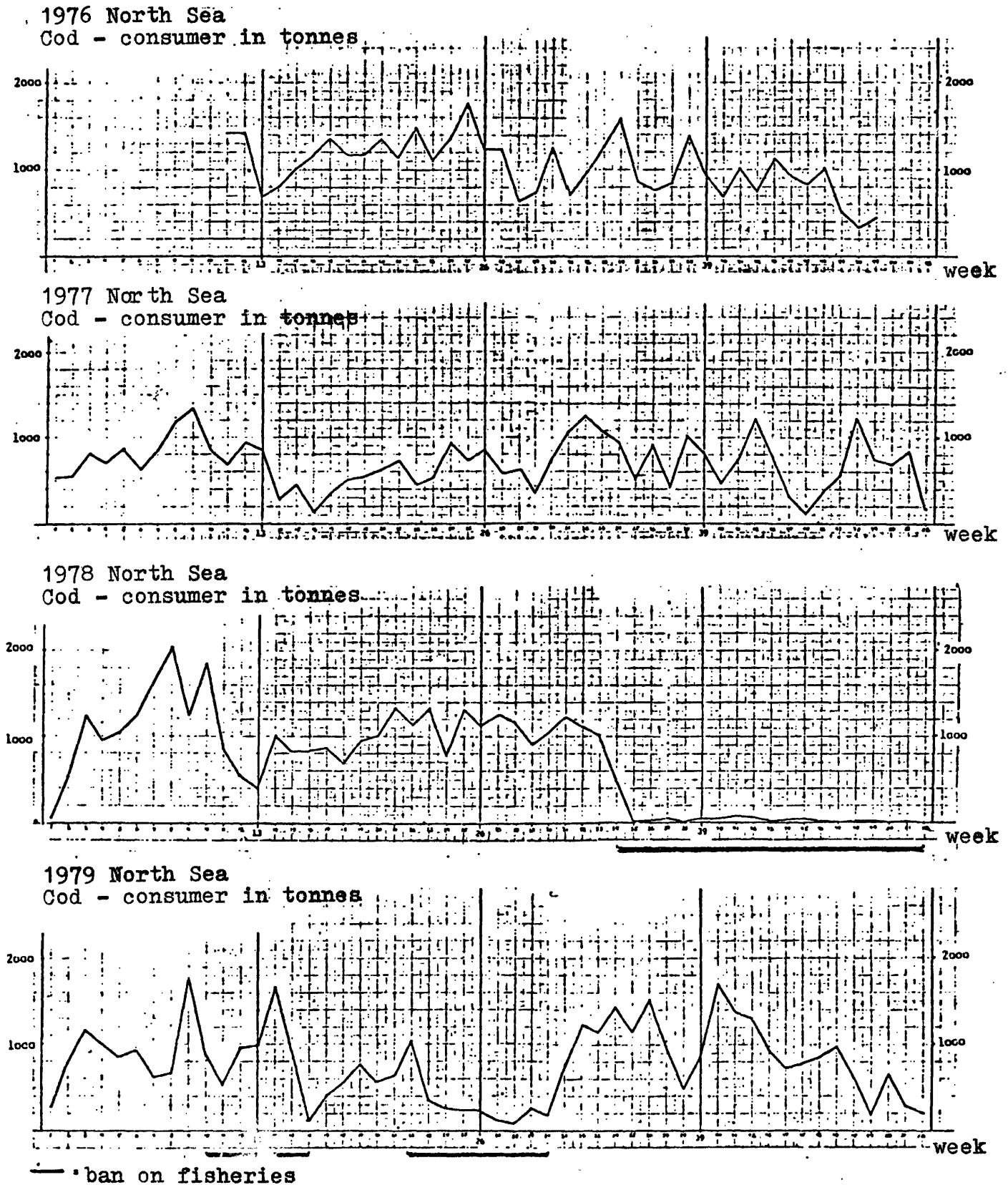
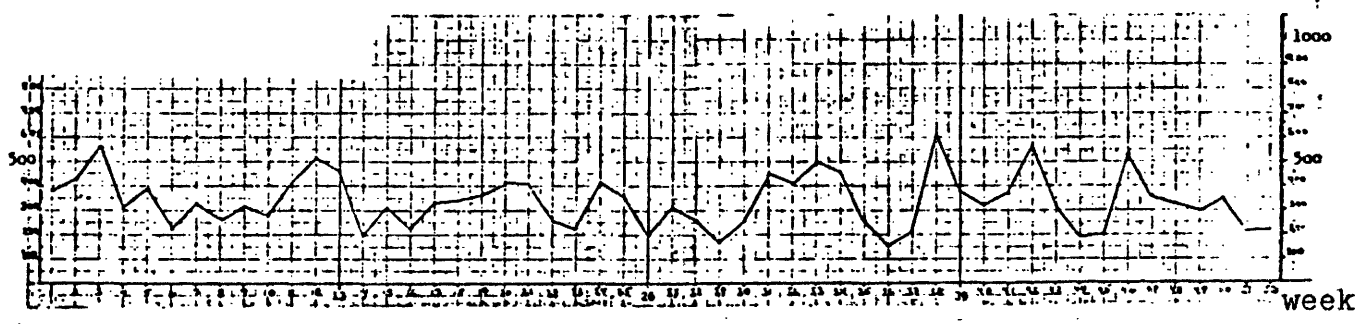
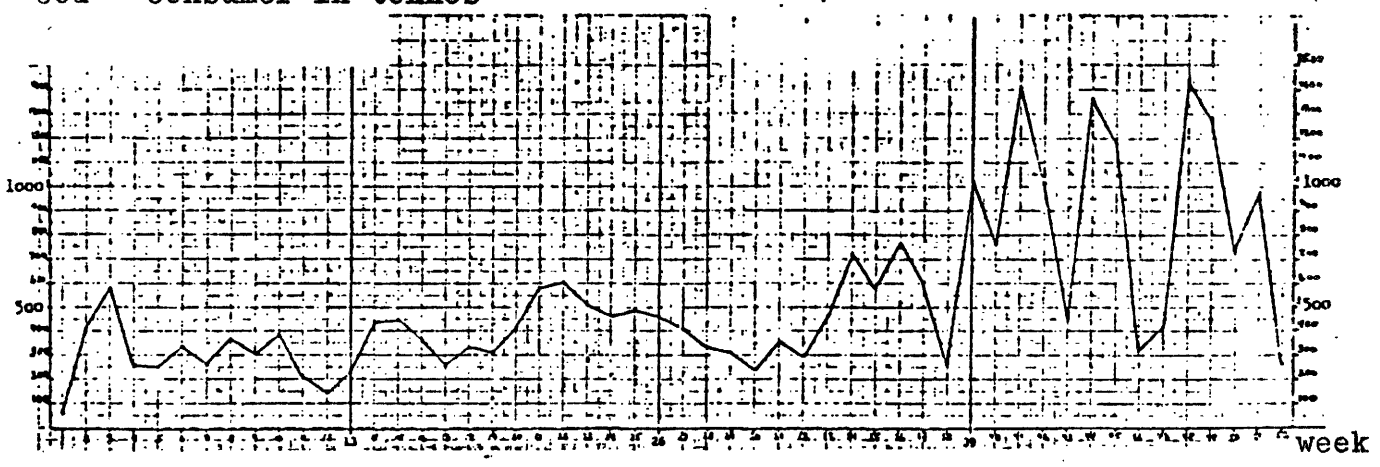


FIGURE 2.1.1 continued

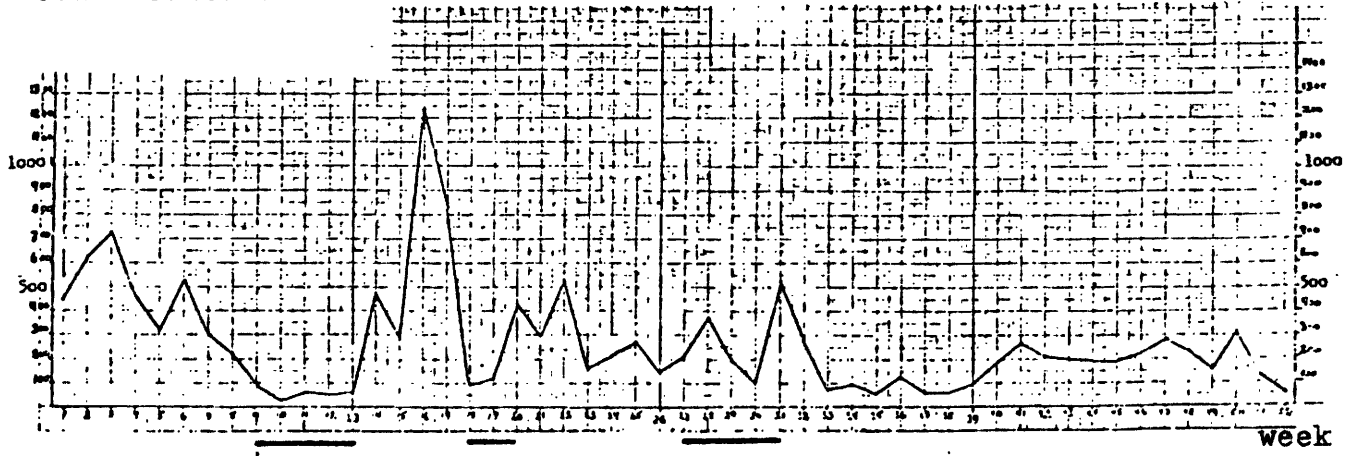
1977 Skagerrak
Cod - consumer in tonnes



1978 Skagerrak
Cod - consumer in tonnes



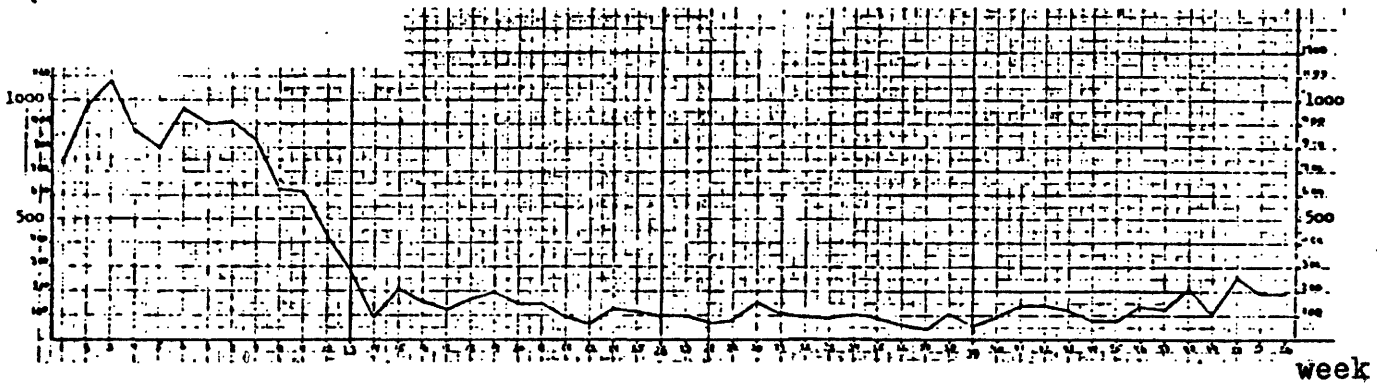
1979 Skagerrak
Cod - consumer in tonnes



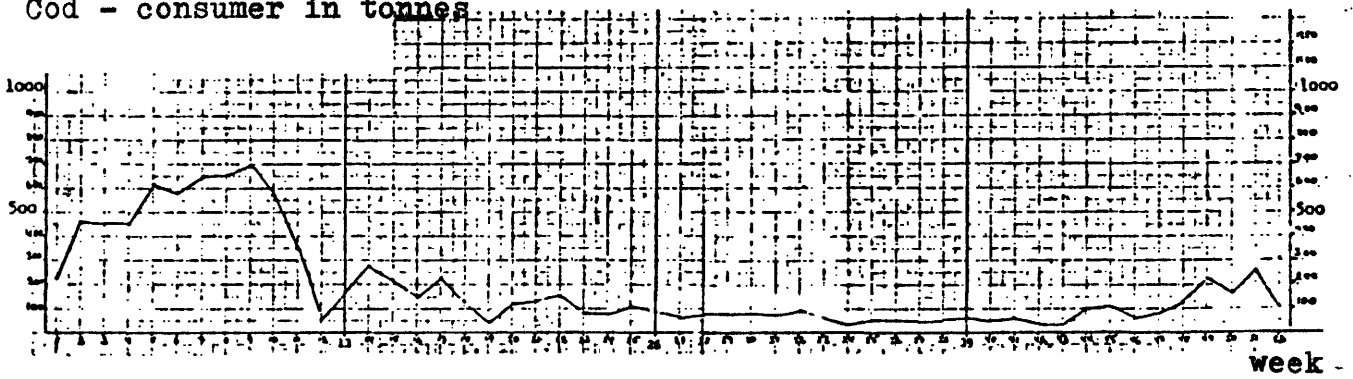
— . ban on fisheries

FIGURE 2.1.1 continued

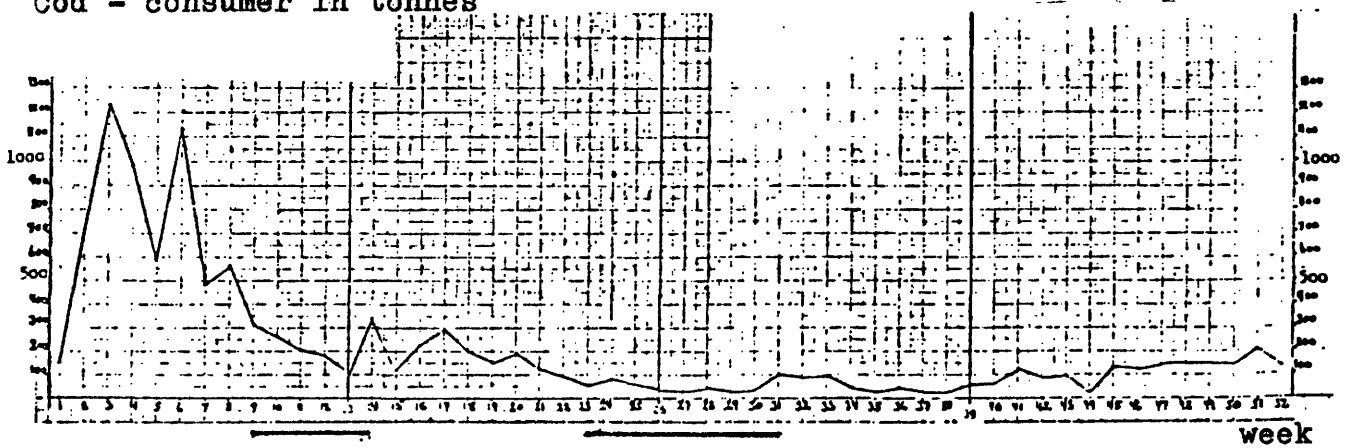
1977 Kattegat
Cod - consumer in tonnes



1978 Kattegat
Cod - consumer in tonnes



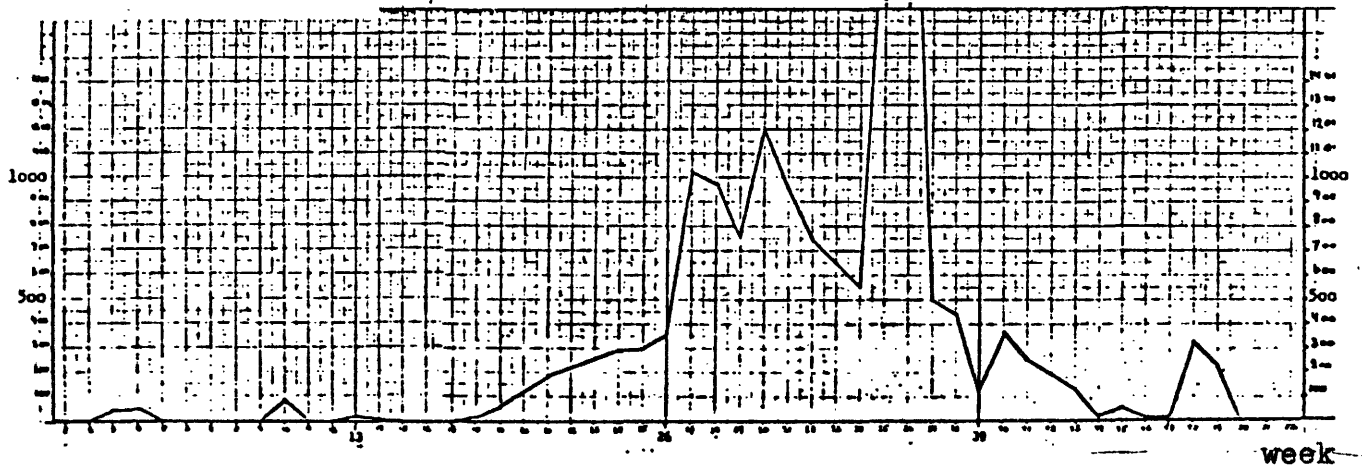
1979 Kattegat
Cod - consumer in tonnes



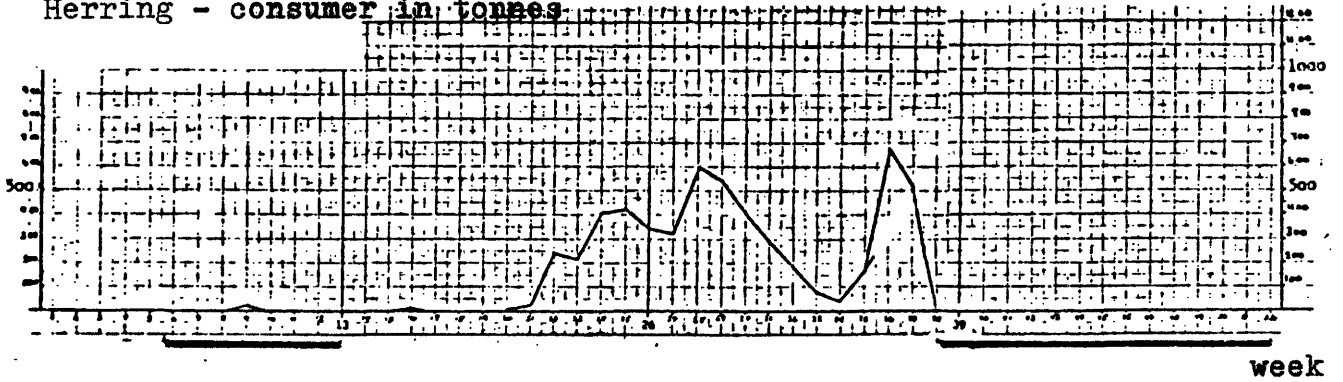
— . ban on fisheries

FIGURE 2.1.1 continued

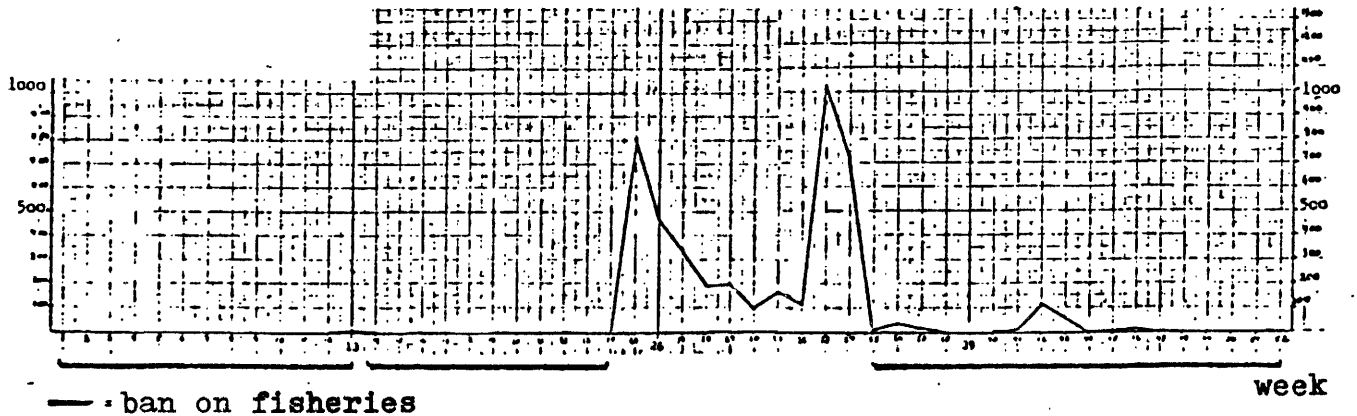
1977 Skagerrak
Herring - consumer in tonnes



1978 Skagerrak
Herring - consumer in tonnes



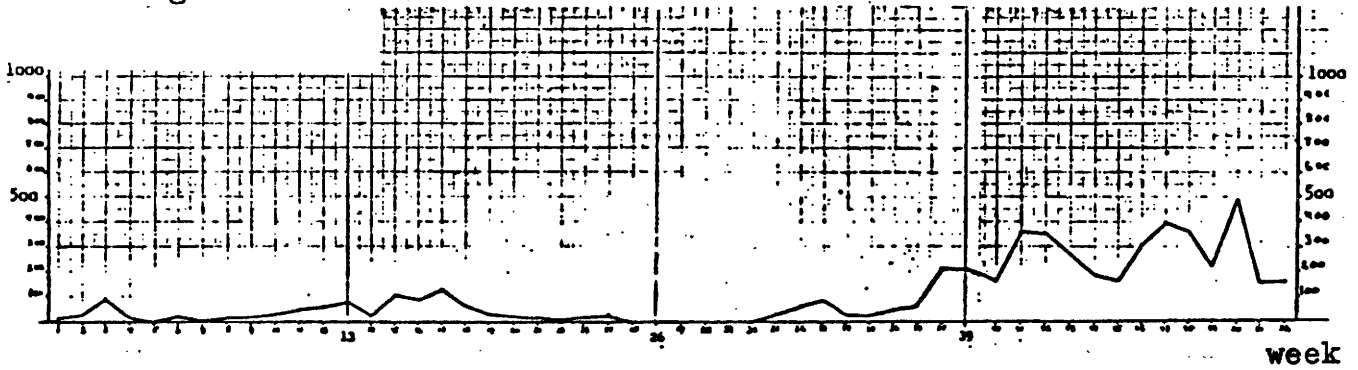
1979 Skagerrak
Cod - consumer in tonnes



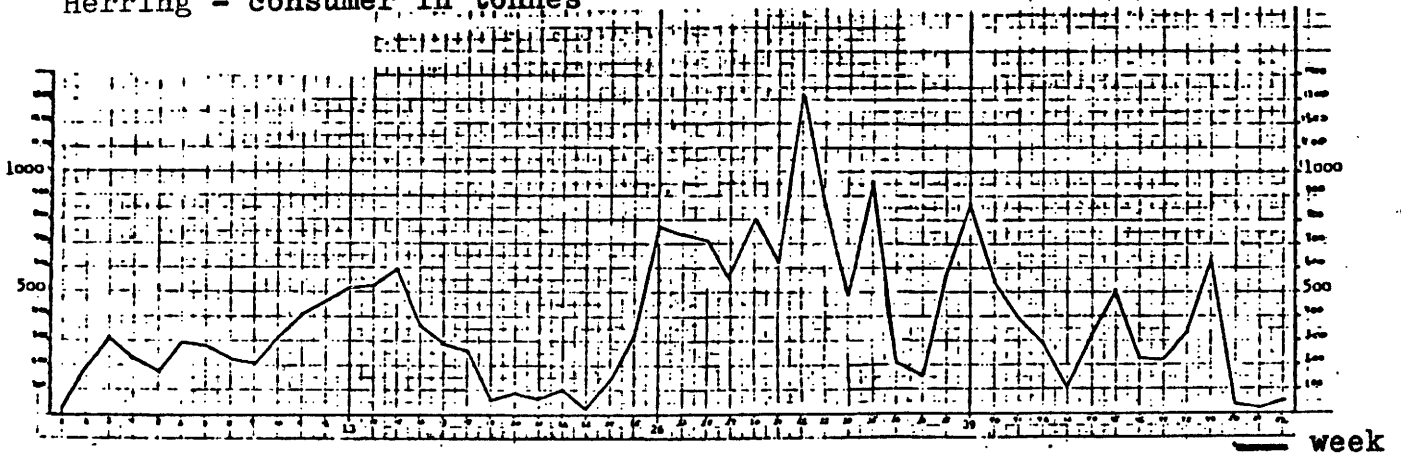
— ban on fisheries

FIGURE 2.1.1 continued

1977 Kattegat
Herring - consumer in tonnes



1978 Kattegat
Herring - consumer in tonnes



1979 Kattegat
Herring - consumer in tonnes



— • ban on fisheries

Source: Ministry of Fisheries, 1978 and 1979, provisional figures

2.1.3 Importance of fisheries controls to service and suppliers' businesses serving the fishing ports

The effect of stocks management on the activities of the service companies and suppliers to the fisheries is of an indirect nature, since the extent of their activities and the pattern of their activities are determined mainly by the production conditions in the primary sector. It is therefore difficult to identify a quantifiable relationship between stocks management and the service companies and suppliers.

Against the background of the employment relationships illustrated in Part I, Section 2.9, it is possible to calculate that the labour input per kg of consumer fish brought ashore is approximately 15 times greater in the fisheries and service companies and suppliers than the labour input per kg of industrial fish brought ashore.

The consequences for employment in the service companies and suppliers of increasing (falling) catches are therefore dependent on the extent to which any changes affect the catches of consumer fish or industrial fish, since the effect on employment of a given percentage change in consumer catches is considerably greater than the effect of a corresponding percentage change in industrial catches.

On the basis of the changes in Danish catches which have taken place in recent years, as shown in Table 2.1.2.,

there are reasons to assume that the potential catches which have been provided as the result of stocks management have had a positive effect on employment in the service companies and suppliers. On the other hand, the fall in foreign landings in Danish ports has had a negative effect on employment, just as the uncertainty surrounding the management of stocks in the years to come has had an effect on the desire to invest in the fisheries. However, since there is scarcely any question of proportionality existing between catches and employment, either in the fisheries or in the service companies and suppliers, it is not possible to indicate the strength of the aforementioned tendencies.

Stocks management also affects the service companies and suppliers through the national administration of the potential catches. It has already been shown that the imposition of quotas on the catches, irrespective of their frequency or duration, causes the catches to be concentrated

at the beginning of the quota period. This has considerable long and short term effects on the utilization of capacity by the service companies and suppliers.

Major fluctuations in the utilization of capacity are produced in the short term, and in the long term there is a tendency towards lower utilization of capacity, since capacity will be designed to cope with peak loadings.

It is not possible to quantify this effect on the Danish service companies and suppliers, although there are a large number of 'case-stories' concerning increasing problems of peak loadings and empty periods.

Reference has already been made to the competition amongst individual fishing vessels resulting from controls in the form of quotas, which produces a tendency for an investment race to take place between the vessels, since everyone wishes to achieve the greatest possible catching efficiency. A race of this kind does, of course, increase the turnover of certain suppliers in the short term, but has scarcely any effect in the long term.

The uncertainty surrounding the management of stocks in the years to come, both at the level of the European Communities and nationally, has, on the other hand, produced a certain amount of reluctance in respect of new investments in the fisheries. It is not possible to judge the effect of this in the absence of statistical data of

a type which are suitable to illustrate the investments which are made in the fisheries sector.

2.1.4 Importance of fisheries controls to land-based trading and processing industries

The consequences of stocks management for the trading and processing sectors are not only related to the supply of product, but are also practical and financial in nature. The consequences associated with the supply of product vary from one species of fish to the next. For the purposes of clarity, the analysis will be restricted to a discussion of the significance of those changes which have taken place in the supplies of the most important species, i.e. herring and cod.

As far as concerns herring, stocks management in recent years has not produced any major supply problems, either for the fresh fish trade or for the preserving industry. This is due partly to the ban on the catching of herring as an industrial fish having led to an increase in Danish

landings of consumer herring, and partly to the fact that approximately 60% of the overall supply of raw materials is in the form of imports from third countries, mainly Sweden. After falling in the period 1976-78, imports rose steeply in 1979. Thus the overall supply in 1976-78 was of the order of 112 000 - 116 000 t of whole fish annually, rising to 136 000 t in 1979¹⁾.

As far as herring is concerned, the fresh fish trade has shown a steep increase in exports in 1979 in relation to the previous years. The increase took place particularly in the area of frozen whole herrings and in the area of cut herring, whilst exports of whole fresh herring have remained more or less constant since 1976.

As far as cod is concerned, of which by far the major proportion is supplied from the landings made by Danish fishermen, stocks management plays a much greater part in determining the quantity of raw materials available for sale and for processing. Thus, in spite of the fact that the quotas were exceeded, the reduction in the Danish potential catch in both 1978 and 1979 has led to a considerable fall in Danish landings of cod in recent years, from 161 000 t in 1976¹⁾ to 125 000 t in 1978 and 127 000 t in 1979¹⁾. In spite of a simultaneous increase in both commercial imports and foreign landings, the overall supply in the period 1976-78 fell from 167 000 to 138 000 tonnes, i.e. by about 17%. However, in 1979 the

supply rose once more to 142 000 t. This fall in the supply of cod has in itself severely affected the fish industry, since exports of whole frozen cod have been increasing since 1978 and in 1979 in relation to previous years. Thus in more recent years, as may be seen from Part I, Section 2.5.1.2., the fish industry has seen a steep fall in the overall supply of whole fresh cod.

In spite of the fact that the Danish potential catch of other gadoids, such as haddock, coalfish and whiting, has risen steeply in 1978 and 1979, supplies of these species for consumer purposes fell far short of making up for the fall in the supplies of cod. The reasons for this are partly to do with catching methods (cf. Section 2.1.2), but not least are connected with the selling of the fish. Firstly, the fish industry has not until now had access to the machinery which has made the processing of the relatively small haddock and whiting a profitable

- 1) Includes all Danish landings, i.e. Baltic landings, too.

proposition, and secondly, the fishermen who were obliged by the quality legislation in force at the time to land gadoids in a cleaned condition were unable to land haddock and whiting at a price which would allow the industry and its exporters to process and sell this fish profitably on a large scale.

In conjunction with the quantity-related problems which have been caused by stocks management, especially in the roundfish industry, stocks management also poses considerable practical problems to the entire fish industry and to the fresh fish trade, particularly with regard to the continuity of supply. As has already been mentioned, the control of catches by means of quarterly and monthly quotas and periodic bans on fishing results in the concentration of supplies at the beginning of those periods in which the fisheries are re-opened after the expiry of a ban. This faces the fish industry with a serious problem, since the fish must be processed as quickly as possible and preferably in a fresh condition, for reasons of quality. This method of controlling the catches thus places greater demands on the industry, and particularly in respect of the production and storage capacity of the filletting industry, than the normal seasonal fluctuations have done previously.

The extent to which the production and storage capacity of the fish industry has been expanded with the aim of countering the fluctuations in the supply of raw materials caused by stocks management cannot be described within the

context of this survey; however the major expansion of cold storage capacity in recent years (cf. Part I, Section 2.5.1) is presumably not unrelated to this.

Similarly, it appears not unlikely that the major fluctuations in supplies brought about by stocks management are one of the principal reasons why the fresh fish trade has been able to expand at the cost of the fish industry in a period in which the supplies of raw materials have been on the decline. In the case of the fresh fish trade, the production and storage capacity does not act as a limiting factor to the speed and volume at which product may be sold to the same extent as it does in the rest of the industry.

2.1.5 Importance of fisheries controls to the fish-meal and fish-oil industry

More than 95% of the raw materials used in the fish-meal and fish-oil industry are in the form of landings of industrial fish by Danish fishermen, and the sector is accordingly totally dependent on the potential catches allocated to the primary sector. In the period 1976-78, both the supply of raw materials and the production of fish-meal fell by between 12 and 14%, and this trend continued in 1979. The fact that the fall in the supply of raw materials was not as great as might have been expected from the allocation of stocks is due simply to the fact that the catches were in excess of the quotas which had been allocated. Stocks management and the actual potential catch 'at sea' have the effect of producing variations from one year to the next in respect of the weighting of the individual species in the overall supply. This is of little practical significance to the industry, however, which processes all species on an equal footing. This flexibility with regard to the composition of the raw materials supply presumably means that the fish-meal and fish-oil industry is less dependent on the variations which occur in the pattern of the catches as the result of bans on fishing than the consumer industry, since the opportunities taken by the fishermen to engage in alternative fisheries is of no significance to the production of the firms.

It is of considerable importance to the fish-meal and fish-oil industry that Danish fishermen should make every

effort to make up for the loss of traditional stocks in traditional waters by means of new resources such as blue whiting and horse mackerel from the more remote waters to which Denmark has access, and which have not until now been fully exploited.

2.2 Underlying condition 2 - Price movements on production input

2.2.1 Price movements on inputs into the fisheries

Apart from wage costs, which normally represent a fixed percentage of the gross profit less certain allocations, the most important costs within the fisheries are the following:

- a) catching costs;
- b) maintenance costs;
- c) cost of finance;

re a) The cost of fuel and gear are the major items in the catching costs. The average price of oil rose by about 22% between 1975 and 1977, cf. Figure 2.2.1., after which it exhibited a slightly falling tendency between 1977 and 1978. The price of oil rose by about 75% during 1979, as shown in Table 2.2.2.

The increase in costs associated with this rise varies between individual types of vessel and different forms of fishing; cf. Part I, Section 2.2.3. The highest oil costs are faced by the trawl fisheries, where they represented approximately 12% of the overall operating costs in 1978, although some of the less energy-intensive forms of fishing (Danish seining and net-fishing) have also experienced major increases in their fuel costs.

The price of fishing gear rose by approximately 30-40% in the period 1975-79. The price may be seen to have increased

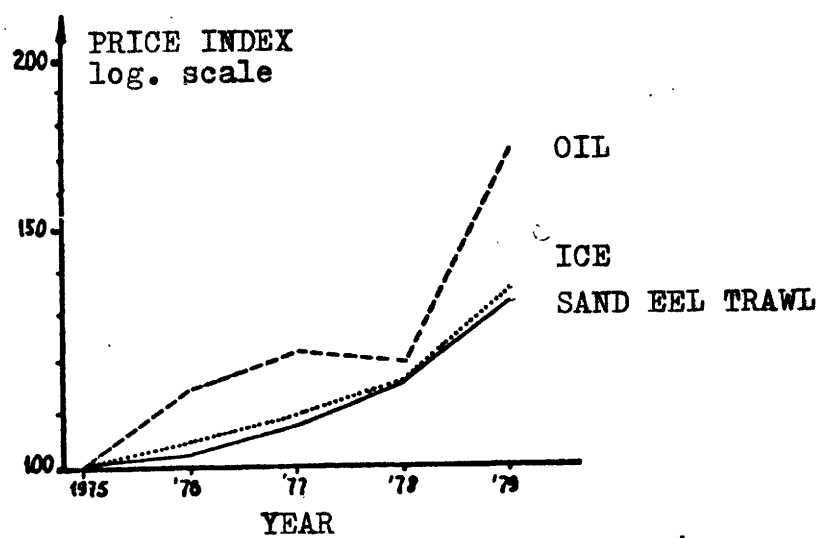
progressively throughout the entire period from Figure 2.2.1., which shows the price movements on a single piece of, in this context, typical gear (a sand eel trawl of the 'spider' type). Thus the price increase was about 15% in 1978-79 alone. The increase in the cost of ice is also shown in Figure 2.2.1. This price, too, has risen progressively between 1975 and 1979 - reflecting the rising cost of energy.

re b Maintenance includes a number of different types of service and repair work, of which some are carried out on an annual basis on individual vessels, whilst others are carried out at various intervals.

In 1978, maintenance costs accounted for approximately 16% of the total operating costs in the fisheries.

FIGURE 2.2.1

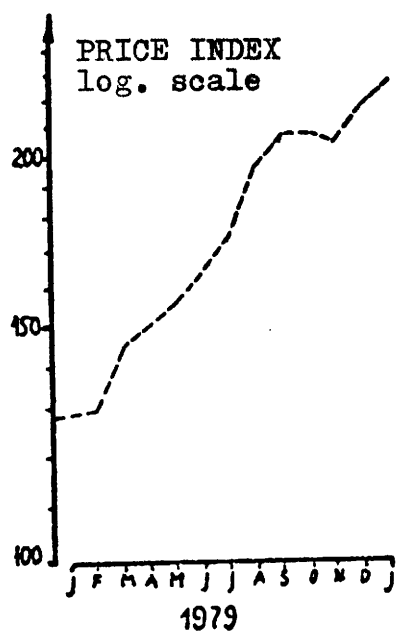
Price movements on production input in the fisheries -
CATCHING COSTS.



Source: Danmarks Statistik. Statistical Yearbook for
various years and own data.

FIGURE 2.2.2.

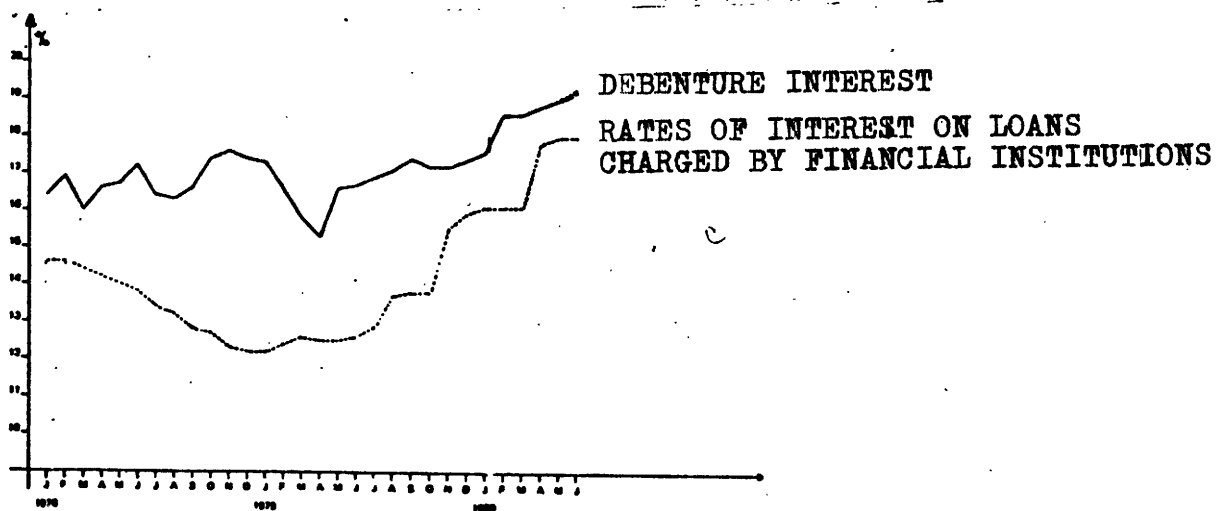
Price movements on production input in the fisheries -
OIL PRICES 1979.



Source: Danmarks Statistik.
Statistical Intelligence.

FIGURE 2.2.4

Rates of interest charged by financial institutions and effective debenture interest



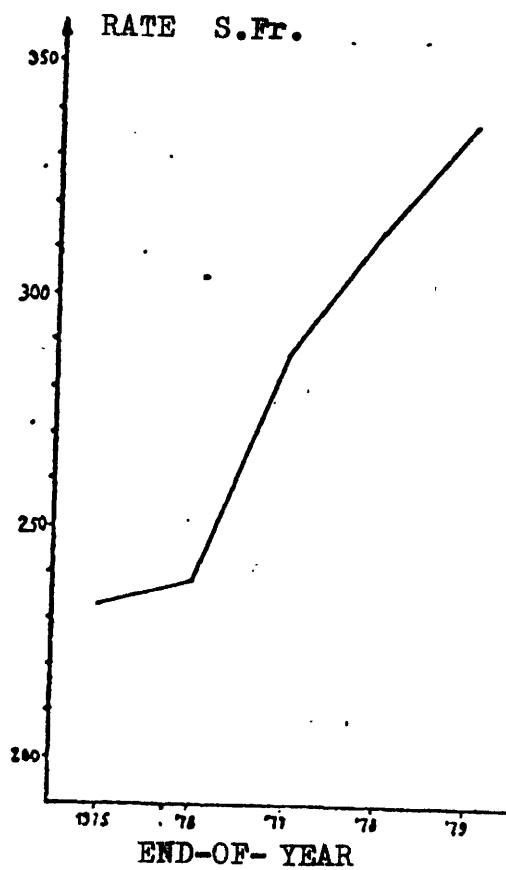
x new method of calculation

The average effective debenture interest has been calculated by Københavns Fondsbørs (the Copenhagen Stock Exchange). The rates of interest on loans are the rates of interest on loans made by the financial institutions with access to variable utilization.

Source: Official List and Statistical Intelligence.

FIGURE 2.2.5

End-of-year rates in S.Fr. in relation to D.Kr.
1975-1979



Source: Danmarks Statistik, Statistical Yearbook 1980.

By examining the price movements for a series of typical services, for example electronic and electrical repairs and shipwrights' and painters' services, it will be found that all sectors in the period 1975-79 applied an overall increase in price of approximately 40%, distributed evenly throughout the period. The increase is due both to increases in the cost of materials and to increases in wages.

re c The most recent representative survey of the financial situation within the fisheries, which was conducted in 1977, revealed that approximately 15% of the total outside capital in the fishing fleet was represented by cash credits in the financial institutions. In 1976 this was equivalent to an average cash credit of Kr 90 000 per vessel. Figure 2.2.4 indicates that the interest charged on cash credits has shown considerable fluctuations in certain years. The rate of interest fell evenly over the year in 1978, whereas it rose steeply at the end of 1979.

Figure 2.2.4 also shows interest charges incurred in conjunction with the taking out of fixed debenture loans. This interest level increased throughout the entire period 1975-79, with the result that there was a rise in the interest charges associated with new investments. The availability of loans with lower rates of interest and of a variety of grants (cf. Section 2.5) has nevertheless had the effect in recent years of reducing the interest charges associated with certain types of investment.

In 1976 19% of the outside capital in the fishing fleet was in the form of loans in foreign currencies. Approximately 80% of the loans were in Swiss francs. Figure 2.2.5 shows the pattern of the exchange rate for Swiss francs, which provides an illustration of the exchange losses which some of the vessels in the fishing fleet - these being the larger vessels - had to bear. The Figure thus provides a background to the support measures which have been introduced in recent years to off-set the exchange losses (cf. also Section 2.5).

2.2.2 Price movements on inputs into the fresh fish trade

The major cost item in the fresh fish trade is the raw material in the form of fish, to which must be added the costs incurred in conjunction with handling (re-packing, etc.) and transport of the fish.

Since a large proportion of the Danish fresh fish trade is conducted as a subsidiary activity alongside the industrial processing activity, it is not possible to produce a

detailed weighting of the relative importance of the individual cost components of the fresh fish trade. In the years 1975-1977 the accounts statistics for the wholesale fish trade show a net advance of approximately 15% on average, i.e. raw materials (and ancillary materials) represent approximately 85% of the turnover. To this must be added the cost of transport, which in 1976 represented 5 - 10% of the cost of the raw materials in the form of fish (depending on species of fish and destination), and the cost of labour, which represented approximately 6% of turnover.

The most important species in terms of weight in the Danish fresh fish trade are herring, cod, plaice and mackerel. In terms of value, however, Denmark exports considerable quantities of the more valuable species such as trout, eels, salmon, lobsters, turbot and sole. These species will not be discussed here, however, since they are treated as specialized businesses and thus fall outside the marketing regulations of the European Communities.

Figure 2.2.6 shows that the movements in the prices of the most important species at the initial stage of the selling chain have varied a great deal from one species to another. The price of herring fell in 1979 after having risen steeply throughout the 1970s, whereas the price of cod stagnated in 1978 and 1979 after having increased less steeply, resulting in an actual fall in the price of cod if allowance is made for inflation.

In the case of plaice, however, the price rose steeply in both 1978 and 1979. It should be noted that the indicated price rises for all three species were much steeper than the overall rise in the wholesale price index.

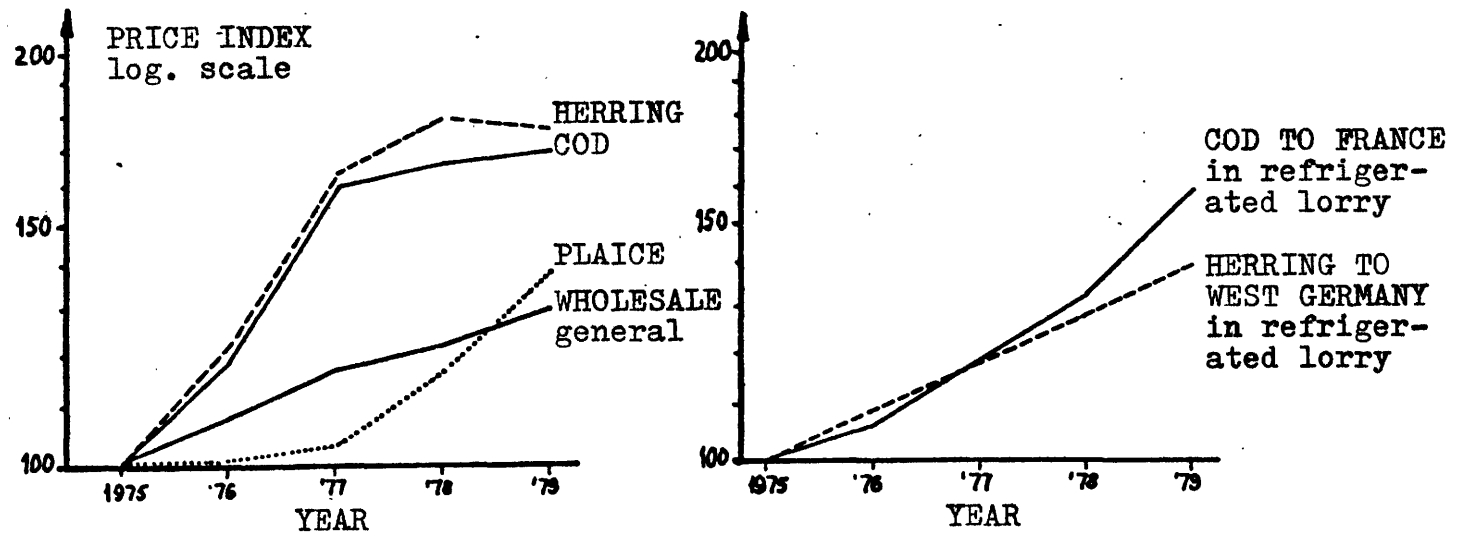
The movement in the cost of transport is illustrated in Figure 2.2.6. by the cost of transporting two important species to two important destinations: herring to Hamburg and cod to Paris. It will be noted that the cost of transport to France has increased much more than the cost of transport to Germany, which must be viewed in the light of the increasing cost of energy. In spite of the variation in the cost of transport depending on the destination and the product, etc., it may be assumed from the available data that transport costs have increased at a rate slightly below the rate of increase for raw materials, with the exception of 1979.

FIGURE 2.2.6

Price movements on inputs into the fresh fish trade

RAW MATERIALS, price per kg

TRANSPORT, price per kg to major markets

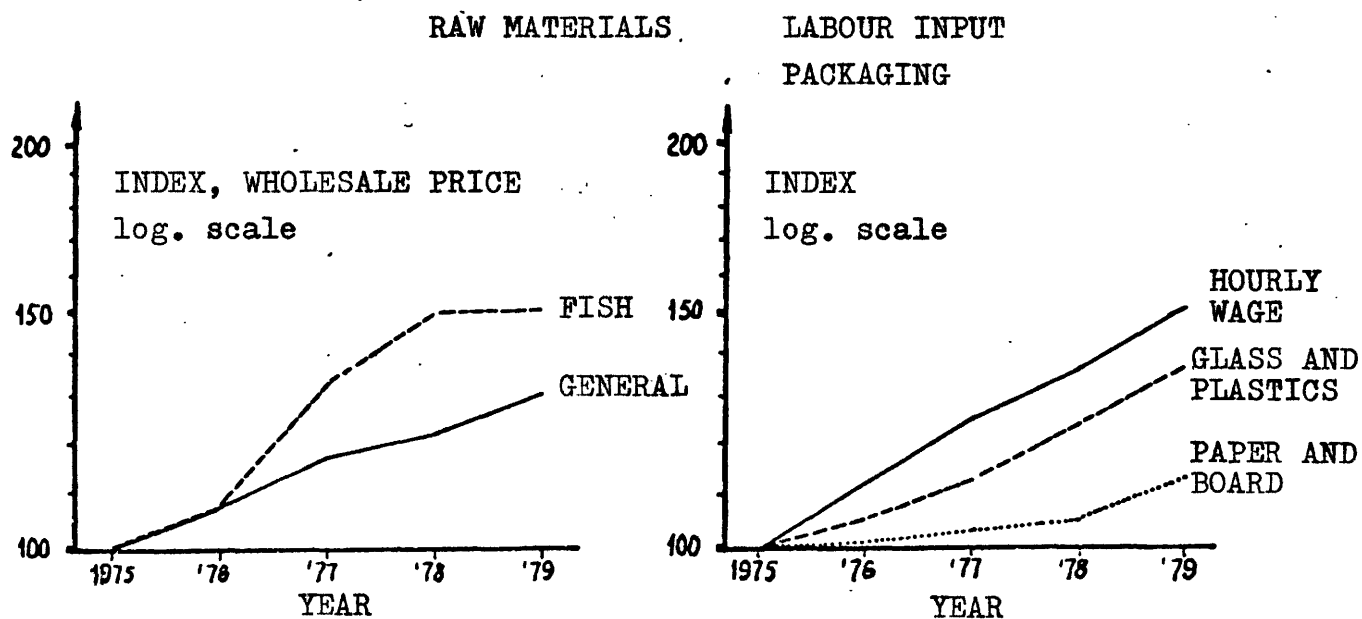


Sources: Ministry of Fisheries, Fisheries Report for various years and provisional figures

Danmarks Statistik, Statistical Yearbook for various years

FIGURE 2.2.7

Price movements on production input into the consumer fish industry.



Source: Danmarks Statistik, Statistical Yearbook for various years.

2.2.3 Price movements on production inputs into the consumer fish industry

The distribution of the input of raw materials and services into the consumer fish industry may be seen from the input-output table in Part I, Section 2.9. The major raw materials costs are fish (about 80%), packaging (about 7%), and transport and storage costs which may not be separated (about 3%). To these must be added the direct production costs for labour and capital. The cost of production labour is relatively high in the fish industry (15-20% of the production value), although Part I, Section 2.5.1.4 indicates that there has been a tendency in the period 1975-78 for materials costs to rise and for wage costs to fall when measured in relation to the overall production value.

The price movements on the most important production inputs may be seen from Figure 2.2.7, which shows that the aforementioned increase in the significance of materials costs, etc., is a result of major price increases, above all in the area of the raw materials in the form of fish, but also in glass and plastic packaging materials, which are highly energy-dependent products. However, the stagnation of fish prices in 1979 has presumably meant that this trend has now ceased or reversed. The cost of hourly wages has been increasing throughout the entire period. The decline in the significance of wage costs is thus also attributable to the fact that productivity in the fish industry has been increasing.

The wholesale price index represents the average movement in prices at the initial stage of the selling chain for fish and, as may be seen from Figure 2.2.6., conceals major variations in price between the different species. Thus the movement in the prices of raw materials has occurred at various levels within the filleting industry (which uses mainly cod and plaice) and within the preserving industry (which uses mainly herring and mackerel).

Although it is not possible to quantify the situation in greater detail, it is a well-known fact that many firms have had to face additional raw materials costs in recent years as the result of the increased cost of storing raw materials (cf. Section 2.1.4). This development mainly has to do with the greater need for the cold storage of raw materials as the result of increased fluctuations in supplies (cf. also

Section 2.1.2 and Section 2.1.4), together with an increase in the real cost of cold storage resulting from increased energy prices.

The changes which have taken place in interest rates in recent years were indicated in Section 2.2.1. However, as no data are available in respect of the financial structure of the fish industry, it is not possible to evaluate the significance of the interest rate changes. Interest charges in 1977 accounted for approximately 2% of the total turnover of the fish industry, and since extensive investments have been made in the intervening period (cf. Part I, Section 2.5.1.4) the consumer fish industry has been greatly affected by the increase in interest rates, in particular those of 1979, irrespective of the fact that a considerable proportion of the investments were made with the help of State grants (cf. Section 2.5 and Section 2.6).

2.2.4. Price movements on inputs into the fish-meal and fish-oil industry

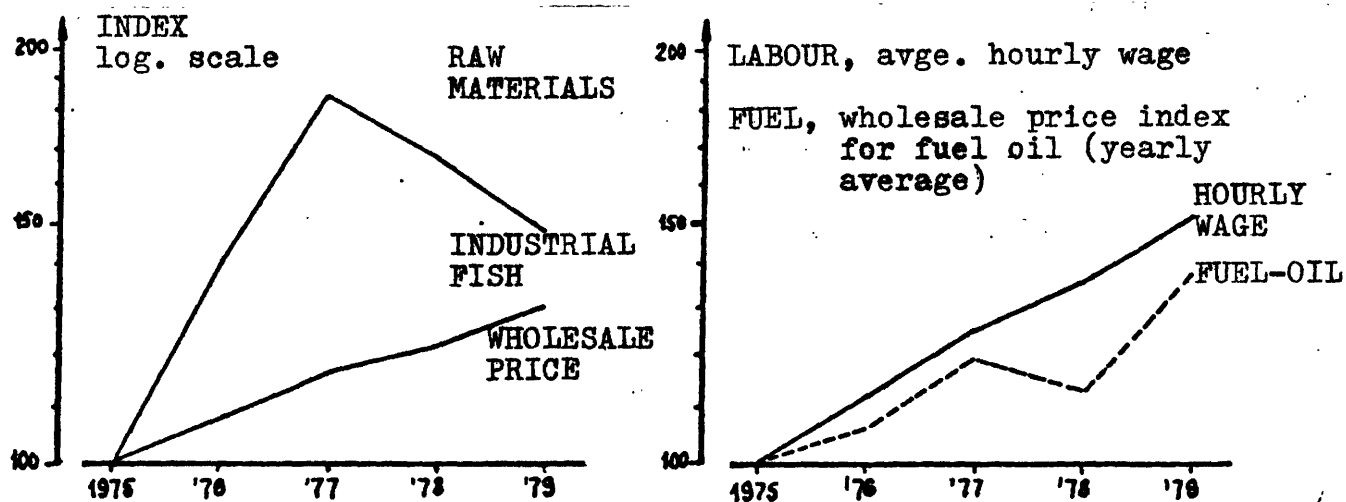
As may be appreciated from the input-output table in Part I, Section 2.9., the major inputs of raw materials into the fish-meal and fish-oil industry are the raw materials in the form of fish and energy. Industrial fish accounted for approximately 85% of the total raw materials costs in 1974. Of the remaining 15%, one half was spent on energy (oil and electricity).

The distribution of the total costs of the fish-meal and fish-oil industry fluctuated quite widely during the 1970s (cf. Part I, Section 2.5.2.4.). The costs of raw materials and packaging materials have risen evenly since 1975, from 66% to 73% of the production value, whereas energy costs rose from their level of between 2 and 3% of the production value at the beginning of the 1970s to approximately 7% in 1974 and 1975, falling to approximately 5.5% in 1978. There were similar major fluctuations in the proportion of the production value represented by wage costs.

Figure 2.2.8 shows the index for price movements on the most important cost items in the fish-meal and fish-oil industry. The price of the most important cost item - industrial fish - rose steeply from its very low level in 1975 until 1977, after which there was a marked fall in both 1978 and 1979. This is attributable to the special pricing system for industrial fish, which is purchased at a fixed price agreed fortnightly with regard to the movement in the

FIGURE 2.2.8

Price movements on production inputs into the fish-meal and fish-oil industry.

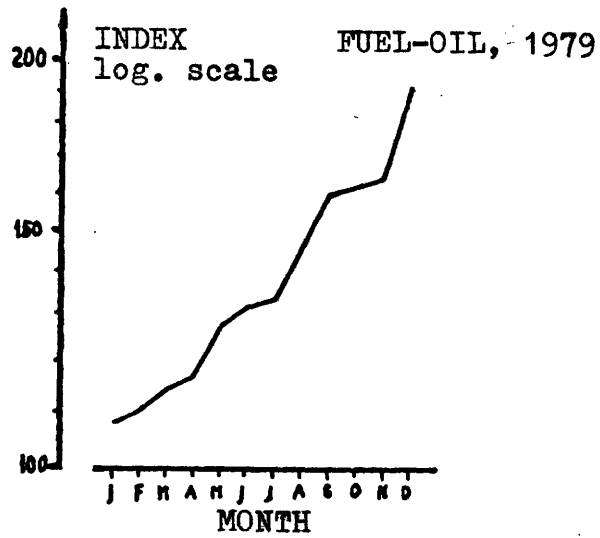


Sources: Ministry of Fisheries, Fisheries Report for various years and provisional figures.

Danmarks Statistik, Statistical Yearbook for various years.

FIGURE 2.2.9

Price movements on production inputs into the fish-meal and fish-oil industry. 1975 = 100.



Source: Danmarks Statistik: Statistical Intelligence.

price of fish-meal on the world market (cf. Section 2.4.1). Thus the price of raw materials has closely followed the movements in the world market price for fish-meal (cf. Part I, Figure 2.5.10). The fluctuations in materials costs and wage costs in relation to the production value may therefore be explained mainly in relation to the fluctuations in the price of the finished product.

Energy costs have represented an ever-increasing burden to the fish-meal and fish-oil industry in recent years. As could be appreciated from the input-output table, oil costs in 1974 accounted for approximately 5% of the total input of raw materials, and the doubling of the price of fuel oil between 1975 and the end of 1979, with the greatest increase being concentrated in 1979, (cf. Figure 2.2.9), accordingly placed a heavy burden on the fish-meal and fish-oil industry in a period in which the quantity of raw materials was falling, and in which the world market price for the finished products was either falling or stagnating. Because of the combination of fluctuations in the prices and quantities of fish-meal produced, the energy costs in relation to the production value do not present a true picture of the significance of the cost of energy. If, on the other hand, the average energy cost per tonne of finished product is calculated, then it will be found that this value closely followed the movements in the price of oil shown in Figure 2.2.2 until 1978.

It is not possible to assess the significance of the movements in the rate of interest, just as in the case of

the consumer fish industry, since no data are available in respect of the internal financial situation within the sector. Interest charges represented about 2% of turnover in 1977, and although investments in recent years have been made with considerable State aid, the changes in the rate of interest in 1979 have been of major significance from the point of view of costs.

2.3. Underlying condition 3 - Marketing regulations of the European Communities and price movements relating to fish and fish products

2.3.1. Importance of European Communities' marketing regulations to the fisheries

The marketing regulations of the European Communities in respect of fish and fish products are laid down in Council Directive No. 100/76 (cf. Part I, Section 1.4.3), which contains provisions in respect of internal trade relating to producers' organizations and minimum prices, and provisions in respect of trade with third countries relating to reference prices and export restrictions. The general marketing policy of the European Communities is also of significance to the import of fish and fish products through its external customs tariffs.

As far as the producers' organizations and minimum prices are concerned, the marketing regulations are of direct significance to the prices and sales at the initial stage of the selling chain, whereas the reference price regulations and the external customs tariffs have an indirect effect, since these regulations only affect the prices and sales at the initial stage of the selling chain as the result of changes in the supply and demand position.

The Danish producers' organization (the PO) has not formulated any of the fisheries plans and has not become involved in any of the fish processing activities which are made possible by the Council Directive (cf. Part I, Section 1.4.3).

The producers' organization claims that it is unable to formulate fisheries plans so long as not all vessels are members of the organization. About 90% of all vessels were members in 1980, and the PO has applied for exclusive recognition in an attempt to include all vessels in the organization. Any expansion of the activities of the producers' organization to include fish processing is made difficult by the present nature of its Constitution. The accounts of the PO are accordingly divided up into a fund for each species of fish included in the minimum price regulations, and it is stipulated that the resources within these funds may only be used for the purpose of stabilizing prices in favour of the species of fish to which the fund relates. Any changes to the Constitution may only be made at the Annual Meeting of members on the basis of a qualified majority.

Controlling the supplies of fish and the price of fish in the initial stage of the selling chain by varying the minimum prices has been used on a number of occasions, whereby the minimum price has been reduced in order to limit

supplies. No use has been made of an increase in minimum prices, which, amongst other things, must be viewed in the light of the fact that the producers' organizations do not receive assistance from the EAGGF, in the event of the minimum price being fixed above the level laid down by the Commission of the European Communities.

The main objective of the minimum price regulations is to provide a safety net for the fishermen, since the PO will purchase any fish which fails to reach the minimum price at auction.

Purchases by the PO in 1975-76 accounted for approximately 0.9% of the value of total consumer landings, although the level fell to approximately 0.2% in 1977-79. Since the minimum prices have remained consistently between 20% and 60% below the market prices throughout the entire period, there has been a marked decline in the direct significance of the support purchases made by the PO. The combined level of support provided by the European Communities in respect of price regulations amounted to Kr 14 million in the period 1975-79, corresponding to 55% of total purchases.

There was a considerable spread in the level of the purchases of the different species during the period. The greatest purchases were in respect of mackerel, at an average level of 2.3% for the entire period, whilst the level for coalfish was 0.4%. The average level for the most important species, cod, herring and plaice, was of the order of 0.7%. On the

other hand, the minimum price regulations have in all probability had a psychological effect on both the fishermen and the fish buyers in so far as they lay down a minimum price limit.

The reference prices are laid down on the same basis as the minimum prices and are therefore normally considerably below the market prices. The fact that the rates of duty in 1977-79 were suspended in the case of herring and were reduced in the case of cod meant that these species could be imported at prices considerably below the normal price level. It is unusual for Danish auction prices to fall as low as the reference price level, although under certain circumstances local concentrations of foreign landings can depress the prices, which has occurred only on rare occasions, however.

Where it is felt that serious disruption of the market may result, then either the reference prices may be raised or

a total ban imposed on imports, although this possibility has been used on only one single occasion, when imports of hake were suspended for a period in 1979.

The duty on herring was suspended in 1977 and the duty on cod was reduced in 1978 in an attempt to improve the supply of raw materials to the fish industry. It is difficult to assess the effect of these changes in customs duty on prices in the initial stage of the selling chain, although it is possible to illustrate a number of possible situations, on the assumption that a reduction in customs duty will increase the level of competition between those who have fish to sell at the initial stage of the selling chain.

The price of cod stagnated between 1977 and 1979 (i.e. there was a real fall in the price, allowing for inflation; cf. Figure 2.3.1). This fall, together with the simultaneous decline in supplies (cf. Table 2.3.1), points to problems in selling the fish. Since this was the general pattern for the entire European market, it is doubtful whether the absence of the increase in imports during the period could have had the effect of keeping the prices up, since any price rises could scarcely have been passed on to the consumer.

TABLE 2.3.1

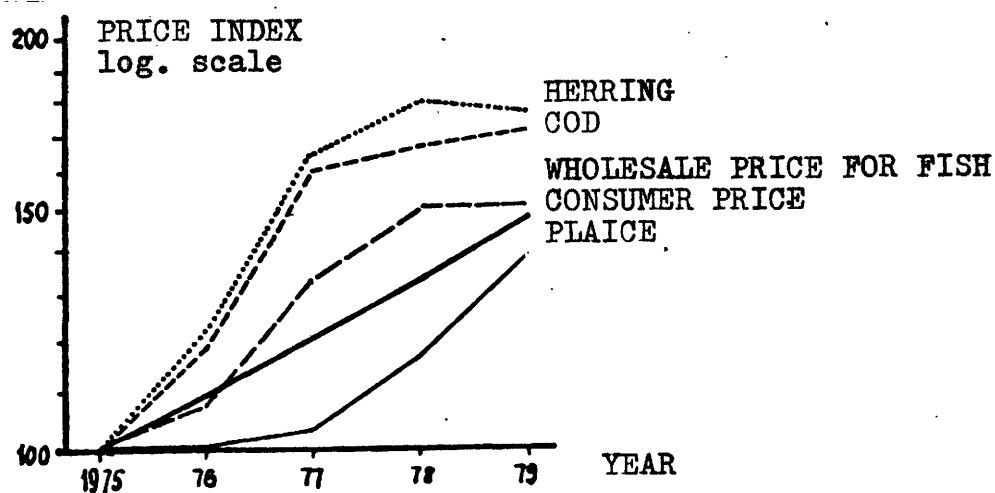
Supply of whole fish to the Danish market, 1 000 tonnes.

	Danish landings	FRESH IMPORTS total (foreign landings)		FROZEN imports	TOTAL supply
<u>COD</u>					
1976	160 669	3 139	(1 989)	3 114	166 922
1977	146 696	7 007	(3 138)	589	154 929
1978	125 451	10 492	(4 787)	2 171	138 114
1979	127 113	13 085		2 507	142 705
<u>HERRING</u>					
1976	39 221	74 294 ¹⁾	(57 295)	2 440 ¹⁾	115 955
1977	37 751	71 397 ¹⁾	(36 780)	1 758 ¹⁾	110 906
1978	46 032	65 866 ¹⁾	(20 447)	2 088 ¹⁾	111 898
1979	53 645	79 343 ¹⁾	(18 395)	3 024 ¹⁾	126 012
1) Whole fish, i.e. excluding off-cuts and cut fish.					
<u>PLAICE</u>					
1976	45 909	3 530	(2 045)	90	49 529
1977	47 001	6 294	(4 534)	163	53 458
1978	49 011	4 917	(4 040)		53 925
1979	50 126	7 288		120	57 534

Source: Danmarks Statistik, Quarterly foreign trade statistics for various years, and Ministry of Fisheries, Fisheries Report and provisional figures.

FIGURE 2.3.1

Price index for cod, herring and plaice at the initial stage of the selling chain; wholesale price index for fish and consumer price index. 1975-1979.

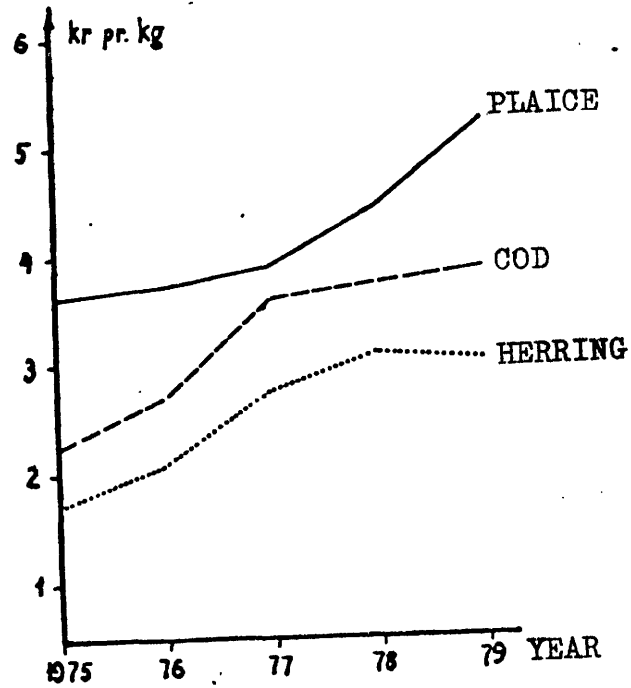


Source: Ministry of Fisheries, Fisheries Report and provisional figures.

Danmarks Statistik, Statistical Yearbook.

FIGURE 2.3.2

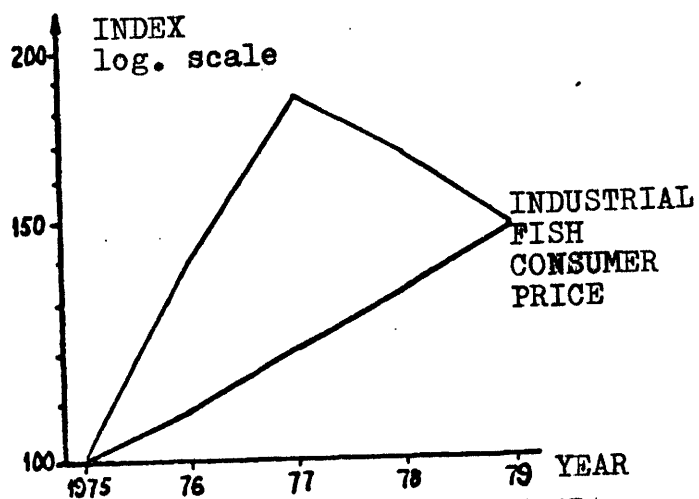
Price movement on cod, herring and plaice in the initial stage of the selling chain. 1975-1979.



Source: Ministry of Fisheries, Fisheries Report and provisional figures.

FIGURE 2.3.3

Price index for industrial fish at the initial stage of the selling chain and consumer price index. 1975-1979.



Source: Ministry of Fisheries, Fisheries Report and provisional figures.

Danmarks Statistik, Statistical Yearbook.

There was a major increase in the price of herring between 1977 and 1978, cf. Figure 2.3.1., at the same time as the supply stagnated, mainly as the result of a drop in imports. Between 1978 and 1979, on the other hand, the price fell in conjunction with a considerable increase in the overall supply, as the result of increased Danish landings and increased imports. In this situation it is probable that a reduction in the foreign supplies would have been able to lift the price, since it appears that there was an excessive supply in relation to the actual demand.

In the case of plaice, which, together with cod and herring is the most important species in the Danish fisheries, there was no reduction in the level of duty, which has remained constant at 15%.

The reason for this is that almost 100% of the plaice catches in the north-east Atlantic are taken by fishermen from the EEC countries, as a result of which imports from third countries are insignificant. Since Danish exports go almost exclusively to the other EEC countries, the price of plaice is accordingly determined for the most part by the internal EEC market. Favourable selling conditions on this market (cf. Part II, Section 2.3.2), together with a constant supply situation, meant that the movement in the price in the initial stage of the selling chain between 1977 and 1979 exhibited a pattern which lay slightly above the increase in the consumer price index (cf. Figures 2.3.1. and 2.3.2.).

Thus the prices of plaice have developed much more favourably than the prices of cod and herring between 1977 and 1979.

Since the values of the landings of cod, plaice and herring together account for just under 70% of the value of all consumer landings, any movements in the price of these species will be reflected in the movement in the prices of the consumer fisheries as a whole, in terms of the wholesale price index for fish. In relation to the consumer price index, the movement in the price of consumer fish thus showed an increase between 1975 and 1978, after which there was a marked fall in 1979, due mainly to the relative fall in the prices of cod and herring.

Trading in industrial fish is not controlled by the marketing regulations of the European Communities, and is therefore entirely dependent on the conditions existing within the

market. The price of industrial fish is simply determined in relation to world market price of fish-meal and fish-oil, and does not, therefore, depend on the level of supplies. Price movements have followed the world market prices for fish-meal and soya-meal (cf. Section 2.4.4.), which has meant that the price has fallen since 1977, not only in relation to the consumer prices, but also in absolute terms from Kr 0.54/kg in 1977 to Kr 0.43/kg in 1979 (cf. Figure 2.3.3.).

2.3.2. Importance of European Communities' marketing regulations to the fresh fish trade

By far the major proportion of the Danish fish trade takes place with other EEC countries and, as far as concerns the most important species cod, herring and plaice, accounts for a significant proportion of the imports of these species by the other EEC countries. As a result of this, the consequences of any intervention with regard to the control of the supply situation within the EEC will unavoidably be felt in the Danish fresh fish trade.

Total Community landings of gadoids fell by approximately 150 000 tonnes in the period 1976-1978 (cf. Table 2.3.2). With the aim of guaranteeing the industry adequate supplies of raw materials, unilateral customs duties on cod, haddock

TABLE 2.3.2

Changes in the total supplies to the EEC of raw materials in the form of whole fresh and whole frozen fish and fish fillets, between 1976 and 1978. 1 000 tonnes.

	Changes in own landings in national ports %	Changes in total supply of whole fresh and whole frozen fish % ¹⁾	Changes in imports of frozen fillet from third countries %
COD	- 66.8	- 64.7	+ 15.5
COALFISH	- 23.0	- 21.6	+ 4.0
HADDOCK	- 63.4	- 65.0	+ 1.2
HAKE	- 0.9	.	.
HERRING	- 90.5	- 70.8	.
MACKEREL	+ 294.6	+ 168.2	.
OTHER			+ 13.8

1) Calculated as own landings in national ports, corrected for imports and exports of whole fish to and from third countries. In the case of herring, the calculations include exports and imports of fresh and frozen cut herring, including off-cuts.

. = information does not exist/unavailable

Source: OECD, Review of Fisheries, various years and the Statistical Office of the European Communities, Analytical tables concerning foreign trade, for various years (cf. Supplementary Table 1).

and hake (fresh and frozen whole fish, and fresh and frozen fillet) have therefore been suspended since 1978. These measures were followed both in 1978 and particularly in 1979 by steep increases in imports from third countries, in particular imports of haddock and cod (cf. Supplementary Table 3), although as may be seen from Table 2.3.2., this increase was far from adequate to compensate for the fall in the EEC countries' own landings.

On the other hand, the limited stocks produced a considerable increase in the internal trade between member countries, particularly in the area of whole fresh fish. Thus, imports of/cod by EEC countries (with the exception of Denmark) increased between 1976 and 1979 from about 50 000 t to about 90 000 t; only one-third of this increase was attributable to imports from third countries.

However, the Danish fresh fish trade was only in a position to follow this trend in 1979, since Denmark has supplied approximately 25 000 t of fresh cod to the EEC market each year since 1976, rising to approximately 31 000 t in 1979; cf. Table 2.3.3.

TABLE 2.3.3

Danish exports of fresh fish in the period 1976-1979.
1 000 tonnes¹⁾.

		1976	1977	1978	1979
		TOTAL (EEC)	TOTAL (EEC)	TOTAL (EEC)	TOTAL (EEC)
HERRING	whole fish	15 491 (15 250)	17 435 (17 332)	16 122 (15 845)	18 526 (18 077)
HERRING	cut fish	33 197 (30 885)	28 632 (26 375)	27 933 (25 559)	32 532 (29 982)
COD	whole fish	25 984 (25 486)	25 488 (25 004)	26 782 (26 234)	31 796 (30 762)
DARK COALFISH	whole fish	7 401 (7 251)	6 853 (6 705)	4 923 (4 767)	5 779 (5 594)
HADDOCK	whole fish	4 085 (3 843)	4 808 (3 881)	5 358 (4 517)	4 816 (4 438)
MACKEREL	whole fish	4 804 (4 201)	7 175 (6 299)	5 920 (5 183)	8 499 (7 590)
PLAICE	whole fish	8 184 (6 875)	8 845 (7 413)	11 304 (10 056)	11 278 (10 159)

Note: In accordance with Section 1.1., exports of frozen whole fish have been included in the fresh fish trade. Since these exports are insignificant for all species except herring, they have been omitted here for reasons of clarity. Reference to be made to Table 2.3.5 for details of exports of frozen herring.

Source: Danmarks Statistik, Quarterly foreign trade statistics, 1979 and Statistical Office of the European Communities, Analytical tables concerning foreign trade, for various years.

The increase between 1978 and 1979 covered about one-half of the increase in the imports by other EEC countries.

In order to counter the effects on the industry of the extensive restrictions on the catching of herring since 1977, the European Communities entirely suspended their autonomous customs duties on fresh and frozen whole fish and filleted herring from the middle of 1977, as well as on certain semi-manufactured herring products intended for the preserving industry. This suspension of customs duties had no major consequences in respect of the supply of fresh herring from third countries to the EEC market, which consists almost entirely of Swedish supplies to Denmark. (65 000 - 70 000 t in the years 1976-78, rising to 80 000 t in 1979). On the other hand, imports by the Community of frozen herring from third countries have increased to a certain extent in recent years, cf. Supplementary Table 3, due mainly to the fact that West Germany, which is the largest importer in the European Community, has compensated for a decline in the supply of fresh herring from Denmark. As may be seen from Table 2.3.2, the total reduction in the herring resources of the European Communities was not compensated for entirely, however.

What is typical of the herring trade in the European Communities is its highly one-sided concentration in Denmark, with imports from third countries being mainly in the form of Danish imports from Sweden, and with internal trading being mainly in the form of Danish exports to West Germany and, to a less extent, to the Netherlands.

Thus, in 1976, Denmark supplied 57% of the imports of fresh herring by the other EEC countries, although the Danish market share rose to almost 100% in 1978 and to approximately 82% in 1979 as the result of a major decline in supplies by Great Britain to the rest of the EEC market. As far as the EEC trade in frozen herring is concerned, Denmark occupies a more modest position, with only about 15% of imports by EEC countries coming from Denmark in 1979. Nevertheless, this represents a doubling of the level in previous years. Most of the imports of frozen herring by EEC countries came from Canada.

The plaice trade is not controlled by the external marketing regulations of the European Communities, and has not undergone any significant changes in recent years. Danish exports, mainly to other EEC countries, rose steeply in 1978 and 1979 by comparison with 1976 and 1977, and in 1979

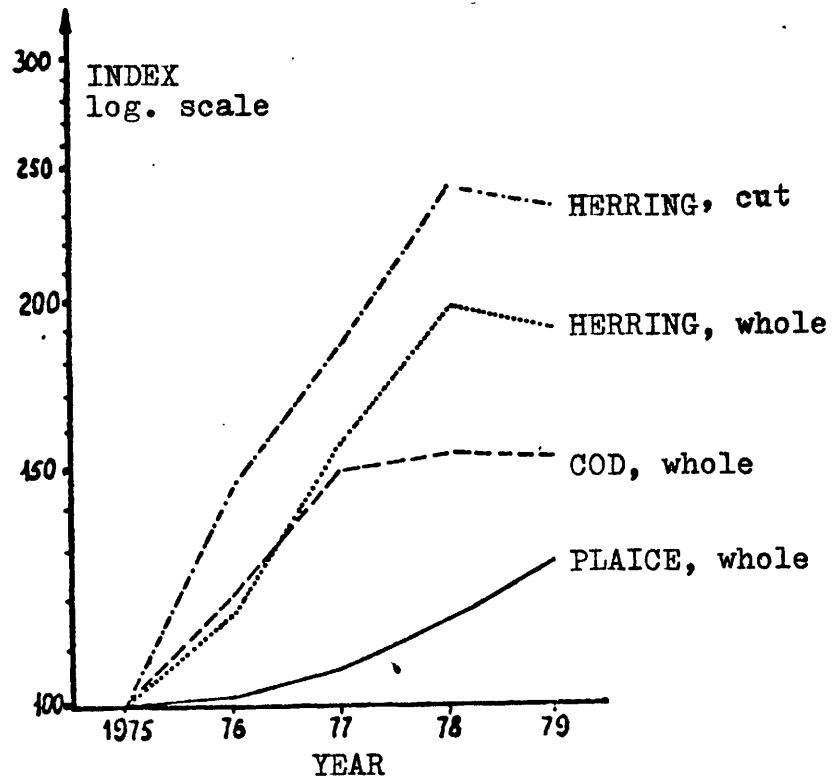
represented about 1/3 of the imports by the other EEC countries. Imports of plaice from third countries into the European Communities are at a modest level.

Danish exports of mackerel have risen considerably in the late 70s, and in particular exports of frozen mackerel, which have been at a level of about 10 000 t per year in recent years; about half of this is supplied to other EEC countries, and the remainder to third countries - mainly Eastern Bloc countries. However, Denmark makes a comparatively minor contribution towards meeting the needs of the Central and East European market for both fresh and frozen mackerel, by far the majority of which is supplied by Great Britain. Accordingly, Denmark receives only a modest share of EEC export restitution in respect of the export of frozen mackerel to third countries; the amounts involved were Kr 2.2 million and Kr 2.3 million in 1978 and 1979 respectively.

Figures 2.3.4 and 2.3.5 show that there were differences in the movements in price for the individual species on the most important markets. In the case of cod, a steep price increase in 1977 was followed by stagnation of the average

FIGURE 2.3.4

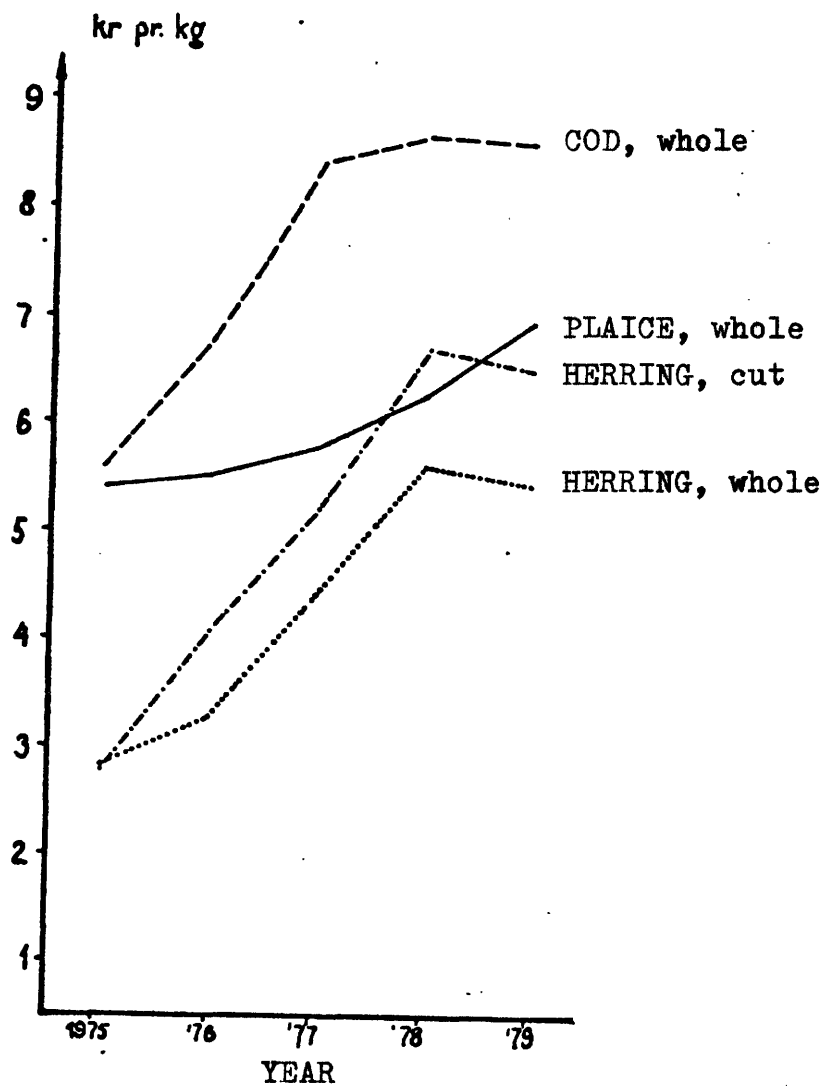
Movement in average prices for exports of fresh cod, herring and plaice. 1975-1979.



Source: Danmarks Statistik, Quarterly foreign trade statistics.

FIGURE 2.3.5

Average prices for exports of fresh herring, cod and plaice. 1975-1979.



Source: Danmarks Statistik, Quarterly foreign trade statistics.

prices (i.e. a real fall in the price, if inflation is taken into account). This, in combination with the fact that the relaxation of import restrictions on whole fish and fillet from third countries by the Communities did not entirely make up for the fall in supplies of fresh cod, means that the European market for fresh cod is extremely price-sensitive, since it has adjusted relatively quickly to the change in the supply situation.

A steep increase in the price of herring took place in the export markets, in particular in 1977 and 1978, although here too the average prices in 1979 showed a declining trend, which must presumably be viewed in conjunction with the increased imports of frozen herring from third countries (cf. Section 2.3.1).

The movement in the price of plaice, on the other hand, has, on the whole, followed the general pattern of price movements. The trend towards an increase in average prices in 1978 and 1979 must presumably be viewed in conjunction with the increase in imports by Great Britain, and with the level of inflation there.

To summarize, then, the external marketing regulations of the European Communities have not had any quantitative effects on the Danish fresh fish trade, cf. Table 2.3.2., although the increased competition from fresh and frozen products from third countries has, in recent years, contributed to a stagnation in the price of herring, in spite of the fact that imports from third countries did not fully compensate for the fall in landings by the Community itself.

A similar stagnation in the price of cod has occurred since 1977, but which apparently is not due simply to increased imports, but also to a decline in demand.

2.3.3. Importance of European Communities' marketing regulations to the consumer fish industry

Filleting industry

In recent years the European Communities have sought to control the supply of raw materials to the fish industry partly by means of export restitutions and partly by means of autonomous customs duties.

As the result of a decline in overall landings in the Communities, a progressive reduction of the export restitution on frozen fillets of cod was introduced during 1977, from its initial level of Kr 0.53 per kg until it ceased entirely to be paid on 29.01.1978. The payment of export restitution on frozen fillets of coalfish ceased finally on 29.06.1977. There was a simultaneous increase in the level of export restitution payable on frozen whole mackerel, and also on frozen fillets of mackerel with effect from 29.04.1978.

In order to guarantee adequate supplies to the industry, the autonomous customs duties on fresh and frozen whole fish and on fillet of cod, haddock and hake which had applied since 1978 were reduced from 15% and 18% respectively to 9%.

The supply of raw material in the form of cod¹⁾ to the Danish filleting industry fell, in spite of the above measure, by 13 000 t (9%) in 1977 and by 31 000 t (22%) in 1978 and 1979 in relation to 1976, which meant that a reduction in Danish supplies of 95%, 88% and 91% respectively was passed on to

the filletting industry. The aforementioned measures therefore had only a limited degree of success, by means of imports, in maintaining the supply of raw materials to the Danish filletting industry. Since 1976, however, imports have accounted for an ever-increasing proportion of the supply of raw materials to the filletting industry, which, as has already been mentioned, has been due to the relative expansion of the fresh fish trade. The fresh fish trade has not been restricted by the removal of the export restitution, since sales are made almost exclusively to the EEC market. Commercial imports (most of which is assumed to go to the filletting industry) have thus increased from 2.5% of the raw materials supply in 1976 to 7% in 1979. By far the major

1) I.e. Danish landings + imports - exports of whole fish.

proportion of the increase in imports has come from third countries, namely from Sweden, although it is not possible to assess the extent to which the removal of customs duties has affected the situation.

The marketing regulations have not had the effect of encouraging imports of semi-manufactured products in the form of frozen fillets to compensate for the fall in whole fish.

The potential sales of the Danish filletting industry have apparently been affected to a very great extent by the change in the restitution situation in relation to fillets of cod. The most important market for Danish frozen fillets of cod has traditionally been (and still is) the USA, although Table 2.3.4 shows that exports to the USA have just about halved in the period 1976-79, which has meant a fall of about

TABLE 2.3.4

Danish exports of frozen cod fillets to the USA 1976-79.
1 000 tonnes.

1976	1977	1978	1979
23.5	19.6	17.5	9.9

Source: Danmarks Statistik, Quarterly statistics for foreign trade for various years.

25% in total exports of cod fillets between 1976 and 1979 (cf. Section 2.4). The restitution received by Denmark was thus approximately Kr 15 million in each of the years 1975

and 1976 and approximately Kr 7 million in 1977, predominantly in the form of subsidies for the export of frozen cod fillets to the USA. Exports to the USA are primarily in the form of blocks of frozen cod fillets, which is an extremely price-sensitive product with a very small margin of profit. Thus the export subsidies of 8-10% in 1975, 3-6% in 1976 and 0.5-3% in 1977 of the price of the finished product were of considerable importance to the profitability of Danish exporters when producing for and selling to the US market.

Preserving industry

The principal raw materials for the Danish fish preserving industry are herring, mackerel and bivalves. The autonomous internal customs duty on herring has been suspended within the EEC since 1977 with the aim of guaranteeing the industry the necessary levels of raw materials.

A typical feature of the landings of herring and mackerel is that quite a large proportion comes from the direct landings of third countries in Danish ports. The picture has changed slightly, however, in recent years in the case of herring, in that the traditionally large Swedish landings of herring have shown a considerable fall in favour of a corresponding increase in commercial imports (overland) from Sweden, due to the fact that Government grants are available to Swedish fishermen who export in this way. Above all in 1979 there was a steep increase in imports of fresh herring from third countries, which rose by 20% in relation to 1978.

TABLE 2.3.5

Denmark: Balance of supply for herring, 1976-1979.
1 000 tonnes.

	1976	1977	1978	1979
Danish landings	39.2	37.7	46.0	53.6
Imports: fresh + frozen whole herring	76.7	73.2	68.0	82.4
Exports: fresh + frozen whole herring	20.3	24.5	22.7	36.5
Available for the herring preserving and filletting industry 1)	96.2	87.3	92.0	100.5
Exports of fresh and frozen cut herring, including off-cuts	37.0	32.8	33.3	40.5

Note 1) : A proportion of the products of the herring filletting industry is exported in fresh or frozen condition in the form of cut herring or off-cuts, which by definition in this context form part of the fresh fish trade, (cf. Section 1.1).

Source: Danmarks Statistik, Quarterly foreign trade statistics for various years;
Ministry of Fisheries, Fisheries Report and provisional figures.

Throughout the 1970s (with the exception of 1979) the supply of herring from third countries has been falling more or less constantly, although thanks to a corresponding expansion in the exports of fresh fish and an increase in national landings, the overall supply of herring has been sufficient to supply the preserving industry, which, apart from a relatively low level in 1977, has had available a more or less constant quantity of raw materials ever since 1976; cf. Table 2.3.5. This is also evident from the fact that imports of frozen raw materials are of modest, although increasing significance.

As far as mackerel is concerned, the supply situation for the preserving industry has also been satisfactory, although here too imports in the form of foreign landings in Danish ports are of critical significance. At certain periods the EEC regulations in respect of restitution subsidies for frozen whole mackerel and fillets of mackerel have presented the preserving industry with certain problems in respect of obtaining supplies of raw materials at an acceptable price.

Sales by the preserving industry are made mainly on the domestic market, in the rest of Scandinavia and in Central Europe, and no attempt has been made by the European Communities to control sales.

2.4. Underlying condition 4 - International market

2.4.1. Importance of the international market to service companies and suppliers

The service companies and suppliers include a large number of firms which provide services or manufacture production equipment for the fishing fleet and for the fish industry ashore. Major variations exist in the level of dependence of these firms on the Danish fisheries sector. Consequently, some of the out-and-out service companies are, as has already been mentioned, entirely dependent on the local fisheries, whilst others, particularly the larger manufacturing firms, are associated with the fisheries sector at both national and international level.

Major opportunities have opened up in export markets in recent years for the manufacturers of fishing gear, since a number of maritime countries have, in conjunction with the changes which have taken place in international maritime legislation, established national, 200-nautical-mile fisheries zones in which they are in the process of building up their own national fisheries. It is precisely in the area of coastal fisheries of this kind that the Danish manufacturers of fishing gear are in possession of the necessary experience and expertise relating to vessels, the fitting out of the vessels, and fishing gear, since it appears that highly intensive fisheries are to be developed along the lines of the traditional Danish fisheries. For example, Danish manufacturers of fishing gear have supplied gear in

conjunction with the development of the national fisheries in Bangladesh, Uruguay and Canada. The reason why the Danish contribution in this area has been at a comparatively modest level until now has to do with the fact that Danish experience and know-how is spread over individual and often relatively small firms, which lack any form of centralized coordination or collecting together of skills. This means that it is difficult for Denmark to comply with the demands which are often placed by these projects, namely the requirement for coordinated, turn-key projects extending not only to the vessels and fishing gear but also to the landing facilities and processing companies. At the same time it is a fact that international competition to participate in these very large government projects is dependent on capital resources and on the availability of state subsidies, which are often able to outweigh the most important competitive factors associated with the Danish manufacturers of equipment, i.e. their know-how, quality and reliable deliveries.

2.4.2. Importance of the international market to the fresh fish trade

In addition to being subject to regulations relating to the supply situation, the fresh fish trade is also subject to a variety of national and above all international regulations concerning trade and transport, which affect the freedom of action of the sector to a greater or less degree. The most important markets for the fresh fish trade are the other EEC countries. Denmark's entry into the EEC and the consequent removal of the tariff barrier to the other EEC countries has, from a purely practical point of view, made it very much easier to reach the traditional customers. In view of the fact that Danish exports of fresh fish have traditionally been made to the other EEC countries, it has not been possible, due to shifts in the market produced by other factors, to assess the extent to which the removal of the tariff barriers has had a positive effect on Danish exports of fresh fish. The introduction of common marketing regulations for fisheries products was accompanied by the establishment of common marketing standards in respect of the most usual species of fresh and chilled fish. This means that common standards are applied in all EEC countries to the classification and grading of fresh, chilled and frozen fish, which has had the effect of promoting trade between member countries.

Danish fresh fish is transported partly by rail and partly by refrigerated lorry, a characteristic feature of which is

that the goods reach their destination quickly and in excellent condition as far as quality is concerned. The standard which is normally achieved is that an item sold at the morning auction in a Danish port will be delivered in, for example, Rome approximately 1½ days later. The fact that this is possible has to do with the highly developed distribution system. A very large proportion of the fish which is exported is purchased and re-packed into export packaging materials in small batches throughout the entire country, after which it is transported to the Danish-German border and is collected together into large loads with the same destination. This highly efficient system is, however, subject to a variety of international regulations relating to transport. The introduction by the European Communities of regulations governing the number of hours worked and obligatory rest periods for those employed in road transport, and above all the introduction of the 'Tachograph', has made

it more difficult and more expensive to transport fresh fish to its destination within the desired period of time. Furthermore, the German and French regulations relating to the total or partial banning of the use of heavy goods vehicles at weekends also present the fresh fish trade with problems, often in respect of quality.

2.4.3. Importance of the international market to the consumer fish industry

The most significant marketing changes which have affected the sales of the Danish fish industry have been the major changes in the US market for fillets of cod over recent years, since this is Denmark's largest single market for deep-frozen produce. Exports of cod fillets to the USA, in terms of value, accounted for 25% of total Danish exports of processed fish products in 1976, excluding whole fresh and frozen fish.

In 1978 and 1979, however, a major reduction took place in Danish exports to this market, without the possibility of compensating for this loss to any great extent in Europe, for instance (cf. Table 2.4.1).

TABLE 2.4.1

Total Danish exports of frozen fillets of gadoids and flatfish, and proportion of those exports to the USA. 1976-1979. 1 000 tonnes.

	1976		1977		1978		1979	
	total	USA	total	USA	total	USA	total	USA
Cod	39.2	66%	30.4	64%	29.4	59%	26.3	37.7%
Other gadoids	6.3	57%	7.3	65%	4.9	39%	4.6	32.6%
Flatfish	8.0	9.3%	8.3	13.8%	8.7	8.5%	11.0	4.7%

Source: Danmarks Statistik, Quarterly foreign trade statistics for various years.

This pattern of developments is, as has already been mentioned, due to the fact that exports to the US market were beset by certain financial and foreign exchange problems, although recent years have also seen major variations in the level of supply to this important market, since the introduction of the 200-nautical-mile fishing

limits has had the effect of increasing the USA's own potential catch on the one hand, and on the other hand has had the effect of increasing Canada's potential catch, and with it the possibility of or wish to supply the American market, particularly with fillets of cod.

The American market for fish products has grown steadily throughout the 1970s. Between 1977 and 1978/^{alone,} there was an increase of more than 14% by weight in the sales of fish and fish products through the retail trade, which is a very much greater increase than in other essential foodstuffs categories; poultry, for instance, rose by 5%. The types of product which predominate on the American market for fish and fish products are ready-to-serve dishes and 'fish sticks'¹⁾, and the traditional market pattern throughout the 1970s has been for the majority of the fillets to be imported from Canada, Norway, Iceland and Denmark as semi-manufactured produce in the form of frozen blocks for subsequent further processing by both American and Canadian, Norwegian and Icelandic firms in the USA.

The introduction of the 200-nautical-mile fishing limits has caused this picture to change considerably in recent years, however; thus the USA's own catches of gadoids increased more than four-fold between 1976 and 1978 alone, from 71 000 t to 183 000 t. In the same period, the Canadian catch of 'bottom fish' (gadoids and flatfish) increased by about 25% to a total of 600 000 t. The result of this is that the situation in the middle of the 1970s, when there was a

shortage of fish, had changed by the end of the 1970s into a situation in which the supply was increasing more rapidly than the demand on the major US market for fish products; the consequence of this has been falling prices. The steep increase in supply over such a comparatively short period is due to the fact that the American and Canadian governments both provide considerable sums of money in support of the fishing fleet and the processing industry. The Danish fish filleting firms have been unable to maintain their comparatively small market share of about 4% against such massive, quantity-related and financial competition; cf. Part I, Table 1.4. The fact that Norway and Iceland have, in

1) Made from fillets of gadoids and flatfish.

fact, been able until now to maintain an equally small market share is attributable on the one hand to the more effective and direct marketing approach of the Norwegian and Icelandic firms, which operate both their own marketing companies and their own re-processing plants in the USA, and on the other hand to the fact that the Norwegian krone and the Icelandic króna have both been devalued in line with the fall in the dollar, with the result that these firms have only minor foreign exchange losses, unlike the Danish firms.

No direct explanation can be given for the reasons why the filleting industry has been able only to a very limited extent to compensate for the losses in the US market in the European market, for instance, which, as stated above, was under-supplied with raw materials in the form of fish. Major factors were presumably the difficult supply situation combined with lack of knowledge of the market, although at the same time imports by the Community of frozen fillets from third countries have risen steeply in the years since 1976, which may have provided considerable competition. Finally, it should also be mentioned that a number of firms have taken the opportunity in recent years of reorganizing their production to include products with a higher level of processing, such as variants of breaded fillets and ready-to-serve main meals.

In addition to being subject to Danish legislation, the manufacture of food products for export is often controlled

in various ways by the legislation in the client country, and in the final analysis by the specific requirements of the customer in respect of the product and the production process. The practical outcome of this is that each country has its own foodstuffs legislation, including, for example, requirements in respect of raw materials, additives and ancillary materials, ingredients listing, unit weights, designation, declarations and microbiological standards. This means that individual firms must often adapt to a wide range of product and packaging variations with small, and in practice often insignificant differences. It is usual for the requirements to be more complex in proportion to the degree of processing of the product, and accordingly it is mainly the preserving industry and that part of the filleting industry which produces ready-to-serve main courses which must adjust to these circumstances.

Since working with a wide range of products places an unreasonable financial load on the business, it would be of considerable importance to many firms if a higher level of international standards could be drawn up in respect of, for example, additives and ancillary materials and declarations for the most common types of product.

It is not possible to quantify the extent of the specific problems faced by the consumer fish industry as a result of these circumstances. The US market is known to be a relatively difficult market in this respect, since each State has its own regulations over and above any common general regulations. However, the market for the Danish fish industry has not been affected to any great extent, since the situation mainly concerns highly processed products.

2.4.4. Importance of the international market to the fish-meal and fish-oil industry

As indicated in Section 2.1.5., Danish production and sales of fish-meal have been declining since 1976, due to a drop in the supply of raw materials, with a simultaneous fall in prices since 1977. As fish-meal is an international standard product, the conditions affecting the sale of Danish fish-meal are determined by the relationship between the overall supply and demand on the world market.

The major world producers of fish-meal are, in order of importance, Japan, the USSR, Peru, Norway, the USA, Denmark,

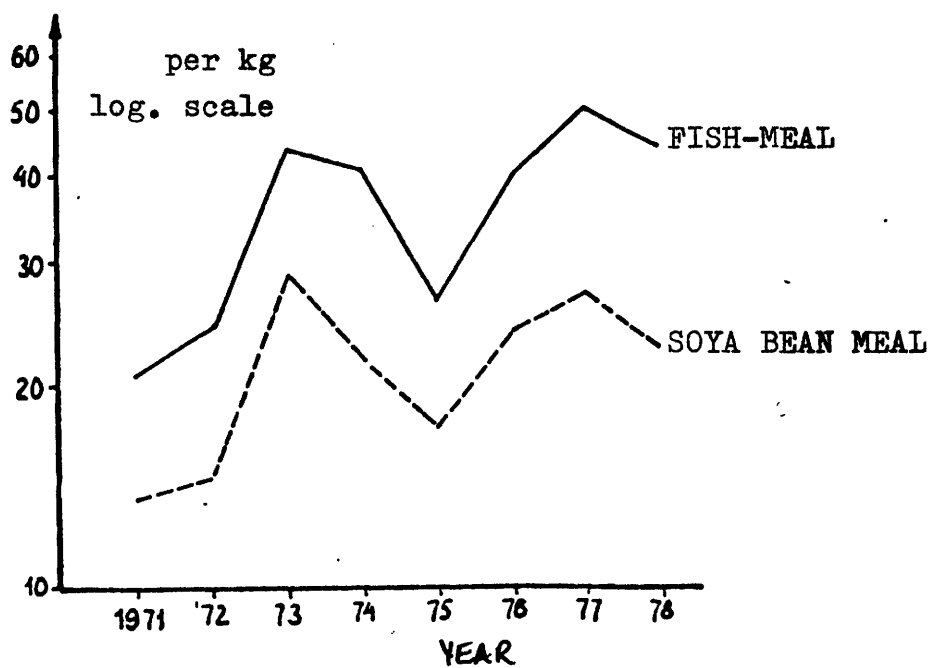
Chile, Iceland and South Africa. Production in all these countries showed an increasing trend in 1976 and 1977, although the trend was declining again in 1978 and 1979, with the exception of Chile, which in 1979 increased its production by a good 30% by comparison with 1978. The major sellers on the world market are Peru, Norway, Denmark, Iceland and Chile. Iceland and Chile have achieved a steady increase in sales throughout the 1970s, whilst sales by Denmark and Norway reached a peak in the years 1975-77, followed by a declining trend. Sales by Peru have fluctuated considerably throughout the 1970s. Japan, the USSR and the USA, which in 1978 accounted for 35% of world production of fish-meal, produce only for the domestic market on the whole.

The main markets for fish-meal are to be found in Eastern and Western Europe, which purchased 22% and 50% respectively of the fish meal which was exported (traded) on the world market in 1978. The Danish markets are located here, too, as may be seen from Part I, Section 2.5.2.3., being mainly in Western Europe. The Eastern European market is supplied mainly by Peru, Norway and Iceland, with the remaining market in Latin America and Asia being supplied mainly by Peru and Chile.

World production of fish-meal and 'fish solubles' has been at a level of between 4.0 and 4.5 million tonnes annually since 1971, which was the last big year for the production of Peruvian fish-meal. This situation should be viewed in the light of the fact that world production of foodstuffs has risen by about 10% annually throughout the 1970s, with the result that there has been a decline in the relative market share of fish-meal in the foodstuffs market. However, the relative fall in the sales of fish-meal has not been reflected in the world market prices, which, apart from reaching a very low level in 1975-76, have remained more or less constant since 1973; cf. Figure 2.4.1. Fish-meal is, as

FIGURE 2.4.1

Movements in the price of soya bean meal and fish-meal on the English market.



Source: Statistical Office of the European Communities.
Purchase prices for raw materials, various years.

has already been mentioned, a standard product, which is used in compound feeds for animals in competition with other protein-rich foodstuffs such as soya bean meal and skimmed milk powder. The world market price for fish-meal is thus determined not only on the basis of the supply and demand for fish-meal, but also on the basis of the overall supply and demand for protein-rich foodstuffs. The price of fish-meal did, in fact, closely follow the price of soya bean meal for a number of years, cf. Figure 2.4.1. Compared with the increase in total world food production, there is thus a clear tendency for fish-meal to be replaced to an ever greater extent by other protein-rich foodstuffs. In 1978 and 1979 there appears to have been a tendency for the demand, and therefore the price, of fish-meal to have been affected by the increased supply of skimmed milk powder from the surplus stores of the European Communities.

The relatively poor price position relating to the sale of Danish fish-meal, especially towards the end of the 1970s, thus appears to be linked to a generally negative movement in prices on the world market since 1977, due partly to a relative decline in demand and partly to the availability and the price of competitive protein-rich foodstuffs.

2.5. Underlying condition 5 - Importance of specific legislation in respect of assistance to industry to individual sectors within the fisheries

Primary sector

Until 1977, the legislative measures aimed at directly influencing the structure and economy of the Danish fishing fleet were extremely limited in extent. Legislation was thus directed principally at the infrastructure (expansion of the fishing ports) and at the institutions.

Against the background of changes in the conditions affecting the Danish fishing ports and on the basis of the recommendations proposed by the Fisheries Commission which was established in 1975 (cf. Part I, Section 4.1), a more extensive policy of structural reorganization was introduced in 1978.

The instruments of this structural reorganization policy, which are discussed in greater detail in Part I, Section 4.2., may be divided up into the following:

- a) grants
- b) loans
- c) other measures
- d) EEC measures

re a) In 1978 the Danish government provided a total of Kr 48 million in direct grants to the fisheries sector, of which Kr 32 million, corresponding to approximately 1.5% of the production value, went to the primary sector, and Kr 16

million to the fish industry. Approximately Kr 115 million were made available in the form of grants in 1979, of which Kr 102 million went to the fisheries, corresponding to approximately 6% of the production value.

It is possible to distinguish between the following types of grants:

- 1) grants aimed at the relief of acute problems;
- 2) grants aimed at helping the fishing fleet to adjust to changes in the potential catch.

re 1 In both 1978 and 1979 grants were paid in respect of fishing vessels which were laid-up in conjunction with temporary bans on fishing. The Kr 50 million authorized for this purpose were fully utilized. No data are available at

the present time in respect of the distribution of the grants by type and size of vessel.

Grants were made available in 1980 to enable alternative fisheries for Norway pout to be conducted in other waters as the result of the closure of the Norway pout banks. The sum of Kr 23 million which was approved for this purpose was utilized only to a limited extent, however, as only a few vessels were able to meet the conditions for the grants.

re 2 In 1979 Kr 50 million were paid out in the form of grants to Danish fishing vessels which had been taken out of service in the fisheries. The availability of these grants meant that 101 vessels of more than 5 g.r.t., corresponding to 4% of the total number, were taken out of service in the Jutland fisheries. The grants were paid above all to vessels of between 40 and 50 years old in the size category 30 - 50 g.r.t.

Approval was given in 1977 for Kr 10 million to be allocated to energy-saving measures on fishing vessels (modification and replacement of engines on the boats). The fishermen found it difficult to take advantage of this legislation, however, since only a very small number of vessels were able to meet the technical stipulations in respect of the replacement of engines.

Approval was given in 1977 and 1979 for the payment of

Kr 10 million and Kr 20 million respectively in grants in respect of investments in the fishing fleet aimed at increasing productivity in the handling of the catch and at raising the proportion of the catches used for consumer purposes. The funds approved in 1977 have been used up. Since the 1979 legislation only came into force in the middle of that year, only Kr 8 - 10 million of the 1979 allocation was utilized, because a large number of applications had not been dealt with by the year end. Investment grants were provided mainly for the installation of cleaning and sorting equipment on board the vessels, mechanical ice makers, and for the insulation and improvement of cargo holds.

Kr 5 million were allocated in each of the years 1978 and 1979 for experimental fisheries. The major proportion of these grants were made available for the purchase and testing of fishing gear (trawls and long-lines), and for certain major projects which were already under way,

including experimental fisheries for dark coalfish, which, as previously mentioned, is a considerably under-utilized resource.

In each of the years 1978 and 1979, Kr 1.5 million were allocated in the form of grants for the employment by the fisheries organizations of technical and financial consultants. A number of engineers and economists have been engaged by the main organizations in recent years, and also by the larger local fisheries organizations. It is doubtful whether these positions would have been created without the help of these grants towards the salaries involved.

re b) The changes in the Constitution of the Kongeriket Danmarks Fiskeribank (the fisheries bank of the kingdom of Denmark) in 1978 have enabled the bank in recent years to increase considerably the level of its lending to the fisheries, including the provision of loans for purposes which were not previously acceptable.

Certain of the loans available from the bank contain a considerable element in the form of State grants. This is the case, for example, with the so-called subsidized-interest loans, on the basis of which the Bank was able, within a ceiling of Kr 50 million in 1978, to provide cash loans at low rates of interest and with repayments deferred for two years to fishermen who had got into financial difficulties as the result of the limits which had been imposed on the

size of the catches. A total of 257 loans to an overall value of Kr 46 548 000 were provided under this scheme. The scheme attracted State grants of approximately Kr 2.5 million each year.

A loan scheme was established in December 1977, on the basis of which the State, via the Kongeriket Danmarks Hypotekbank (the mortgage bank of the kingdom of Denmark), could provide low-interest, foreign currency loans at a guaranteed rate of exchange to the commercial financial institutions, including the Fiskeribanken (fisheries bank) for re-lending in the form of so-called 'K-loans' at 10% interest and with a repayment period of 10 years¹⁾. Under this scheme in 1978 the fisheries bank had available a total of Kr 30 million, of which Kr 24 million were earmarked for the fisheries. Of this sum, about half was allocated to cover part (50%) of the exchange losses on foreign loans which had been taken out by fishermen and by the fish industry prior to 1 January 1976²⁾. These foreign loans (worth approximately Kr 350 million), which had mainly been taken out in the form of

- 1) Interest includes a provision to cover the risk of exchange losses.
- 2) Exchange losses were subsequently made tax-deductible.

Swiss francs, had attracted exchange losses of the order of 25 - 30%.

The K-loan scheme was extended in 1979, and the cash ceiling for loans to the fisheries sector was raised to Kr 60 million. The funds which were reserved for the primary sector were fully utilized, mainly for investments in the fishing fleet (refits and purchase of engines, etc.). In 1978 and 1979 approximately Kr 16 million were made available in the form of K-loans to cover exchange losses, and approximately Kr 24 million as investment loans.

The changes in the Constitution of the fisheries bank in 1978 meant that its traditional 'areas of lending', i.e. loans for new vessels and engines and for the purchase of second-hand vessels, could be extended to include loans for the refinancing of foreign loans and for the payment of debts owed to suppliers. The simultaneous enlargement of the capital base and the loan framework of the bank, together with the increased ability to make loans in the form of cash loans, meant a considerable increase in the traditional lending activities of the bank at market rates in 1979 by comparison with previous years. Thus in 1979, loan commitments of approximately Kr 109 million were made to the fisheries, as against approximately Kr 46 million in 1978.

re c) In an attempt to conserve the limited stock of fish for fishermen who were engaged in fisheries as their principal

activity 1), an amendment^{was made} to the Salt Water Fisheries Act (cf. Section 4.2.1) in 1978, whereby the access of part-time fishermen to the fisheries in Danish territorial waters was restricted considerably, and whereby new part-time fishermen were denied access completely. A total of 3 971 part-time fishermen were registered in 1977, and it may be assumed that this number has fallen in 1978 and 1979. It is not possible to assess the significance of the change on the quantity and value of the catch.

The Law which was introduced in 1979 for the purpose of controlling the fisheries, which empowers the Minister of

1) Defined as fishermen who derive at least 3/5 of their annual income from professional fisheries.

Fisheries to implement a series of necessary control measures, has meant that the fisheries in 1979 were subjected to a variety of provisions relating to the distribution of fish stocks (allocation of quotas by period, bans on fisheries, etc.) and their use (for consumer or industrial purposes) ¹⁾, whereas no provisions of a nature which restricted capacity ²⁾ were stipulated in 1979. The effects of the provisions relating to the allocation of resources are discussed in Section 2.1.2.

re d) Pursuant to Council Directive 350/77, fishing vessels in the EEC sea have been forbidden since February 1977 from engaging in on-board processing activities other than salting, shrimp-boiling, filletting, freezing and the reduction of waste and unavoidable catches. This provision has had a limited effect on the Danish fisheries, since a number of individual vessels equipped for the processing of industrial fish into fish silage have been obliged to leave the fishing fleet.

Only limited use has been made in Denmark of the assistance scheme established in Council Directive 1852/78 in respect of EAGGF grants for the development of inshore fisheries (for the construction or purchase of fishing vessels) and for the development of fish farming (new installations or modernization of existing installations for the farming of fish, crustaceans or molluscs).

Service companies and suppliers

No financial support schemes were set up specifically for the service companies and suppliers to the fisheries in 1978 and 1979. Nevertheless, these firms were able to take out K-loans via the Investering sinstitut tet for Industri og Håndværk (industrial and trade investment institute).

Consumer fishing industry

a) Grant schemes

Pursuant to the Law relating to financial assistance for structural measures within the consumer fish industry which entered into effect in June 1978, cf. Part I, Section

- 1) These controls have until now been applied in relation to the Salt Water Fisheries Act.
- 2) A provision was laid down in 1980 prohibiting any increase in the capacity of the fleet (new vessels and conversion of existing vessels) without special permission.

4.2.2., approval was given for a total of Kr 25 million to be made available for development and rationalization measures aimed at adjusting the industry to suit the changed conditions in respect of fish stocks. The grant scheme, which allows the possibility of providing project assistance of up to 25% of the overall investment, is coordinated by means of EEC Council Directive No. 355/77, which permits the payment of grants by the EAGGF in respect of rationalization measures, etc., within the consumer fishing industry. By the summer of 1980, between 30 and 40 firms had received financial assistance, with 10 of these also receiving assistance from the EAGGF at the same time, and it is anticipated that the approved sum will have been used up completely once all the applications have been dealt with.

Financial assistance has been provided for, amongst other things, the expansion of cold-storage capacity, coalfish filletting plants and the additional processing of fillets.

Assistance provided to the consumer fish industry by the EAGGF in 1978-79 amounted to Kr 7 million. In addition, the fish industry was able in 1978 and 1979 to obtain Kr 0.5 million each year in the form of grants for the setting-up of consultancy services.

b) Loans schemes

The fish industry was able in 1978 to obtain low-interest loans at a guaranteed rate of exchange (K-loans, see above)

via the Finansieringsinstituttet for Industri og Håndværk (the industrial and trade finance company).

The loan framework was expanded in 1979, at the same time as the administration of the loans was transferred to the fisheries bank. A total of 55 loans to a total value of approximately Kr 56 million were provided in 1978-79 in the form of K-loans to the fish industry ¹⁾.

c) Other schemes

A guarantee scheme was introduced in 1979, in accordance with which the State was able, within a ceiling of Kr 50 million, to issue guarantees for bank loans taken out by firms in the consumer fish industry which had got into financial difficulties as a result of the supply situation.

1) Until 1 July 1979.

2.6. Underlying condition 6 - General commercial legislation.

A thorough analysis of the significance of general commercial legislation to the structural and financial development of the fisheries sector is extremely difficult for several reasons. On the one hand, what is involved is a very large complex of laws, etc., with highly diverse aims and effects, and on the other hand the majority of items of legislation have both direct and indirect effects of both financial and social character which are transmitted from one sector to the next.

An attempt will be made in the following Section to shed light on the specific effects on the fisheries sector of some of the more significant commercial legislation which was introduced in Denmark in the 1970s. The background to this is that certain items of legislation have been directed at problems which meant that the fisheries sector was to a very great extent affected by the legislation in both a positive and a negative manner. It is possible in the case of all the items of legislation to provide a more or less accurate indication of the direct economic effect, although at the same time it must be established that many of the items of legislation also have consequences for employment and for the market which may not be illustrated directly.

This commercial legislation includes:

a) A series of temporary, direct and indirect support

schemes aimed at encouraging changes in the production arrangements and production processes of individual firms as part of an essential process of adapting to the development of the economy, society and the market.

- b) Laws which allow certain tax concessions to commercial firms.
- c) Measures for the general encouragement of commerce and productivity, with more or less extensive State involvement.
- d) Certain innovations in the area of labour and environmental protection legislation of significance to the fisheries sector. Assistance is also available under the regional development legislation discussed in Part I, Sections 2.1.5 and 2.5.2.4.

A characteristic feature of the general commercial legislation discussed here is that it extends only to industry, commerce and trade. Thus the primary fisheries sector is covered only by the specific commercial legislation discussed in Section 2.5.

re a) Support schemes

The legislation dealt with here includes¹⁾:

- 1) The Law in respect of financial assistance for environmental investments;
- 2) The Law in respect of State assistance for energy-saving measures in conjunction with industrial processes;
- 3) The Law in respect of State assistance for product development;
- 4) The Law in respect of State injections of funds into the Finansieringsinstituttet for Industri og Håndværk (the industrial and trade investment institute).

Of the aforementioned Laws, 1) and 2) are direct assistance Laws which are aimed at encouraging investments in conjunction with necessary improvements to the existing process equipment, whereas 3) is slightly wider in its perspectives, on the one hand providing direct financial assistance to meet the additional expenditure incurred by small and medium-sized companies in conjunction with product development work so as actually to support the individual firms in keeping abreast of technological and marketing developments, and on the other hand attempting to

encourage production which will have a significant effect on employment, the promotion of exports or on providing competition to imports. In the Law in respect of State injections of funds into the Finansieringsinstituttet, the State funds are directly responsible for the fact that the Finansieringsinstituttet is able to provide the so-called EM-loans, which attract $3/4$ of the market rate of interest, for projects within precisely defined areas connected with exports and the environment.

At this point in time it is possible only to summarize the benefits which the fish industry has been able to derive from the aforementioned schemes (cf. Appendix 2). The fish-meal and fish-oil industry has made very great use of the opportunities to obtain assistance with environmental investments, both in the form of direct State assistance and in the form of EM-loans. This is connected with the major efforts which have been made both by the authorities and by the industrial firms to reduce problems of unpleasant odours in particular.

- 1) A more detailed description of the conditions associated with the individual schemes and of the general level of utilization of the schemes is to be found in Appendix 2.

The consumer fish industry, on the other hand, has only made use of the direct assistance legislation to a relatively modest extent. The reasons for this are primarily that the consumer fish industry has really only made a very modest effort to take advantage of the schemes. On the whole, the Law in respect of financial assistance for environmental investments has not been used by the consumer fish industry, and applications have been received and assistance provided under the Law in respect of assistance for product development for only a small number of projects and for a comparatively modest amount.

The Law in respect of assistance for energy-saving measures has been used to a certain extent by the consumer fish industry, and much greater use has been made of the EM-loan schemes, particularly in the years 1977 and 1978, in which years EM-loans totalling Kr 4 million were taken out in conjunction with total investments of Kr 8 million in this area, encouraged by a new and extraordinary initiative on traditional markets. Furthermore, the consumer fish industry took out EM-loans to a less extent in support of environmental investments.

The reason for this apparently paradoxical situation, in which the fish industry has utilized the assistance provided for product development only to a modest extent, whilst at the same time it has applied for a considerably greater level of financial assistance for marketing development

must presumably be sought in the structure of the fish industry, which is characterized by its large number of small firms with a product range consisting of products which have undergone relatively simple processing. Thus the traditional product development within these firms is limited, with certain exceptions, to essentially minor changes and adjustments to the product, which are not covered by the Law in respect of product development, but which may nevertheless call for an extraordinary level of marketing effort.

One other important reason for the lack of use which has been made of the support measures is presumably the fact that the majority of the consumer fish industry is located in 'special regional development zones' (cf. Part I, Section 2.2.4), in which the firms receive financial support under the regional development legislation in the form of loans and grants for new investments in both buildings and process equipment. Thus in recent years, and above all in 1979, a considerable amount in loans has been approved under the

regional development legislation in respect of investments in the fish industry (cf. Part I, Section 2.5.1.4), which has presumably satisfied the needs of the industry when combined with the specific commercial support measures.

re b) Fiscal legislation

Danish fiscal legislation generally allows for investments in operating equipment to be depreciated by up to 30% of the book value of the investment. This provision was applied in the years 1975 and 1976, when the possibility was also provided of further depreciating new investments by up to 15% of the cost of acquisition. Similarly, since 1977, it has also been permissible to make investment deductions in respect of machinery and inventories and similar operating equipment which had been acquired in the period between the middle of 1975 and the end of 1978. These investment deductions represented 20% of the difference between the cost of acquisition and the disposal value of the operating equipment in 1975 and 1976, and 10% of this difference in 1977 and 1978. However, it was not permissible to use the two extraordinary depreciation schemes at the same time.

No data are available to permit the evaluation of the extent to which these fiscal measures encouraged new investments in the fish industry and in the service companies and suppliers to the fisheries, although as may be appreciated from Part I, Section 2.5.4., a marked increase has occurred since 1976 in investments in operating equipment by both the consumer fish

industry and the fish-meal and fish-oil industry, after a very low level of investment in 1975, so that the sector was evidently able to derive very great benefit from these arrangements.

re c) Other schemes

Over and above the aforementioned commercial support measures, there also exists a number of other schemes aimed at the general encouragement of commerce and productivity, which may not be described as true support measures in that sense, but which do nevertheless contain a significant level of State financing or guarantees. Examples of this are the export promotion funds administered by the Eksportkreditråd (the export credits board).

The activities and powers of the Eksportkreditråd are laid down in the Law in respect of Danmarks Erhvervsfond (the Danish commercial fund), and extend to providing sureties

for bank loans and guaranteeing losses incurred in export transactions as the result of unpaid debts. The financial base of the Eksportkreditråd is constituted mainly by the risk premiums paid in conjunction with the individual sureties and guarantees, although at the same time Danmarks Erhvervsfond, and in the final analysis the Danish State, act as a safety net for the guarantees and sureties issued by the Eksportkreditråd.

The fish industry and the fisheries equipment industry make extensive use of the export credit scheme, although it is not possible to obtain statistical information indicating the scope of this use in more detail.

re d) Labour legislation, etc.

Labour legislation is normally understood to include a large complex of laws covering the areas of employment services, national insurance, unemployment insurance, accident insurance, pensions, training and re-training, etc. This Section will be limited to a discussion of individual areas of the legislation in respect of the employment services and unemployment insurance, which give rise to special problems in view of the particular production conditions which exist within the fish industry.

Law in respect of the employment services and unemployment assistance (Lbk 78, 441; L 79, 229)

Through their membership of an unemployment fund, individuals who are available on the labour market are entitled, under

precisely defined conditions, to receive unemployment payments in times of temporary unemployment. The finance for the payment of assistance by the unemployment funds comes from membership contributions, employers' contributions and, for the most part, from State contributions. The amount which may be received in the form of assistance is a fixed maximum sum not exceeding 90% of the previous salary.

For many years, the Law provided for members of an unemployment fund to be entitled to receive immediate assistance in the event of their not having been employed for the number of hours for which they had been insured. An amendment to the Law in 1979 introduced certain restrictions in this respect, for the purpose of preventing abuses. These

amendments are aimed at limiting the extent of short-term lay-offs. The amendments are as follows:

- 1) Those with full-time insurance may only receive unemployment assistance for a minimum of 8 hours per week; i.e. if more than 32 hours, but less than 40 hours, have been worked in any one week, then no assistance will be paid in respect of the missing hours.
- 2) Any overtime worked in one week must be taken off in lieu in the following weeks before an insured employee shall be entitled to receive unemployment assistance.
- 3) The employer shall, whenever lay-offs occur within quite precisely defined periods either side of public holidays, pay up to one week's unemployment assistance per absent employee.

All three amendments have a quite severe effect on both the workers and the firms within the fish industry, since this sector is characterized by its extremely variable working conditions due to fluctuations in the supply of raw materials caused by the time of year, the weather and regulations. As has already been seen in Part I, Section 2.5.1.5, the fish industry is characterized by its low number of working hours per person per year, although at the same time the fish industry has twice as many overtime hours in relation to the average number of overtime hours for industry as a whole. This is due to the fact that the very irregular supplies of perishable raw materials must be processed 'when they are

there', which means that work takes place under 'high pressure' when the supply of fish is plentiful, but that a proportion of the work force is laid-off when the level of supply is lower.

The introduction of these new regulations has forced the firms to organize their production in such a way that there is the smallest possible amount of overtime and periods of short-term lay-offs. This presents problems to large areas of the fish industry, and the amendments have resulted in a direct loss of income for many of those employed in the fish industry, although in the long term the result is additional costs for the firms, which in the circumstances are required to insure the full working hours and wages of their workers.

The regulations in respect of the payment of additional employers' contributions in respect of lay-offs either side of public holidays have the effect of directly increasing the wage costs of the firms. Danmarks Fiskeindustri- og Eksportforening (the Danish Fish Industry and Export Association) has estimated that the immediate effect of the amendments will be to increase wage costs by 20 - 25% annually.

It is difficult to estimate the financial significance of the amendments to employees in the fish industry, although it is not uncommon, particularly in the case of the regulations in respect of lay-offs either side of public holidays, for the result to be a greater number of days out of work, since this regulation is 'applied' in such a way in many places, that production is either fully or partially suspended both before and after the period in question. This has the effect of lengthening considerably the period of unemployment either side of the public holiday. On the other hand, the remaining amendments appear to have enabled the firms to improve their production planning in such a way that they have reduced considerably the extent of any short-term lay-offs and overtime; this is particularly true of the processing firms. Nevertheless, it is not possible to assess the extent to which the aforementioned circumstances compensate for each other.

Whereas the processing firms are able to a certain extent to adjust to these changes in such a way as to limit any inconvenience to both the firms and their employees, the

service companies (including those providing special transport and handling facilities in conjunction with the initial stage in the selling chain) have only limited opportunities to do this and are therefore affected to a greater extent by the amendments.

The stipulation in respect of additional employers' contributions in conjunction with lay-offs either side of public holidays also extends to agriculture and to the fisheries. This means that the fisheries are also affected relatively severely by this regulation, since the practical administration of the limited stocks often means that the fishermen either choose or are obliged to remain ashore on days which fall either side of public holidays.

The variable labour input of the fish industry also conflicts in one other area with existing practice surrounding the Law in respect of the employment services and unemployment

assistance, because the system of unemployment services is not flexible enough to meet the requirements of the firms for additional labour to be sent at short notice (i.e. in a matter of hours) when the opportunity presents itself for purchasing large quantities of fish at the morning auctions. This situation is behind the 'paradox problem' of the fish industry which manifests itself from time to time in an inability to find labour in spite of high unemployment.

Law in respect of the protection of the environment (L 73, 372, with subsequent amendments, and Notice 78, 290)

A comprehensive framework law was introduced in 1973 in respect of measures for the prevention of environmental pollution. Pursuant to this Law, the fish industry is classified as a 'highly polluting activity' in which, amongst other things, any new installations or changes or extensions, etc., which will give rise to pollution may take place only with the approval of the regional authorities (i.e. with the approval of the Administrative District), and in respect of which the local authorities (Communes) are empowered to order remedial measures to be taken, including the closing down of any operations which are polluting the environment. This regulation is applied at regular intervals to both the consumer fish industry and the fish-meal and fish-oil industry.

The particular environmental problems of the fish industry are on the one hand problems associated with effluent and

on the other hand the odour problems of the fish-meal and fish-oil industry, in respect of which a great deal of work into methods of prevention has been done during the 1970s both by official bodies and by the firms themselves. The fisheries communes and the industry itself have jointly worked out a series of regulations in respect of 'the organization and operation of fish-meal and fish-oil industries', which forms the basis of the approvals procedure applied by the Administrative District in connection with any changes to the installations as well as the basis of the inspection procedures applied by the Commune in relation to the firms. The majority of firms at the present time comply with this series of regulations, thus enabling the pollution of the air and the pollution of the water resulting from the processing of fish to be limited to an acceptable level by technical means.

However, the firms are often required to accept partially spoiled fish which may not be transported or processed

without causing pollution of the air. In an attempt to overcome this, experiments have been conducted for a couple of years using a system whereby the price is calculated on the basis of the quality of the fish, and at this point in time it appears likely that a system of this kind will enter into common use throughout the country.

The increasingly strict requirements introduced throughout the 1970s have resulted in the investment of large sums by the fish-meal and fish-oil industry into environmental conservation measures. Since the coming into force of the Law in respect of the protection of the environment in 1974, the fish-meal and fish-oil industry has invested Kr 33 million in measures for the improvement of the environment; financial assistance of just under Kr 9 million has been received from the State for this purpose pursuant to the aforementioned Law in respect of assistance for investments of this kind.

Investments for environmental protection measures by the consumer fish industry in the same period amounted to approximately Kr 10 million, although in this case basically direct no/assistance was received from the State. The proportion of total investments represented by environmental investments in the period 1974-78 was approximately 11% in the case of the fish-meal and fish-oil industry, and 3.5% in the case of the consumer fish industry.

3. Opportunities for and obstacles to adaptation to changes in underlying conditions

Before undertaking any summary of the overall consequences of the changes in the underlying conditions for the individual sectors of the fisheries system, it is desirable to mention the one underlying condition which is applicable to the fisheries sector, namely that ownership of the natural resource arises only when the catch is taken. Thus in the case of fisheries in which there is no control over the fishing activities, such activities will increase for as long as they are associated with a private financial gain, irrespective of the level of reproduction of the fish stocks. The controls imposed on the extent of the fisheries in the whole of the north-east Atlantic in recent years indicate that the level of reproduction of a number of major fish stocks has been threatened as a result of the previously uncontrolled access to fishing these stocks.

The main method of control which has been used in order to reduce the fishing activities is the imposition of quotas on catches. In spite of its suitability as a means of preventing biological over-fishing, this method of control is typically 'uneconomical' in the sense that when it is used in otherwise uncontrolled fisheries it will result in the uneconomical utilization of capacity, which will then be repeated all the way from the primary sector to all the sectors in the fisheries system. The quota system too, in spite of any time-related distribution of the individual

quotas, tends to produce uneconomical expansion of the capacity in individual sectors.

The aforementioned consequences of the quota system, which have been described in detail in the literature published on fisheries economics, have been shown in many places in this survey to pose considerable problems to the Danish fisheries sector.

This general problem area will not be dealt with in any greater detail here, although it is important to emphasize by way of introduction that many of the problems referred to in the following chapter have a common origin in the 'non-economic' means of controlling the fisheries which is in fact the quota system.

3.1. Fisheries

The most important changes in the underlying conditions affecting the Danish fisheries have been a falling or stagnating trend in the catch, produced by various control measures, in combination with rising costs in the actual fishing and falling or stagnating prices for the majority of species of fish. The accounts information for a number of fisheries ports contained in Part I, Section 2.2.3 indicate that the gross profit has been stagnating since 1977, whilst costs have been rising, thereby resulting in a falling trend in net profits, and a directly negative trend in the case of the larger trawlers in 1979.

Nevertheless, the development in gross profit since 1977 has been characterized by an improvement in the profit from the consumer fisheries, with a worsening of the profit from the industrial fisheries.

There was an increase of 11% for the country as a whole in the value of consumer landings in the period 1977-79, whereas there was a fall of 24% in the value of landings of feed fish and industrial fish, causing the value of the consumer landings to increase from 62% to 71% of the value of the total landings by Danish fishermen.

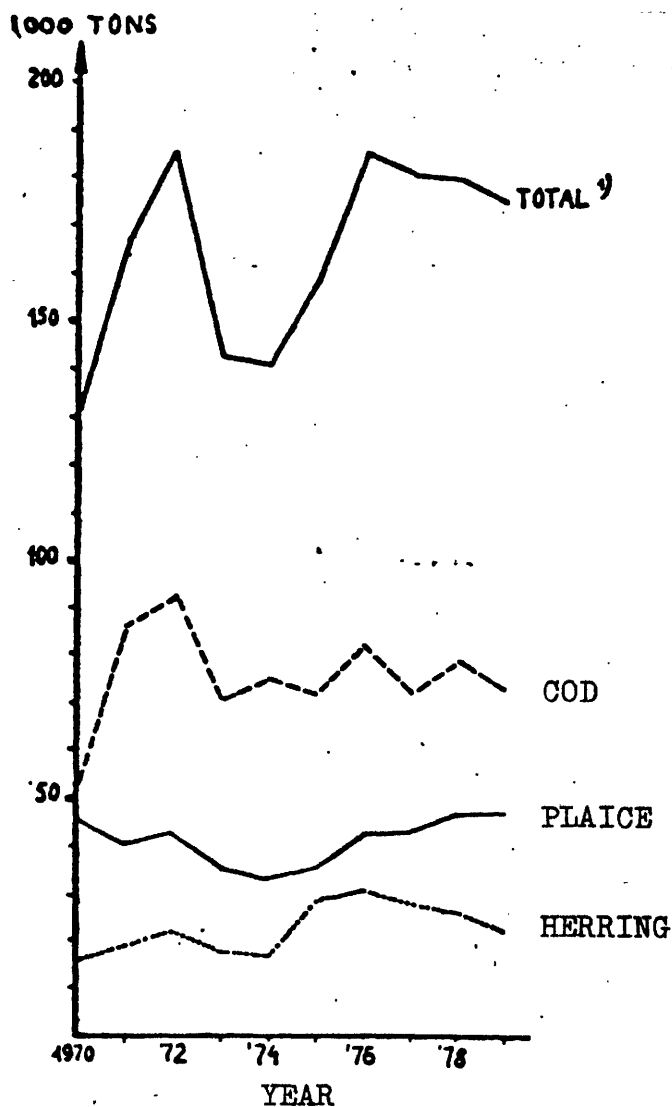
This increase in the significance of the consumer fisheries has taken place for all types of vessel, although with major variations. In the case of the smaller vessels (of less than 50 g.r.t.), consumer fisheries accounted for a fluctuating

proportion of between 70% and 90% of the total profit, whilst the proportion fluctuated between 10% and 70% in the case of the larger vessels. Increases in yield of the order of 30% have been reported from individual ports on North Jutland in the area of consumer fisheries.

Because of the falling gross profits from the industrial fisheries since 1977, the average overall gross profit has remained more or less constant in the period 1977-79, corresponding to a fall in real terms, compared with the increase in the general level of prices. The developments in the gross profit must be viewed in the light of the respective developments in catches and prices.

FIGURE 3.1.1

Catches of consumer fish by Danish fishermen in the North Sea, the Skagerrak and the Kattegat, 1970-79.

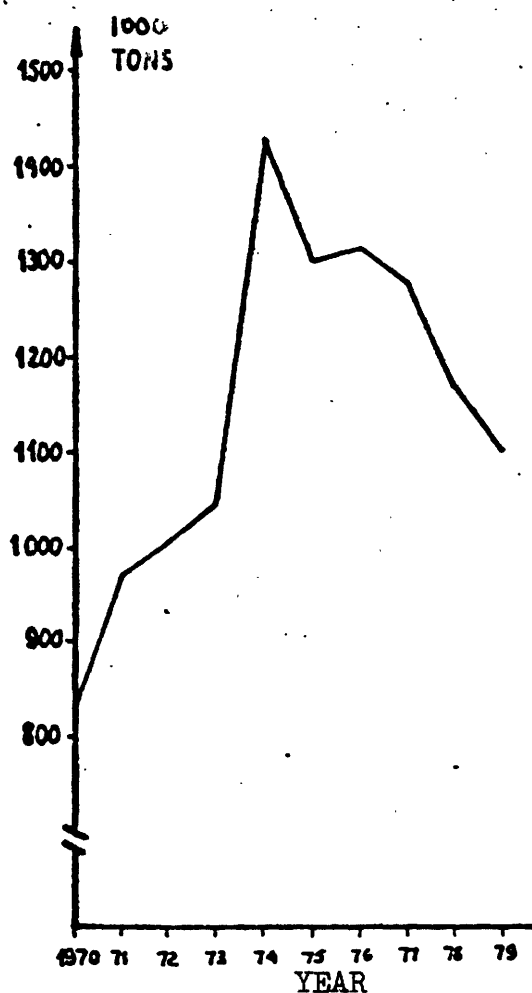


Note 1): Includes the species cod, plaice, haddock, herring, mackerel and coalfish.

Source: Ministry of Fisheries, Fisheries Report for various years and provisional figures.

FIGURE 3.1.2

Catches of industrial fish¹⁾ by Danish fishermen in the North Sea, the Skagerrak and the Kattegat, 1970-79.



Note 1): Includes the species Norway pout, sprats, sand eels, gadoids, mackerel and herring in the North Sea, and the species sprats, gadoids, mackerel and herring in the Skagerrak and Kattegat.

Source: Ministry of Fisheries, Fisheries Report for various years and provisional figures.

Consumer catches in the North Sea, the Skagerrak and the Kattegat, which are the traditional waters for the Jutland fisheries (cf. Part I, Section 1.1) were of the order of 180 000 t in the period 1977-79. Compared with the average catches in the period 1970-77, the level of catches had risen, although it was exhibiting a stagnating/falling trend; cf. Figure 3.1.1.

The stagnating catches in the period 1977-79 must be viewed in the light of the extensive control measures which were introduced in 1978 and 1979 and which included regulations in respect of quotas and technical measures, as well as net size and unintentional catch percentages. In the case of the consumer fisheries the potential catch was limited particularly by the quotas, whereas in the case of the industrial fisheries the limiting factor was mainly the technical measures which had been introduced.

Thus the most important reason for the stagnation in consumer catches since 1977 was the ban on herring fishing in the North Sea and the reduction in the herring quota in the Skagerrak and Kattegat in 1979 (cf. Section 2.1.1 and Section 2.1.2). These measures were taken for purposes of stock conservation. On the other hand, the reduction in the catch resulting from the cod quota in the North Sea was imposed for purposes of distribution, above all in favour of Great Britain and Norway. Danish catches of cod remained at a more or less constant level, however, since the quotas both in

the North Sea and in the Skagerrak and Kattegat were exceeded in spite of a number of bans on fishing.

However, the catches in 1978 and 1979 were not only limited by the quotas which had been imposed on the basis of biological and distribution-related considerations. The Danish quotas offered the possibility of a considerable real increase in the consumer fisheries as far as coalfish and mackerel were concerned. This possibility was not utilized in the case of coalfish, due to lack of experience with the catching of this particular species of consumer fish. The mackerel quota, too, was not utilized for consumer purposes, mainly as the result of low prices in this case.

The prices in the first link of the selling chain were also important for the stagnating trend in the gross profits of the consumer fisheries. Thus the wholesale price index for

consumer fish only showed an increase of just over 10% between 1977 and 1979, as against approximately 30% in the two previous years. Compared with the retail price index, this represents a real fall in price between 1977 and 1979 (cf. Section 2.3.1).

This development is due mainly to the modest increases in the price of herring and cod. The prices of herring showed a direct decline between 1978 and 1979, which was presumably associated with the increase in the level of supply to the Danish market, including imports of both fresh and frozen whole herring.

The stagnating prices for cod, on the other hand, are associated with problems of selling the fish in the subsequent links in the selling chain, since the stagnation in prices took place at the same time as the stagnation in the overall level of supply.

The level of industrial catches in 1977-79 was not significantly below the average level of industrial catches in the period 1970-77, although it was marked by a sharply falling trend; cf. Figure 3.1.2. The drop in industrial catches between 1977 and 1979 was not due to the quotas, which on the one hand were large (sand eels and Norway pout) and which on the other hand were exceeded by a considerable margin (sprats and whiting). In spite of the existence of an adequate quota, however, the Norway pout fisheries were restricted in 1978 as the result of the closure by Great

Britain of the 'Norway pout bank'. Furthermore, the tightening of the regulations relating to unintentional catches in 1978 together with the net size regulations which were already in force produced a decline in the catch of gadoids for industrial purposes. The decline in the landings of herring for industrial purposes is attributable to the ban on catching in most waters in conjunction with the tighter regulations relating to the size of unintentional catches and to net sizes. The decline in industrial catches between 1978 and 1979 was due almost exclusively to a drastic fall in the catches of sand eels as the result of a natural fluctuation in the availability of the species.

The reduction in the gross profit from the industrial fisheries was due not only to the reduced catches, but also to a great extent to the 20% fall in the price of industrial fish between 1977 and 1979. This fall in price was a consequence of the dependence of movements in price on the world market for protein-rich foodstuffs (cf. Section 2.3.1).

Although the overall gross profit from the fisheries was, as has already been mentioned, more or less constant in the period 1977-79, there was a simultaneous rise in the level of overheads which had the effect of reducing the net profit.

The available financial analyses thus reveal an increase of between 3 and 6% in expenses between 1977 and 1978, and a similar increase between 1978 and 1979, for which full details are only available for Hanstholm, however.

The reason why costs increased more than gross profit between 1977 and 1978 is that, unlike fish in the first link in the selling chain, the overheads of the fishing fleet followed the general movement in prices in Denmark; cf. Part II, Section 2.2.1. A major increase in costs took place in 1979 as a result of the steep rise in the price of oil, which increased by no less than 75% during 1979. This price increase had a particularly adverse effect on the trawler fisheries, in which the consumption of fuel is at a relatively high rate by comparison with other types of fisheries. The cost of fuel rose accordingly between 1978 and 1979 from approximately 12% to approximately 20% of the overall operating costs of the trawler fisheries.

It will be appreciated from the above that the fishing fleet has been caught in a financial trap between stagnating incomes and rising costs. This development has had a particularly adverse effect on the trawlers, which are engaged mainly in industrial fisheries, since there has been a marked

fall in the gross profit from industrial fisheries, in addition to which these vessels use relatively more fuel than other types of vessel. Thus in 1979 trawlers of more than 118 g.r.t. in Hanstholm produced a negative operating profit, whereas the majority of the consumer fisheries produced a positive operating profit.

The larger trawlers in the industrial fisheries had only a modest possibility of improving their poor operating profits. Of course, considerable quotas of blue whiting and horse mackerel remained unutilized in the more remote waters, although the modest prices for industrial fish, in conjunction with the rising price of oil, made profitable fisheries for these species rather difficult.

As has already been mentioned, difficulties were also encountered in attempting to improve earnings by converting to consumer fisheries.

The traditional possibility for individual vessels to get out of a difficult financial situation by increasing their fisheries activities was made more difficult by fishing bans, since the fisheries were restricted to short periods in which everyone took part, followed by the introduction of a ban, (cf. Part II, Section 2.1.2), prohibiting any further fishing.

In conjunction with the fishing bans, grants were made available both in 1978 and in 1979 in respect of the temporary laying-up of fishing vessels. The main effect of these grants was to increase the gross profit by about 2%. In relation to the increase in the general price level, however, these grants had only a modest effect in improving the poor financial situation of the fishing fleet.

It is difficult to assess the effects on employment, as well as the effects on the size and composition of the fishing fleet, since no overall statistical surveys have been compiled by the central authorities to illustrate this point since 1977. There can be no doubt, however, that the reduction in the number of vessels and in the gross registered tonnage which was begun in 1976 has continued in more recent years. The appropriate data for individual fishing ports are available on the one hand, and on the other hand the scheme

for the breaking-up of vessels resulted in more than 100 vessels being taken out of the Jutland fisheries in 1979. This reduction in the numbers of vessels accordingly produced a fall in the level of employment in the Jutland fisheries of between 200 and 300 persons, corresponding to just under 4%.

As a result of the differences in potential earnings between the consumer fisheries and the industrial fisheries, the effects have varied in intensity in the different regions. Esbjerg, for instance, has been hard hit by the poor potential earnings in the industrial fisheries, since Esbjerg, which is the major port for the industrial fisheries, has had to bear most of the decline in the industrial catch, whereas the other west-coast ports, with their relatively modest industrial fisheries, have been less affected. The North Jutland ports, on the other hand, have been affected mainly by the stagnating consumer catches of herring and by the falling prices for these fish. In Hirtshals and Skagen, the

value of the herring landings thus represents going on for $1/3$ of the value of all landings.

3.2. Service companies and suppliers

As has already been mentioned, the service companies and suppliers in the fishing ports together form a highly heterogeneous group of trading and industrial firms which serve the primary fisheries sector in the areas of investments in vessels, gear and equipment, repairs, maintenance and the handling of the catch. The individual firms in this sector are thus dependent partly on the actual fisheries activity and partly on the general financial situation and the desire to invest of the primary sector.

The actual fisheries activity has in recent years been subjected increasingly to national control measures, and as a result of this has changed in many respects with both positive and negative consequences for the level of activity in the service companies and suppliers. In many ports, and in particular those in North Jutland, the effect of controlling the catch has been a change in the fisheries towards increased consumer fisheries. This change has had a positive effect on the service companies and suppliers, since the consumer fisheries generate considerably greater land-based employment than do the industrial fisheries. On the other hand, national structural planning measures such as grants for vessels which have been laid up and grants for vessels which are broken up have mainly produced a negative effect on the fisheries activities, since part of the fleet has been either permanently or temporarily withdrawn from the fisheries in this way, thereby failing to create land-based

employment and sales. The national control of the catch by the introduction of quarterly quotas has also had an adverse effect on the service companies and suppliers, since this form of control involves greater fluctuations in the fisheries activities than would otherwise be produced by seasonal factors and the weather, together with corresponding fluctuations in the utilization of capacity by the service companies and suppliers.

The desire to invest within the fisheries sector is determined partly by the actual financial situation and partly by the individual investors' assessment of the potential future catch, the level of overheads and the factors affecting sales. No statistical data are available in respect of investments in the fisheries, although there appears to have been a trend towards increased investments in recent years,

particularly in the areas of machinery, and equipment for finding and catching fish, by means of which individuals have sought to secure for themselves the greatest possible share of the limited quota. In addition to this, the State support measures which were introduced for the purpose of restructuring the fishing fleet will benefit the service companies in the final analysis, since the support is provided mainly for the rebuilding and modernization of vessels or for the acquisition of new gear. It should also be pointed out in this connection that certain (mainly the larger) service companies and suppliers have been in a position, either alone or in association with other firms, to achieve not inconsiderable export sales in recent years. Nevertheless, no data relating to the levels of employment or to the financial operation of the service companies and suppliers are available, on the basis of which it would be possible to quantify the aforementioned situation.

3.3. Fresh fish trade

The fresh fish trade appears to be the sub-sector which has been least affected by the changes in recent years in the underlying conditions governing the industry, since trading in fresh fish has shown a rising trend in both 1978 and 1979.

This is due to the fact that the Danish fresh fish trade is a major supplier to the large West European market of valuable species of fish such as eels, salmon, turbot and sole, etc., on the one hand, and of the species cod, herring, plaice and mackerel, which are important from the point of view of the quantities supplied, on the other hand. The market for the latter species of fish has been under-supplied as the result of the stock management which has taken place in recent years, causing demand to develop favourably. Thus, after a period of stagnation in the years 1976-78, there was a steep increase in the exports of fresh cod in 1979, in spite of a reduction in Danish supplies of cod; at the same time there was a major increase in exports of fresh plaice and herring in 1978 and 1979, which must be viewed in conjunction with the increase in the supply resulting from the excellent potential catch available to Danish fishermen.

The fresh fish trade has expanded at the expense of the consumer fish industry, particularly as far as cod and herring are concerned, with the result that there has been a decline in the supply of these species for processing in recent years. This is presumably due firstly to the fact that

the fresh fish trade has found it easier to adapt to the higher price level for fish products which was created by the increased demand, and secondly to the fact that the fresh fish trade is not affected to the same degree as the processing industry by the tendency for supplies to be concentrated as a consequence of the imposition of quotas. Accordingly, firms in the fresh fish trade are not restricted in their operations to the same extent as firms in the processing industry by factors such as production capacity and storage capacity.

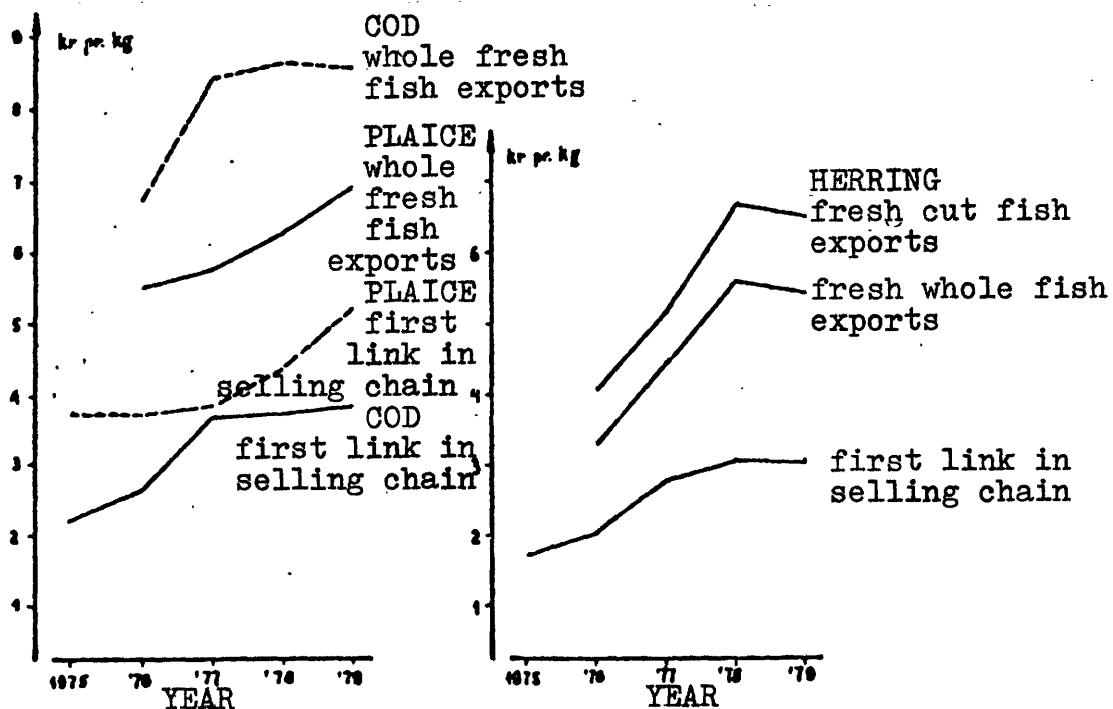
As has already been illustrated in Figures 2.3.4 and 2.3.5, major increases in price have occurred on export markets since 1976 in conjunction with the steep fall in the overall level of supply in the EEC countries.

Figure 3.3.1 compares the average movement in the export prices with the average movement in prices in the first link in the selling chain. It may be seen from the Figure that the prices of cod and herring in 1977 and 1978 rose more steeply in export markets than in the first link in the selling chain. This trend appears to have reversed in 1979, however. The movement in the price of plaice was more or less the same in both sales areas, although prices did tend to rise slightly more steeply in the first link in the selling chain in 1979. It does appear, therefore, that the fresh fish trade was able in 1977 and 1978 to pass on the increases in the cost of handling and transport in the selling price of these species, which are the most important ones from the point of view of quantity, which was not the case in 1979.

As has already been mentioned, the fresh fish trade also includes a not inconsiderable level of trade in other, more valuable species of fish. Approximately half the value of Danish exports of fresh fish consists of salmon, trout, turbot, sole and eels, etc., for which a good level of sales was achieved in 1978 and 1979. It has not been possible, however, to analyse the market for these species in greater detail within the context of this study.

FIGURE 3.3.1

Comparison of movements in prices in first link in the selling chain and in export markets for fresh herring, cod and plaice. 1975-1979.



Source: Ministry of Fisheries, Fisheries Report for various years and provisional figures.

Danmarks Statistik, quarterly foreign trade statistics.

3.4. Consumer fish industry

The most important changes in the underlying conditions for the consumer fish industry at the end of the 1970s were 1) major changes in the raw materials base in respect of both quantity and price, and 2) increased competition and changed demand in important markets. The main consequences of these changes were felt in that area of the filletting industry which uses roundfish as its raw material, and it is on that aspect that this Section will mainly concentrate.

Summary of causal relationships

The problems of the filletting industry in obtaining the necessary quantities of raw materials are due firstly to the fact that Denmark was obliged to accept a reduction of 20 000 t in its potential catch of cod, ^{in the North Sea} corresponding to approximately 27% of the total catch in the previous year, when the permissible catches were allocated between third countries and the EEC countries and internally between the EEC countries themselves. This, of course, resulted in a considerable fall in overall Danish supplies by comparison with previous years. Secondly, this reduction in supplies has itself affected the fish industry, due to the fact that the fresh fish trade was able to expand in both 1978 and 1979.

The problems of the fish industry in obtaining raw materials in competition with the fresh fish trade are a combination of several factors.

The increase in the price of fish products since 1976 has been above the general increase in prices in the wholesale sector; this factor, in conjunction with the increased competition on the US market, the fall in the dollar and the removal of export restitution payments on frozen fillets of gadoids, has limited the competitiveness of the fish industry in relation to the fresh fish trade. The fresh fish trade has also experienced an increase in demand in recent years as a result of the fall in the national supply of whole fresh fish in all EEC countries. Finally, an apparently significant factor is the concentration of the fisheries into rather short periods by the national management of

stocks, which results in very much lower continuity of supply than that produced traditionally by fluctuations related to the season and to the weather. Accordingly, storage capacity and production capacity have assumed more critical importance in relation to the ability of the fish industry to accept raw materials in the form of fish in periods of heavy supplies, whereas the fresh fish trade has not been subjected to this limitation to the same extent.

At the same time as the major reduction occurred in the potential cod catch, Danish fishermen were allocated higher potential catches of consumer fish such as coalfish, whiting and haddock. Nevertheless, this ability to make alternative catches has not until now helped the fish industry supply position in respect of cod to any great extent. On the contrary, consumer landings of haddock and coalfish in 1978 and 1979 were at a lower level than in previous years, as a result of the difficulties which were experienced in transforming this form of fishing from being mainly unintentional catches taken in the course of industrial fisheries to being direct consumer fisheries.

Through their marketing policy, the European Communities have sought to alleviate the consequences of the reduction in the overall supply of gadoids within the Community. The abolition of tariffs, aimed at encouraging imports from third countries, has had a certain effect, although imports of fresh and frozen raw materials into Denmark from third

countries, and still less from within the European Communities, were unable to compensate for the reduction in the supply, either in 1978 or in 1979.

The changes in the conditions affecting the supply of gadoids to the Danish market have meant that the filleting industry has included more and more imported raw materials in its production in order to meet its needs for raw materials. This has been possible partly by an increase in the landings by foreign fishermen in Danish ports and partly by an increase in overland commercial imports of fresh fish, and to a less extent of frozen fish.

No precise indication may be given of the proportion of the total supply of raw materials to the industry represented by imported raw materials, since it is statistically impossible to determine the extent to which imported fresh fish is re-exported in an unprocessed state. In the case of cod, the

proportion of the total supply to the Danish market represented by commercially imported fish rose from 2.5% to 7% in the period 1976-79. As it is unlikely that commercially imported raw materials are re-exported in an unprocessed state to any great extent, it appears likely that it has increased in importance for the supply of raw materials to the fish industry. In spite of this, the supply of raw materials in the form of cod, haddock and coalfish to the fish industry in 1978 was approximately 39 000 t less than in 1976, corresponding to 24%. The supply of raw materials in 1979 was 23% lower than in 1976.

The preserving industry, on the other hand, which mainly uses herring and mackerel as its raw materials, has enjoyed a relatively stable supply situation in recent years, which is connected not least with the fact that approximately 60% of the total supply to the Danish market is in the form of imports from third countries, in particular from Sweden. The absolute supply situation cannot be illustrated precisely for statistical reasons, although in the case of herring it appears that the supply to the market, after falling to a relatively low level in 1977, rose in 1978 and 1979 to a level corresponding to the 1976 level, whereas in the case of mackerel the supply has been rising since 1975. As far as herring is concerned, however, significant changes have taken place in the channels of supply, since the major proportion of the imports from Sweden have been switched, due to Swedish price support measures, from direct landings in Danish (North

Jutland) ports to overland shipments.

This situation has presumably provided the industry with a certain degree of ability to control the supplies of raw materials, although at the same time it has made the firms more dependent on their suppliers, since Danish purchasers are now second-hand purchasers rather than direct purchasers. It is not possible to assess the significance of this situation in greater detail, although it will be seen that a steep increase in commercial imports took place in 1979, which could indicate that the system has operated in a satisfactory fashion for the firms. As has already been mentioned, the overall Danish supply of herring showed a rising trend in 1978 and 1979. However, these increases are attributable to major increases in the potential catches in the Baltic, which

is why the increase has been concentrated mainly on Bornholm. Landings have consequently been falling or stagnating in North Jutland in 1978 and 1979, which may provide an explanation for the steep rise in imports from Sweden, which are presumably channelled mainly in the direction of North Jutland firms.

The processing of mackerel in the preserving industry has exhibited a steeply rising trend since the middle of the 1970s. This expansion took place mainly on North Jutland under the influence of the difficult catching and supply conditions relating to herring, since mackerel has represented a closely-related supplement to herring in terms of both catches and processing. The supply is provided mainly in the form of landings by Danish and foreign (Faroese) fishermen in Danish (North Jutland) ports. The products which are currently made from mackerel are not, however, ideal substitutes for the traditional herring products, since difficulties have been encountered in creating a market for mackerel products.

Most of the preserving industry's production of preserved herring and mackerel is sold on the home market, where there is strong competition between individual firms. The movement in the price of finished goods is difficult to illustrate in relation to the movement in the price of raw materials, due to the relatively wide range of products, although it appears that the prices of preserved herring products in 1979 have,

on average, followed the same rate of increase as in 1978, in spite of the stagnation in the price of raw materials. This was also true of mackerel in both 1978 and 1979.

The following is a brief summary of some of the steps taken by the filletting industry in adapting to the changed conditions.

Adaptation to the raw materials base

A large proportion of the production of the Danish filletting industry has until now been in the form of so-called 'block goods', i.e. fillets of fish frozen in the form of large, rectangular blocks containing 20 kg, for instance. These are exported mainly to the USA, where they have been used as semi-manufactured goods in the manufacture of fish fingers and fish sticks.

Apart from this, production has consisted mainly of plain, and to a less extent breaded fillets in retail and catering packs. Only a relatively small proportion of production has been in the form of more highly processed products, such as ready-to-serve main courses.

The difficult raw materials position in conjunction with the relative increase in the cost of production have contributed to greater efforts being made in recent years to manufacture products with a higher degree of processing, partly because State grants have been available for this purpose pursuant to both general and specific commercial legislation.

There has consequently been a steep increase in the production of breaded fillets, together with a slight increase in the production of ready-to-serve meals (cf. Part I, Section 2.5.1.3). The probable reason why this development towards the manufacture of highly processed products is relatively slow is that the size of the firms and their lack of tradition in the area of product development naturally cause the firms to put their efforts behind products which require neither a lengthy development phase nor major alterations to existing production nor a major marketing effort. Finally, the fact that many firms are also involved in the fresh fish trade as a subsidiary activity probably also has a part to play. In view of the favourable sales possibilities which have existed in this area, it is probable that a number of firms have expanded their activities in this

field in order to concentrate on a higher degree of processing of fillet products.

As a means of supplementing the reduced traditional raw materials base, several firms have shown an interest in becoming involved in the processing of gadoids, particularly haddock and whiting, which have not been used traditionally for consumer purposes in Denmark until now. However, this interest has only been converted into practical reality in a limited number of cases until now, since major technological and financial problems have been associated with the profitable processing of these fish. These difficulties were produced mainly by shortages of financially viable mechanical equipment and by the lack of facilities for landing the fish in a cleaned condition at a price acceptable both to the fishermen and to the fish industry. Attempts have been made

to overcome this problem, however, through the State support scheme set up in 1980 to provide financial assistance for firms wishing to process whiting. As suitable production equipment was developed at the same time, it appears that whiting will in future become an addition to the existing raw materials base of the roundfish industry.

The major fluctuations in the supply caused by the management of the fish stocks means that the fish industry has found it much more difficult than before to maintain a continuous level of production based on fresh raw materials. This has led to a situation in which major expansion of cold storage capacity has been undertaken in recent years, both in the individual processing firms and on a commercial basis, thereby enabling the supply of raw materials to be controlled in relation to the production capacity and sales to be controlled in relation to production. As far as concerns the control of the supply of raw materials by means of cold storage, however, it is mainly the preserving industry which has availed itself of this until now, since the products of the filleting industry, with their relatively low level of processing and relatively low profit margin, are not easily able to absorb the additional raw materials costs imposed by cold storage, particularly in view of the fact that frozen gadoids are difficult to process in such a way as to produce the same yield as fresh fish.

Adaptation to the market

The marketing problems faced by the filletting industry in recent years are/associated, as has already been mentioned, principally with the developments which have taken place on the American market, where the movements in the price of frozen cod fillet in conjunction with the fall in the value of the dollar were unable to keep pace with the movements in the price of raw materials, and above all with the major price increase in 1977. The negative trend in the relationship between raw materials prices and finished goods prices on the US market is due mainly to an increase in the quantity of product available on the market caused by the increase in the potential catches of the USA and Canada after the introduction of the 200-sea-mile fisheries zone. The fact that Danish firms have been unable to keep abreast of the developments which have taken place on the American market in recent years is attributable to the fact that it has not

been financially justifiable to manufacture and sell semi-manufactured goods to American firms for subsequent processing into fish sticks, etc., and also to the fact that it has not been financially justifiable to convert to the manufacture of products with a higher content of processing aimed at keeping abreast of the developments in the market. In spite of a significant increase in the demand for frozen cod fillets on the European market since 1976, the Danish filletting industry has been unable to increase sales to that market to any significant extent. Exports to the traditional markets of Sweden and Italy remained more or less constant in 1978 and 1979, whereas Great Britain, which until now has been of minor importance as an export market, took a share of exports similar to that of Sweden (26%) in 1979. Denmark is more or less unrepresented on the remaining large European markets for imported frozen fillets of cod, France and the Benelux countries, which is presumably due to a lack of traditional presence on those markets and to considerable competition from third countries.

Adaptation to the level of prices and overheads

The opportunities for the consumer fish industry to adapt to any changes in the level of prices and overheads have been in the form of employment-related and technological rationalization and efficiency measures, over and above the aforementioned modifications to products and markets. As may be appreciated from Part I, Section 2.5.1.5, the number of

employees in the consumer fish industry in the country as a whole has remained unchanged since 1976, although a significant fall in the number of hours worked per employee has taken place in the same period, together with a similar fall in the proportion of the production value represented by wage costs. This may be regarded as indicating an increase in productivity on the one hand, and on the other hand as indicating a change in the pattern of employment produced by the quota schemes, since the greater concentration of the supply of fish creates the need for a relatively larger work force in a relatively shorter period.

The improvements in technological efficiency have manifested themselves as an increasing interest for the setting up of more systematic and efficient production control and quality

control systems, which until now have been used only to a limited extent within the fish industry. Finally, considerable interest has been shown in recent years for optimizing the utilization of raw materials, in relation to both quantity and cost, especially through experiments into the processing and sale of by-products such as herring roe and filletting waste for consumer purposes.

The financial result produced by the consumer fish industry as a whole has been dealt with in Part I, Section 2.5.1.4., from which it will be seen that the margin (i.e. production value minus production costs, but before interest charges and depreciation) is relatively low when compared with margins in other sectors, and that in the period 1976-78 the margin has exhibited a weakly declining trend in relation to the overall production value. The fact that the industry has shown a rapidly increasing desire to invest in the same period, with an associated increase in the level of interest charges, is apparently due to a modest and possibly declining surplus in recent years. This general trend nevertheless conceals major differences between individual firms, due partly to the traditional dependence of the individual firms on production and on the market, and partly to the general financial situation and flexibility of the firms.

The overall effects of these changes in the underlying conditions of the consumer fish industry are difficult to describe in regional terms, partly because there is no

regional information available in respect of use of raw materials, production, sales and operating economics, and partly because the effects vary from one firm to the next, depending on the traditional raw materials base and not least on the financial situation of the individual firm and its ability to adapt to the development trends to which it is otherwise exposed.

On the basis of the charts relating to the structure of the fisheries sector in individual local areas shown in Part I, Section 3, it is possible to indicate a number of apparent relationships between the changes in the overall underlying conditions and the development of regional employment in the consumer fish industry (cf. Part I, Section 2.5.1.5). Thus on

West Jutland, including Esbjerg, employment in the consumer fish industry has been falling steadily since 1975, whilst employment has risen on North Jutland and on East Jutland. There is nothing to prevent this situation being viewed in conjunction with the changes in the underlying conditions discussed here, since the West Jutland firms base their production and sales more or less exclusively on fillets of gadoids and plaice and on the fresh fish trade, whereas the North Jutland firms, which are much more production-oriented, are filletting firms and preserving firms which base their operation on several species of fish, including herring, mackerel and shellfish.

3.5. Fish-meal and fish-oil industry

The main changes in the overall underlying conditions for the fish-meal and fish-oil industry at the end of the 1970s were the decline in the raw materials base and a difficult sales situation with its associated low prices.

The raw materials supply position to the fish-meal and fish-oil industry is determined primarily by the total potential catch and actual catch of industrial fish by Danish fishermen, and to a less extent by the fact that fishermen traditionally make direct landings when supplying the meal and oil firms in which they are partners or shareholders (cf. Part I, Section 2.5.2.1). Regional variations have thus occurred in the supply position, depending on the management of stocks (quotas) and the traditional pattern of catching in the individual ports, above all with regard to the waters fished and the species caught. Thus in 1978 and 1979, lengthy bans were imposed on the catching of sprats in the Skagerrak and Kattegat, the main effect of which was felt on the pattern of the catches and on the supply position in the North Jutland region. It is not possible to quantify this situation in any greater detail, since no regional data are kept in respect of either supplies or production.

In relation to the average level of catches in the period 1970-77, total reductions of respectively 235 000 t (20%) and 199 000 t (17%) were applied to the potential Danish catch of industrial fish in 1978 and 1979 (cf. Section 2.1.1); these

reductions were 15% and 13% respectively in relation to 1976. The effect of this stocks management on the quantity of fish supplied to the fish-meal and fish-oil industry was limited to a reduction of between 12% and 14% in raw materials and production, because the quotas were exceeded in both 1978 and 1979.

The effects of the reduction in the supply must be assessed in conjunction with any movements in production costs and with any movements in the price of fish-meal and fish-oil. The demand for fish-meal for incorporation in compound feeds has been declining throughout the 1970s, although the supply has remained more or less constant. The result of this has been stagnating or falling prices. In spite of major fluctuations in price from one year to the next, the average

price for fish-meal (Danish exports) since 1973 has remained below the level achieved in that year. Prices continued to fall in 1978 and 1979 in relation to 1977. (cf. Part I, Section 2.5.2.4 and Part II, Section 2.4.4). At the same time, however, an increase took place in production overheads as the result of the increases in energy costs and wages.

The special price fixing system used in conjunction with raw materials for the fish-meal and fish-oil industry (cf. Part II, Sections 2.2.4 and 2.3.1) has meant that the declining market prices for fish-meal have been passed on to the fisheries, since the price of industrial fish has followed the market price of fish-meal rather closely (cf. Part I, Section 2.5.2.4). The movement in the prices of the most important 'ancillary materials', labour and fuel has led to a decline in the margin (production value minus raw materials costs and wages costs); i.e. there has been a fall in the profit per unit produced.

The opportunities for the fish-meal and fish-oil industry to adapt to this situation have mainly been in the form of technological and employment-related rationalization measures, since the traditional use of fish-meal in compound animal feeds in competition with other protein-rich feedstuffs only permits competition in the area of quality to a limited extent. In spite of this, the trade associations have invested considerable amounts in recent years into research and development projects aimed, amongst other things, at

improving and standardizing the quality of Danish fish-meal in the interests of more reliable common marketing.

The effects on employment of the changes in the production and sales conditions of the fish-meal and fish-oil industry have been, as may be seen from Part I, Section 2.5.2.5, a major drop in employment as far as the total number of employees is concerned. At the same time, however, there has been a reduction in annual terms in the number of hours worked per employee, which is presumably attributable to the rationalization which has taken place within the sector. The possibility may not be ruled out, however, even though it is not possible to quantify the situation, that the reason also lies in the system of quotas which, by stimulating the

tendency for supplies to be concentrated into certain periods, creates the need for relatively large workforces during relatively brief periods.

The financial and employment-related effects of the changes in the production and sales conditions of the fish-meal and fish-oil industry may not be expressed in regional terms, although it is accepted that they have been felt with varying degrees of strength in the different regions, for no other reason than that half of the firms with approximately 30% to 40% of the available production capacity are located on North Jutland, whilst the rest are located on West Jutland. In addition to this, the firms on North Jutland (cf. Part I, Section 2.5.2.2) have had a consistently lower average utilization of capacity in recent years than the firms on West Jutland, with the result that the North Jutland firms have been more sensitive to changes in the overall underlying conditions for the industry. In this area, too, the last year has also seen a major reduction in the production capacity for fish-meal and fish-oil.

SUPPLEMENTARY TABLE 1

TACs, and EEC and Danish quotas in 1978 and 1979 in relation to average catches by 'all countries', the EEC and Denmark in the period 1970-77, in the North Sea, the Skagerrak and the Kattegat.

	All countries		EEC				Denmark								
	Total catch ¹⁾ (all countries) average	TAC		Average catch by EEC countries ¹⁾ in the period 1970-77	EEC countries' 'quota'		Danish ⁵⁾ catch average		Denmark's quota 7)	Denmark's estimated quota 4)	Danish catch ⁶⁾				
		in the period 1970-77	1978 ²⁾		1979 ³⁾	1978 ²⁾	1979 ⁴⁾	in the period 1970-77			I	K	1978	1979	I	K
1 000 t							I	K				I	K	I	K
Cod IV	240	236	247	220	205	206	1	52	32	33	0	41	0	48	
Plaice IV	117	95	120	116	93	117	2	22	22	28	0	21	0	26	
Haddock IV	258	109	83	171	90	72	40	8	12	10	4	4	3	5	
Herring IV	427	0	0	206	0	0	140	6	0	0	0	0	0	0	
Mackerel IV+IIIA	275	192	145	23	29	20	11	4	26	15	9	9	5	14	
Coalfish IV+IIIA	212	230	200	123	130	111	30	10	41	26	0	10	1	10	
Norway pout IV	499	300	300	205	272	...	249	0	252	252 ^{a)}	160	-	212	0	
Sprats IV	289	450	400	263	330	...	134	0	186	156 ^{b)}	214	-	277	0	
Sand eels IV	432	400	591	391	500	521	379	0	400	496	647	-	472	0	
Whiting IV	148	168	85	141	145	76	77	1	39	21	15	1	41	1	
Cod IIIa	27	...	30	24	32	24	1	23	32	24 ^{B)}	0	38	0	25	
Plaice IIIa	20	...	25	20	25	23	1	17	23	22	0	26	0	21	
Haddock IIIa	5	...	9	4	9	6	2	2	8	5	0	5	0	4	
Herring IIIa	105	65	45	78	34	22	63	16	34	22	10	26	5	22	
Norway pout IIIa	22	...	...	31	40	...	21	0	...	...	...	0	...	0
Sprats IIIa	48	88	70	36	50	...	35	0	50	40	59	0	63	0	
Sand eels IIIa	13	...	...	13	...	...	13	0	...	...	...	0	...	0
Whiting IIIa	19	...	22	19	22	20	19	1	22	20	45	1	16	1	

Notes to Supplementary Table 1:

- ... : no data available
- IV : North Sea
- IIIa : Skagerrak and Kattegat
 - I : Industrial catches
 - K : Consumer catches
 - a) : Quota continued unchanged from 1978
 - b) : Calculated only in respect of the change in the TAC

Source:

- 1) EUROSTAT: Fisheries; Catches by area, 1968-1977, (1978).
The figures for 1977 are taken from the Advance Release of Tables 1 - 5 and K of Bulletin Statistique Vol.62 (January 1979).
- 2) Commission: Proposed amendments to Council Directive (EEC), which specifies measures to be implemented in 1978 in respect of the conservation and management of fish stocks, including the establishment of quotas. (EFT. C 167/1) 1978.
- 3) Memorandum from the Commission to the Council in respect of decisions for 1979 relating to certain fish stocks in the fisheries zone of the Community (COM (78) 669, final version, and COM (79) 72, final version).
- 4) Estimated on the basis of: Sources 2 and 3 and Proposal in respect of Council Directive (EEC) relating to the establishment of catch quotas for 1979 for fisheries from vessels sailing under the flag of Member States for certain stocks which occur both in waters under the sovereignty or jurisdiction of Member States of the Community and in waters under the sovereignty or jurisdiction of Norway and Sweden (COM (79) 77, final version).
- 5) Ministry of Fisheries: Fisheries Report for various years, and Source 1.
- 6) Ministry of Fisheries: provisional figures.

- 7) Notice in respect of the control of fisheries in the north-east Atlantic. (Notice No. 49 of 10.02.1978).
- 8) Source 4, plus Proposal in respect of Council Directive (EEC) relating to the establishment of certain conservation measures for 1979 for fisheries from vessels sailing under the flag of Member States in the Skagerrak and Kattegat for certain stocks which occur both in waters under the sovereignty or jurisdiction of Member States of the Community and in waters under the sovereignty or jurisdiction of Norway and Sweden (COM (79) 77, final version).

SUPPLEMENTARY TABLE 2

Supply of whole fish to the European Communities in 1976-78.
Landings by Community fishermen in national ports, and trade
with third countries.

	1976							1978						
	Total CONSUMER	of which:						Total CONSUMER	of which:					
	COD	GOALFISH	HADDOCK	HAKE	HERRING	MACKEREL		COD	GOALFISH	HADDOCK	HAKE	HERRING	MACKEREL	
BELGIUM	36.4	8.7	1.8	3.3	-	1.4	-	42.6	17.9	1.1	1.8	-	0	-
DENMARK	297.0	158.1	12.8	10.4	1.8	39.0	6.7	261.0	125.5	8.7	7.6	-	46.0	13.5
FRANCE	477.7	17.4	63.1	13.0	17.2	19.3	34.6	451.4	33.8	58.7	-	18.1	0	40.3
WEST GERMANY	216.3	43.7	25.2	2.5	-	-	-	202.0	47.9	19.5	1.4	-	6.4	-
IRELAND	77.3	4.6	1.2	0.8	-	22.3	8.4	75.2	3.9	1.4	0.5	-	26.5	17.8
ITALY	268.6	-	-	-	-	-	-	293.1	-	-	-	-	-	-
NETHERLANDS	164.4	18.6	3.0	1.6	-	20.4	14.3	170.1	41.0	4.1	0.8	-	5.7	48.5
ENGLAND	681.8*	211.6	40.0	125.8	-	88.5	44.6	742.9*	125.9	30.6	81.9	-	15.8	283.1
TOTAL	1950.9	462.7	147.1	157.4	19.0	190.9	108.6	1945.2	395.9	124.1	94.0	18.1	100.4	403.2
IMPORTS of whole fish from third countries, of which														
fresh		8.0	10.7	1.8		76.9	21.3		13.8	11.8	4.3		70.7	34.1
frozen		19.7	2.6	0.8		49.2			16.2	3.3	1.5		72.2	
EXPORTS of whole fish to third countries, of which														
fresh		0.5	0.2			3.8	1.6		0.7	0.9	0.9		3.4	11.8
frozen		1.7	0.5			5.5	49.7		1.7	0.2	0.3		3.0	178.7
Total supply of whole fish		488.2	159.7			307.7	78.6		423.5	138.1	98.6		236.9	246.8

Source: see Table 2.3.2.

SUPPLEMENTARY TABLE 3

IMPORTS by EEC countries of the most important species of fish, fresh and frozen whole fish, 1976-79, and supplies by Denmark to the rest of the European Community. 1 000 tonnes¹⁾.

	1976		1977		1978		1979	
	fresh	frozen	fresh	frozen	fresh	frozen	fresh	frozen
HADDOCK								
total ²⁾	9.8	1.0	9.0	1.5	11.8	1.8	17.4	2.4
Denmark supply to other EEC ³⁾	3.7	9.0	3.6	0.0	4.3	0.0	4.3	0.0
Third country supply to whole EEC ⁴⁾	1.8	0.7	1.6	0.3	4.3	1.5	8.8	1.8
HERRING								
total ²⁾	155.1	83.3	126.1	96.7	105.4	105.2	136.5	98.8
Denmark supply to other EEC ³⁾	46.2	6.7	41.8	10.1	37.8	10.9	46.2	14.8
Third country supply to whole EEC ⁴⁾	76.9	49.2	74.7	69.1	70.7	77.2	83.4	68.0
COD								
total ²⁾	50.0	23.3	61.0	21.3	92.8	20.5	105.0	16.8
Denmark supply to other EEC ³⁾	24.4	2.0	23.7	2.3	25.0	2.6	29.6	2.8
Third country supply to whole EEC ⁴⁾	8.0	19.7	5.9	16.3	13.8	16.2	27.6	12.4
COALFISH								
total ²⁾	35.5	3.4	35.0	7.6	30.6	9.9	28.9	7.3
Denmark supply to other EEC ³⁾	6.2	0.0	5.8	0.0	3.8	0.0	4.4	0.3
Third country supply to whole EEC ⁴⁾	10.7	2.5	9.5	5.9	11.8	8.2	13.9	6.5
MACKEREL								
total ²⁾	52.4	26.0	71.6	39.0	72.2	36.5	71.2	38.5
Denmark supply to other EEC ³⁾	4.1	5.2	5.9	5.6	4.4	4.2	5.6	5.3
Third country supply to whole EEC ⁴⁾	21.3	21.7	32.3	11.4	34.1	8.7	32.0	7.5
PLAICE								
total ²⁾	23.0	2.8	29.1	1.7	34.0	1.8	38.1	2.2
Denmark supply to other EEC ³⁾	6.2	0.4	7.0	0.1	9.9	0.2	11.1	0.3
Third country supply to whole EEC ⁴⁾	0.5	0.7	0.2	0.3	1.0	0.8	1.2	0.8

Notes to Supplementary Table 3:

- 1) All figures are directly comparable with the data in Supplementary Table 5 relating to Danish imports.
- 2) Includes total imports of all EEC countries, including Denmark, i.e. internal trade between the countries and imports from third countries.
- 3) Imports from Denmark by other EEC countries.
- 4) Imports from third countries by all EEC countries, including Denmark.

Source: Statistical Office of the European Communities, Analytical tables in respect of foreign trade, for various years.

SUPPLEMENTARY TABLE 4

EEC countries' total IMPORTS of FILLETS of gadoids and other fish, 1976-79, and Danish supplies to the rest of the EEC.
1 000 tonnes¹⁾

	1976		1977		1978		1979	
	fresh	frozen	fresh	frozen	fresh	frozen	fresh	frozen
COD								
total	6.6	56.8	6.6	57.4	6.9	70.9	9.2	82.5
Denmark supply to other EEC ³⁾	2.9	4.7	3.0	4.3	3.1	3.4	6.4	6.7
Third country supply to whole EEC ⁴⁾	0.2	36.0	0.2	37.9	0.1	51.5	0.0	49.6
COALFISH								
total	.	9.7	.	11.0	.	16.6	.	20.6
Denmark supply to other EEC ³⁾	.	1.3	.	1.1	.	2.1	.	1.7
Third country supply to whole EEC ⁴⁾	.	4.5	.	3.2	.	8.5	.	12.8
HADDOCK								
total	.	8.8	.	5.9	.	8.8	.	12.4
Denmark supply to other EEC ³⁾	.	0.2	.	0.1	.	0.1	.	0.1
Third country supply to whole EEC ⁴⁾	.	6.9	.	4.5	.	8.1	.	11.8
OTHER								
total	8.0	41.6	9.3	55.1	10.6	55.4	13.4	62.8
Denmark supply to other EEC ³⁾	3.3	5.0	3.9	3.3	4.8	5.0	6.0	7.3
Third country supply to whole EEC ⁴⁾	0.0	22.2	0.1	34.9	0.7	35.1	0.8	38.2

. = no information available

Note 1) Cf. Notes 2 - 4 in Supplementary Table 3.

Source: see previous Tables.

SUPPLEMENTARY TABLE 5

DANISH IMPORTS of fresh and frozen fish 1976-79. 1 000 tonnes¹⁾.

		1976	1977	1978	1979
		Total (EEC)	Total (EEC)	Total (EEC)	Total (EEC)
HERRING ^{a)}	fresh	74 499 (1 988)	71 454 (300)	66 195 (178)	79 778 (369)
	frozen	3 031 (525)	2 674 (397)	2 528 (185)	2 497 (598)
COD	fresh	3 139 (1 486)	7 007 (5 112)	10 492 (7 371)	13 085 (4 383)
	frozen	3 114 (24)	589 (17)	2 171 (144)	2 508 (91)
DARK COALFISH	fresh	6 705 (831)	4 974 (719)	7 213 (1 135)	8 203 (1 430)
	frozen	800 (.)	59 (2)	29 (1)	176 (.)
HADDOCK	fresh	2 314 (1 851)	2 332 (1 837)	1 634 (1 138)	1 698 (1 229)
	frozen	28 (19)	83 (42)	84 (11)	71 (.)
MACKEREL	fresh	22 063 (1 930)	32 628 (2 037)	34 798 (1 586)	30 458 (2 654)
	frozen	2 726 (1 090)	2 704 (1 431)	5 444 (3 724)	2 931 (1 677)
PLAICE	fresh	3 530 (3 517)	6 294 (6 264)	4 917 (4 864)	7 288 (7 279)
	frozen	90 (84)	163 (161)		120 (111)

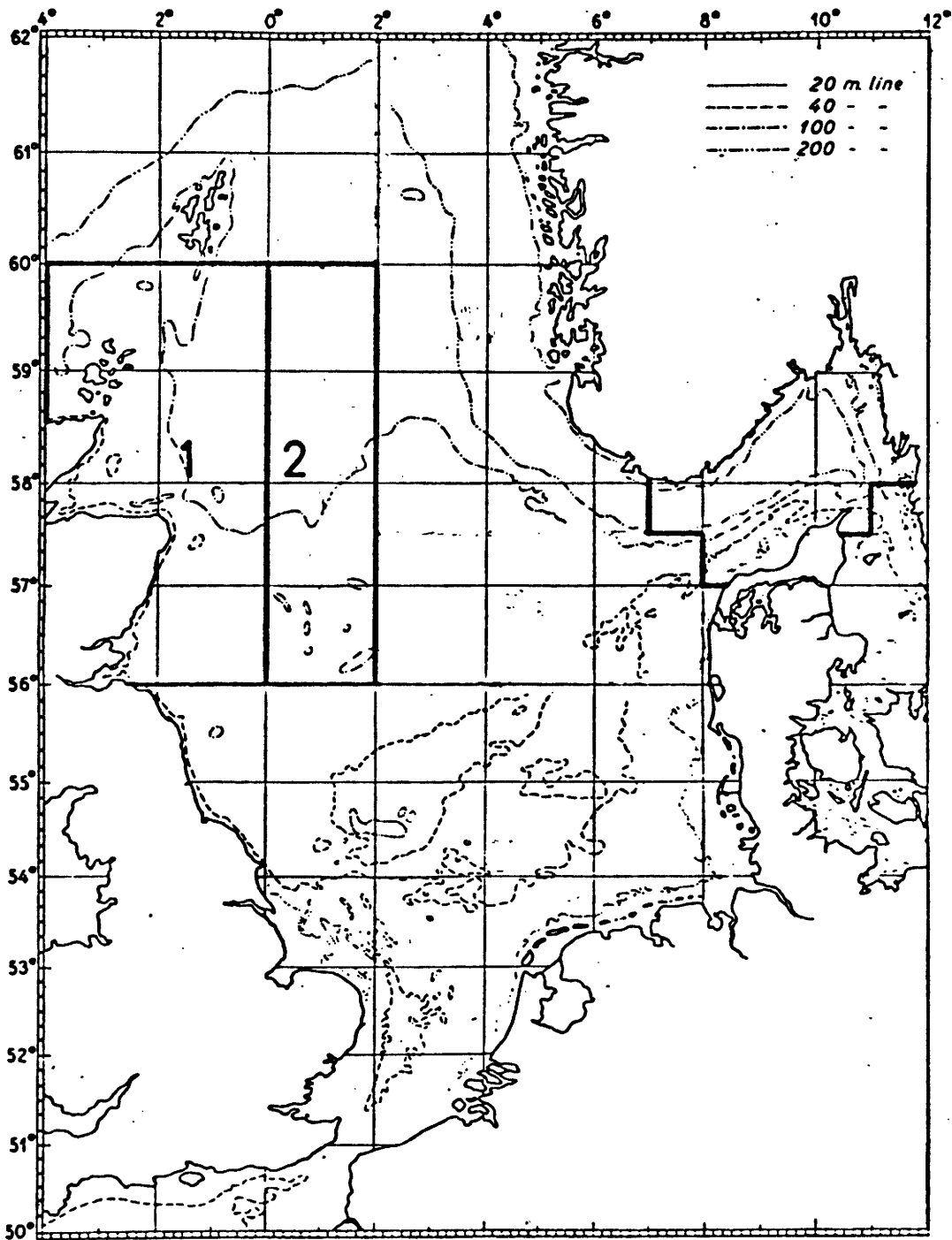
Note: 1) Cf. Notes 1-4 in Supplementary Table 3.

a) includes whole herring and cut herring and off-cuts.

Source: see previous Tables.

Appendix 1

Map of the North Sea showing 'Norway pout banks' 1 and 2



Source : ICES: Coop. Res. Rep. nr. 93, 1979

Appendix 2Some of the general Danish legislation in respect of assistance to industry and its applications¹⁾Law in respect of State assistance for product development (L77, 470)

A total of Kr 135 million, all of which has been used up, were approved in 1978 and 1979 pursuant to this Law, which entered into effect on 1 December 1977.

This scheme was established specifically for the benefit of small and medium-sized firms, which are entitled to receive up to 40% in grants to cover additional costs incurred in conjunction with product development work which is expected to have a considerable effect on employment, on the promotion of exports or on providing competition to imports. Since it must be reckoned in the majority of cases that the overall effects of any product development work will not be felt until at least two to three years after the start of the work, it has not been possible as yet to assess the overall effect of this Law on employment and sales. Accordingly, the Law may only be assessed for the time being on the basis of the firms' own expectations of the projects which have received or which are still receiving grants, and on the basis of our knowledge of the distribution of the funds by industrial sector and by size of firm. What may be established at this point in time is that the fish industry has availed itself only to a very modest extent of the possibility of seeking assistance for product development work; since the Law was

introduced, assistance has been applied for and granted for only a couple of projects. The level of assistance being paid in respect of projects in the fish industry is in line with the average level of assistance being paid in respect of projects throughout industry, although generally speaking the fish industry is under-represented as far as concerns the number of firms which have applied for assistance. However, this should be viewed in the context of the fact that the food industry in general has shown relatively little interest in receiving grant aid.

The firms which supply the fisheries (mechanical engineering and electronics, etc.) have received a certain amount of assistance for product development, particularly in the area of machinery and winches, and for the conversion of

1) Cf. also Section 2.6.

small boatyards into yards for building pleasure craft, for example. It is not possible to show the scope of the assistance paid to this sub-sector, however, because of the complicated way in which the sector is divided up.

Law in respect of State assistance for energy-saving measures in conjunction with industrial processes, etc. (L77, 261 and L77, 612)

This Law entered into effect on 1 July 1977, and is intended to encourage firms within the sector to implement energy-saving measures in their manufacturing processes, thereby reducing the energy consumed per unit produced. A total of Kr 200 million have been provided under the Finance Acts since the introduction of this Law.

The Law enables grants of between 25% and 40% to be paid in respect of investments of more than Kr 100 000 in the area of energy-saving measures. Grants of between 10% and 40% of the sum invested may be paid in the case of investments of less than Kr 100 000, on condition that the investment is undertaken in accordance with the recommendations contained in an existing energy survey relating to that particular sector. Pursuant to this Law, special rules have also been drawn up in respect of assistance for energy-saving measures on board fishing vessels (cf. Section 2.5).

It is not possible to provide a detailed indication of the extent to which this Law has been utilized by the fish industry. Information has been published by the Authorities

showing that the consumer fish industry has received between Kr 1.5 million and Kr 2 million in grants since the Law was introduced, whilst the level of assistance paid to the fish-meal and fish-oil industry cannot be shown statistically. Viewed in the light of the annual level of investment of approximately Kr 30 million by the consumer fish industry on machinery and internal transport arrangements during the period 1977-79, the amount paid in the form of grants appears modest. The background to this is presumably that the filleting industry mainly uses production processes which have comparatively low energy requirements. The grants are used above all for heat reclamation plants, for instance in conjunction with chilling and refrigeration plants and warm water used in the production processes.

The trade associations for both the consumer fish industry and the fish-meal and fish-oil industry have prepared sector energy surveys in 1979/80, which will probably encourage firms in the fish industry to take greater advantage of the provisions of this Law in future.

Law in respect of financial assistance for environmental investments

The fish industry

The background to the above Law is to be found in the environmental reform which has been discussed previously. The aim of the Law is to provide financial assistance for those firms which, with the introduction of the environmental reform, have found themselves faced by stricter requirements for the setting up of measures for the protection of the environment, and for which no allowance could be made at the planning stage; i.e. assistance is provided for environmental investments by firms and installations which were already operating when the environmental reform came into effect on 1 October 1974. This Law has been in force since January 1976, and was amended on 1 June 1978. Pursuant to the Law in its original form, the most important form of financial assistance was grants in respect of interest charges incurred in conjunction with the taking out by the firm of loans for the purpose of environmental investments. Since it became clear in the intervening period, however, that this form of financial assistance would not have the effect of encouraging investments for the protection of the environment at the anticipated level, the grants in respect of interest charges were withdrawn by the 1978 amendment, whereupon a direct grant of up to 25% of the sum invested, corrected for any capital gains, was to be payable on all investments. The Law will remain in effect until 31 December 1980, with

approval having been given for a total cash ceiling of Kr 236 million.

Grants are available for investments of more than Kr 20 000 for measures to restrict pollution in the areas of water, air, noise and waste; grants may also be paid in respect of investments made in conjunction with connections to public effluent plants and in conjunction with the relocation of firms.

A report from the Miljøråd (the Board for the Environment) shows that the consumer fish industry has received financial assistance for environmental investments to only a limited extent during the period in which the Law has been in force, whereas the fish-meal and fish-oil industry has made a great deal of use of the assistance provided by this Law.

Thus in the four years between 1976 and 1979, the consumer fish industry received a total of only Kr 0.5 million in financial assistance, in spite of the fact that the overall level of environmental investments was approximately Kr 11 million. The fish-meal and fish-oil industry received

financial assistance above all in respect of measures to limit pollution of the water and of the air. The overall level of investments by the sector for the purpose of limiting pollution was approximately Kr 22 million, of which approval was given for the payment of grants totalling approximately Kr 8 million.

By examining the manner in which the Law has been applied generally, it will be found that the food, drink and tobacco industry has made most use of the Law; thus, since the introduction of the Law, approximately 30% of all investments for which grants have been paid were made by the food, drink and tobacco industry, which appears to be attributable to the fact that firms in this sector are increasingly being granted approval for production expansion measures pursuant to Section 5 of the Environment Act aimed at producing an overall solution to existing and future pollution problems. The financial assistance granted to the food, drink and tobacco industry is normally directed at measures for the relief of air and water pollution problems.

Law in respect of State injections of funds into the Finansieringsinstituttet for Industri og Håndværk (the industrial and trade investment institute).A/S (L73, 170)

The Finansieringsinstituttet for Industri og Håndværk A/S was founded in 1958 by Danmarks Nationalbank (the Bank of Denmark), the Danske bankers fællesråd (the Danish banking council), Danmarks Sparekasseforening (the Danish Association

of Savings Banks), the Assurandør-societetet (the Society of Insurers) and the Industriråd (the Industrial Council) with the aim of providing loan facilities to industry and trade. With regard to the aforementioned Law, a tax-free sum of Kr 98 million was provided by the State for the Finansieringsinstituttet, to be used as the capital base for debenture loans for the purpose of providing loan facilities for industry and trade at reduced rates of interest. A total of Kr 392 million is thus available for lending out in the form of the so-called EM loans¹⁾ at 3/4 of the market rate of interest. This loan scheme is intended to be applied to measures for the promotion of exports, for providing competition for imports, for the conservation of energy and for the protection of the environment, and is restricted to the following five areas, which have been agreed with the Ministry of Trade:

1) = Export and Environment Loans.

- a) setting up of new production facilities, or expansion of existing production facilities;
- b) switching of production, for instance as a result of changes in the market;
- c) sales promotion activities in new markets and special campaigns in existing markets;
- d) investments for the protection of the environment by industries which are exposed to competition;
- e) energy-saving investments, and investments which will result in a reduction in the level of dependence on oil as a fuel.

A report published by the Finansieringsinstituttet shows that the fish industry made relatively great use of this loan facility in the five year period between 1975 and 1979. Approximately Kr 7 million were loaned to the consumer industry in the form of financial assistance on a total level of investment of Kr 12 million.

Loans to the fish industry represented 8% of the loans made to the whole food, drink and tobacco industry. On the basis of its sales, the fish industry accounts for about 5% of the whole food, drink and tobacco industry. The sums approved as loans to the fish industry in the five-year period in question are shown only for the years 1977 and 1978, of which approximately 3/4 were granted in conjunction with sales promotion activities in new markets, etc., whilst the remainder was granted mainly in the form of assistance for environmental protection investments.

The fish-meal and fish-oil industry similarly made great use of the EM loans schemes. In the five-year period in question, this sector had loans totalling Kr 10 million approved in support of investments totalling Kr 20 million. In this case, however, most of the loans were approved in support of environmental investments (80%), whilst the remainder went on market support measures and switches in production.

The overall distribution of the loan approvals shows that financial assistance was provided mainly in respect of market support measures and environmental investments, with these areas accounting for approximately 40% of the value of the assistance provided.

Introduction

Part III of this study is intended to illustrate the development prospects for the fisheries sector on Jutland in the next 3-5 years, and to indicate the nature of the joint action which may be implemented in order to ensure that the objectives of the fisheries policy of the European Communities, as expressed in the Council Directive in respect of common marketing regulations for fisheries products¹⁾ and in the Council Directive in respect of the establishment of a common structural policy for the fisheries sector²⁾, are applied to the extent that they affect the fisheries sector on Jutland.

Development prospects

Compared to the confusion ruling in a number of areas of the common fisheries policy at the point in time at which this study was begun (the autumn of 1979), the picture is much clearer in the autumn of 1980 as to how the Commission of the European Communities proposes to implement fisheries policy in the years to come; there is also a much clearer picture of the wish of the Council, and of the Member States, to achieve the targeted joint fisheries policy with effect from 1 January 1981.

The background to this development is the statement³⁾ issued by the Council (of Foreign Ministers) on 30 May 1980, which on the one hand makes the achievement of the common fisheries policy an integral part of the solution of other, major

Community problems, and on the other hand places the Council under a direct obligation to issue the necessary directives for a uniform policy within the area of the fisheries before the end of 1980.

The statement issued by the Council also indicates the general principles which the Council wishes to see applied to the form of the fisheries policy as far as concerns stocks management, stocks allocation, fisheries relations with third countries and the structural modification of the fisheries sector.

- 1) Council Directive No. 100/76/EEC of 19 January 1976.
- 2) Council Directive No. 101/76/EEC of 19 January 1976.
- 3) Press Notice 7408/80 (Press 74) of 6 June 1980.

Against the background of this statement by the Council, the Commission set out proposals in the summer and autumn of 1980 for Decrees and Directives both in respect of the allocation of potential catches between member countries in 1980 (based on an allocation code¹⁾ which, in the opinion of the Commission, can also be applied in future years), and in respect of structural modification measures within the fisheries sector²⁾ and technical measures for the conservation of fish stocks³⁾.

The Commission has also submitted to the Council a justified proposal for a review of the marketing regulations for fisheries products⁴⁾.

Irrespective of whether or not the proposed suggestions for the achievement and implementation of a joint fisheries policy for the European Communities are adopted, or whether they remain the subject of political negotiations, the following assessment of the development prospects for the Jutland fisheries sector has been based on the proposals submitted by the Commission.

1) COM (80) 452 and COM (80) 575

2) COM (80) 420.

3) COM (80) 465, adopted by the Council with certain amendments on 30.9.1980 (Council Directive (EEC) 2527/80)

4) COM (80) 540

1. Development trends within the Danish fisheries sector within the next few years

1.1 Prospects for developments in potential catches

Against the background of the principles for the internal allocation of the overall potential catches of the EEC countries laid down in the statement issued by the Council on 30 May 1980, the Commission has drawn up an allocation model based on the level of catches in the period 1973-78 which includes the most important species of consumer fish except for herring and mackerel.

On the basis of this model, which includes compensation for Great Britain and West Germany for the loss of traditional fisheries in the fishing zones of third countries and the preferential arrangements for certain member countries and regions laid down in the Hague agreements, Denmark will be entitled to approximately 30% of the catch of those species which are included in the model when these are converted to 'cod equivalents'.* However, an agreed catch allocation code is only one of two conditions which must be met before any assessment of Denmark's potential catch in future years may be made. The second condition - the size of the stocks (both in the EEC sea and in the fisheries zones of third countries) which will be available in any one year for allocation between member countries - has not been met, since TACs for the individual species and for the exchange of stocks with third countries will continue to be laid down

from year to year. On the basis of the above it is only possible at this point in time to evaluate the potential Danish catches from the hypothesis that the existing quotas for 1980 will serve as guidelines for the potential catches in the coming years.**

* The conversion is made by allocating the value 1 to cod, haddock and plaice, the value 0.86 to whiting and the value 0.77 to coalfish.

** Proposal of 16 July 1980 by the Commission, COM (80) 452, as amended by the Proposal of 1 October 1980, COM (80) 575.

1.1.1 Changes in potential catches

Consumer species

The proposals by the Commission for the allocation of the potential catches in 1980 in the North Sea, the Skagerrak and the Kattegat involve an overall improvement of approximately 2.5% in relation to the quotas for 1978, in spite of major reductions in the quotas for coalfish and mackerel. The reason for this is that whiting, which has traditionally been used as an industrial fish (and is categorized as such in Part II of this study), may only be landed as a consumer fish from 1980 onwards, pursuant to Danish legislation.

If the whiting quota is not included in the consumer quota, then this will result in a considerable reduction in the potential consumer catches in 1980 in relation to 1978. Whereas in 1978, and to a less extent in 1979, the possibility existed for a considerable increase in the fisheries for coalfish and mackerel in relation to the traditional fisheries (1970-77), the proposed quota for 1980 involves a major cut in the quotas for these species. As far as mackerel is concerned, the proposal involves a marked reduction in the potential catch by comparison with the quota and the actual catches in 1978, whereas the coalfish quota provides for expansion of the fisheries, since the catches of coalfish in 1978 were considerably below the quota.

The reduction of the quota for mackerel in the waters 'to the west of Great Britain' is due to a reallocation in favour of

other EEC countries, whereas the reduction of the mackerel and coalfish quotas in the North Sea were caused by reduced TACs.

The high degree of uncertainty which wide variations in the TACs impose on resources policy from one year to the next poses a serious problem to the fisheries sector on Jutland and in other areas of the European Communities, since this effectively removes the planning base for more long-term arrangements for the various sectors within the industry.

Compared with the traditional Danish catches of whiting for consumer purposes, the 1980 quota provides the basis for a

very major expansion of the fisheries for this species. As has already been stated in Part II of the study, 1980 saw the introduction in Denmark of a temporary support scheme for Danish firms which process and market whiting. It is assumed that, within a few years, it will be possible for the Danish fish industry to develop a market for whiting products which corresponds to the potential catch; this will be particularly true if it can be established that the Danish quota will be maintained at its 1980 level in the years to come. The utilization of the whiting quota also presents a problem in the area of catching methods, however, since the view is held amongst Danish fishermen that the increase in the size of the nets used in the consumer fisheries to 90 mm with effect from 1 July 1982*, as proposed by the Commission in conjunction with its up-dating of the applicable technical arrangements, will make it difficult to fish the quota in full.

In the case of cod, which is the most important resource within the Jutland consumer fisheries, the 1980 quotas in the North Sea, the Skagerrak and the Kattegat represent an improvement in the potential catch by comparison with the quota laid down for 1978. Compared with the traditional level of catches for cod in these areas, as the average for the years 1970-77, the present-day quota in the North Sea is approximately 20% below this level, whereas the quota in the Skagerrak and Kattegat is of the same size as the traditional fisheries.

In the case of the plaice fisheries in the North Sea, the Skagerrak and the Kattegat, the 1980 quota proposals represent a modest advance on the average level of catches for the years 1970-77, since the quotas are of the same size as the 1978 quotas.

Considerable interest is being shown in the Danish potential catch for North Sea herring, since these fisheries are due to be re-opened in 1981 or 1982. Although as yet no TACs, external allocation agreements or proposals for internal allocation codes are in existence, it may be anticipated that Denmark will be allocated a large proportion of the overall EEC quota. The background to this assumption is, on the one hand, that North Jutland has a great deal of unused herring processing capacity based on the traditional herring landings,

* Council Directive 2527/80, as amended to 1 October 1982.

and, on the other hand, that unemployment in this region - not least unemployment amongst unskilled women - is amongst the highest within the European Communities and is actually increasing. Furthermore, it is this region of Jutland which is being hit by the reduction in the potential catch of mackerel - since mackerel has, for a certain period, been processed as a substitute for or in addition to herring.

Industrial fisheries

The proposed quotas for 1980 do not represent any significant quantitative changes in relation to the 1978 quotas, even though whiting has been withdrawn from the industrial fisheries.

The loss of whiting will have a particularly hard effect on the industrial fisheries in the Skagerrak and Kattegat, where whiting represents a larger proportion of the total industrial catch than in the North Sea. Above all, this is true of the vessels registered in the ports on the east coast of Jutland.

With reference to the traditional Danish industrial fisheries, the proposed quotas provide for fisheries to continue at a significant level only in respect of the species sand eels, sprats and Norway pout. However, the proposals do offer the possibility of increasing the extent of the Danish industrial fisheries by the catching of blue whiting in the waters to the west of Great Britain (ICES areas VI + VII + VIII), and also appear to offer Danish fishermen the possibility of

catching capelin in the waters to the east of Greenland, at which attempts were made by a number of large vessels in 1980. Nevertheless, the profitable use of blue whiting and capelin as a raw material in the Danish fish-meal and fish-oil industry will require the transport costs per unit of output to be reduced, for instance by the use of on-board dehydration plants and similar equipment. Before this can be done, however, it will be necessary to extend the exemption from the general ban on factory ships in the EEC sea to include capelin.

Provided that no unreasonable enlargement of the fishing fleet takes place, this opportunity for the potential expansion of the Danish industrial fisheries will be able to

benefit all vessels engaged in industrial fisheries, even though only the larger vessels (of more than 250 g.r.t.) will be able to participate actively in fisheries in more remote waters.

1.2 Possibilities for structural development of the fishing ports

The guidelines for the structural policy within the fisheries sector in future years may be found in the Proposal of the Commission of the European Communities of 18 July 1980. The Proposal includes the following four part-proposals:

- 1) Proposal for the coordination of, and for the provision of financial support for national measures aimed at adjusting the capacity of the fisheries to suit the current size of the potential catch;
- 2) Proposal for the provision of financial support for experimental fisheries and 'joint venture' projects (projects which involve cooperation between third countries and the European Communities, especially in the area of catching);
- 3) Proposal for the modernization of the fishing fleet in the European Communities;
- 4) Proposal for the encouragement and coordination of research by member countries within the fisheries sector.

In conjunction with its Proposal, the Commission has prepared a rough estimate of the financial assistance which the

European Communities will have to provide if these measures are to have the intended effects. The sums involved are shown in Table 1.2.1.

TABLE 1.2.1

Financial assistance provided by the European Communities in respect of the structural proposals submitted by the Commission, COM (80) 420.

	ERE millions	Dkr * millions	Period of validity
Laying-up and breaking-up of fishing vessels, conversion of fish-meal and fish-oil factories and marketing	131	1021	1981-86
Experimental fisheries and joint ventures	15	117	1981-84
Modernization of the fishing fleet	150	1170	1981-86
Fish farming projects	40	312	1981-86
Artificial sand bars	5	39	1981-86
Training and research in the area of fisheries and fish farming	5	39	1981-86
Coordination and encouragement of research into fisheries, fish products and fish farming	5	39	1981-84
	<u>351</u>	<u>2737</u>	

* 100 ERE = Dkr 780, as at January 1980.

It should be noted that the financial assistance is intended to be paid over a period of 3 - 5 years, enabling more long-term arrangements to be made than by the national support measures of 1 - 2 years' duration which have been in use in Denmark in recent years.

re 1. In line with the proposal for the payment of financial assistance to permit adjustments to be made to the catching capacity, the European Communities will be able to refund up to 50% of the expenses incurred by Member States in respect of: a) the temporary or permanent reduction of the capacity of the fishing fleet; b) the closing down or conversion for other purposes of fish-meal and fish-oil factories; and c) information campaigns aimed at adjusting demand to suit the increased supply of, for instance, less familiar species of fish.

The background to the introduction of a scheme for the laying-up of vessels in Denmark in 1978 and 1979 was the limited size of the potential catches and the bans on fishing. To the extent that these limitations continue to apply, the Commission has also suggested that there will be a need in the years to come for temporary restrictions to be imposed on the fisheries. However, the scheme put forward by the Commission would involve a considerable reduction in relation to the scheme which was in operation in Denmark in 1978-79. It is proposed, therefore, that financial assistance will only be paid to vessels of more than 50 g.r.t., which will exclude a number of Danish vessels which had previously

been entitled to receive national grants. One consequence of the implementation of the scheme in accordance with the present proposal is that it cannot be expected to have its intended effect on the Danish fisheries.

The proposal by the Commission for the payment of grants in respect of the breaking-up of fishing vessels or their sale for other purposes will also involve a reduction in relation to the previous national scheme. The proposal lays down a maximum grant of up to just over Kr 2000 per g.r.t., whereas an average grant of approximately Kr 7000 per g.r.t. has been paid under the national scheme.

The Jutland fishing fleet was reduced in size by approximately 4% in 1979 with the help of national grants for the breaking-up of fishing vessels, and a similar reduction is expected in 1980. Nevertheless, a further reduction in tonnage will be required if the Danish fishing fleet is to achieve an improved operating base. The implementation of the present proposal will not, in all probability, have this effect, since the available grants will presumably not be regarded as being sufficiently attractive.

In conjunction with the reduction in the capacity of the fishing fleet, the proposal by the Commission also opens up the possibility of providing grants in respect of special measures taken by Member States in respect of fishermen who are forced into unemployment resulting from the laying-up or breaking-up of fishing vessels. As far as a large proportion of Danish fishermen (partners in fishing partnerships) is concerned, no use will probably be made of this scheme, since the fishermen concerned will receive unemployment benefit through their membership of an employees' unemployment fund. Relatively few self-employed fishermen, however, are members of an unemployment fund, for which reason they are not entitled to receive unemployment benefit when unemployed. Accordingly, this Proposal may act as an incentive for special measures to be taken for this group in respect of unemployment benefit and vocational re-training, where this is provided for in accordance with manpower policy.

The adjustment of the capacity available within the fisheries may, in accordance with this Proposal, also be extended to include the fish-meal and fish-oil industry, since financial assistance may be paid in respect of expenditure incurred by Member States in conjunction with the disposal of factory

equipment or with its conversion for use in other production areas. In view of the fact that the fish-meal and fish-oil industry has already made major reductions in its capacity on its own initiative in 1980, it would be reasonable to expect, on the assumption that no radical change takes place in the size of the industrial fisheries, that the Danish industry will be able to derive only limited benefit from these regulations. From the point of view of technology and legislation, it is also a difficult matter to convert a fish-meal and fish-oil factory to manufacture other products, particularly in the area of consumer products.

Finally, according to the proposal for the adjustment of capacity within the fisheries, grants may also be paid in respect of informative activities aimed at increasing demand. Against the background of the marked change in the supply of consumer fish which may be expected to take place in the years to come as the result of the inclusion of haddock, whiting and coalfish in the consumer fisheries, there is a significant need for efforts to be made in this area. On the assumption that suitable national measures are implemented in this area, the Proposal will accordingly become extremely important to the efforts being made by the Danish fish industry to include these species in its production.

For the time being, financial assistance for this purpose (cf. Part I, Section 4.2.2) is being paid pursuant to the Law in respect of the payment of financial assistance for

structural measures within the consumer industry, on the basis of which grants are also being provided via the EAGGF. It would also be natural for this scheme to be applied in conjunction with information campaigns, etc., which are being mounted by existing consumers' organizations such as Statens Husholdningsråd (the Danish National Council for Domestic Science) with the indirect support of the Government.

re 2. The proposal that up to 50% of national expenditure incurred in conjunction with experimental fisheries and joint-venture arrangements should be repaid will, if it is implemented in its present form, be of only moderate significance to the structural adaptation of the Danish fisheries, since the scheme only extends to vessels of more than 33 m in length or of more than 250 g.r.t. Accordingly, only approximately 1% of the Danish fishing fleet, representing about 15% of the overall tonnage, will be

included in the scheme. Furthermore, the nature of the Proposal is such that top priority will be given to vessels whose traditional fisheries have been cut back by the extension of the fisheries zones of third countries, which will further reduce the ability of the Danish fisheries to benefit from these grants.

The restriction of Danish mackerel fisheries in remote waters together with the opportunities for capelin fisheries to the east of Greenland make it appear likely that Denmark will benefit to a certain extent from a financial support scheme for experimental fisheries along the proposed guidelines.

re 3. The proposal for the payment of modernization grants is aimed first and foremost at fishing vessels of less than 250 g.r.t., but also contains the possibility of grants being paid in respect of the building of new, larger vessels. The proposal also provides for grants in respect of fish farming projects, artificial sand banks for the protection of fish stocks and the establishment of training centres for the purpose of providing further training and a professional consultancy service for fishermen.

At national level in 1977 and 1979, grants were paid in respect of modernization and energy-saving measures on board fishing vessels; cf. Part I, Section 4.2.2. On the other hand, the Jutland fishing fleet received only limited amounts of financial assistance from the EAGGF under the previous

structural policy of the European Communities. The financial assistance provided in this connection has been paid almost exclusively to the Greenland fisheries, although this situation must change in future if the present proposal is to have any relevance to the Jutland fisheries. Since the Jutland fisheries may be expected, partly because of the high average age of the vessels in service, to ^{face} considerable problems of a structural and financial nature in the years to come, a support scheme such as the one proposed here must be regarded as a major element in the control of the future development of the fisheries.

A condition for the payment of grants in accordance with this proposal is that the national Governments should establish support schemes in which the financial assistance provided by the European Communities may be included. Thus before Danish fishermen can benefit from the proposed support scheme, the existing Law in respect of financial assistance for structural measures must be extended to include measures for the promotion of productivity in conjunction with all the functions of the vessel; at this point in time, the Law only provides for financial assistance to be made available for measures to increase productivity in conjunction with the handling of the catch.

The proposal for grants to be made available in respect of the establishment of fisheries training centres providing technical expertise and facilities for training and research into catching methods will presumably not find an application in Denmark. The North Sea Centre (Nordsøcentret) at Hirtshals, which is currently being constructed with a grant from the European Fund for Regional Development and which is expected to be completed by the end of 1984, plans to offer a wide range of specialized fisheries courses for Danish fishermen and for fishermen from the other countries of the European Communities.

A most important prerequisite for the implementation of the aforementioned structural adaptation schemes in such a way as to produce the optimum results is the precise mapping-out of

the situation relating to fish stocks in future years, and the agreement of a common fish stocks policy. If this is not done, then the basic condition for the correct functioning of the scheme will be uncertain, with the consequent risk of considerable misdirected investments being made.

re 4. According to the proposal for the encouragement of fisheries research, grants may be paid within a ceiling of approximately Kr 39 million over a period of three years in respect of research projects in the following areas: a) fish farming; b) fisheries methods; c) the processing and preserving of fish products, and d) the exploitation of underutilized fishing grounds and species of fish.

A more intensive level of research in the above areas will provide wider perspectives for the Danish fisheries and their associated industries. At the present time, efforts are being concentrated mainly in the area of fish farming and the processing and preserving of fisheries products, with the

work being done by the Vandkvalitetsinstituttet (the Water Quality Institute), Danmarks Fiskeri- og Havundersøgelser (the Danish Fisheries and Marine Research Institute) and the Fiskeministeriets Forsøgslaboratorium (the Research Laboratory of the Ministry of Fisheries) (cf. Part I, Section 2.8), although the sums approved for research are modest in all three cases. In the areas of fisheries methods and the exploitation of new fishing grounds and new species, the research effort has been at a very modest level until now. It is important that the research effort in these areas should be intensified, not least in conjunction with means of increasing the yield from the national experimental fisheries.

In the event of the present proposal being implemented, then one may expect that the existing State institutions and other bodies will make use of that fact for a much-needed expansion of research activities. Furthermore, the proposal will be able to provide assistance for the efforts which are currently being made to establish facilities for research into fisheries methods in Denmark. At the present time, these efforts are being made at the North Sea Centre at Hirtshals and at the Ålborg Universitetscenter, both of which will presumably be able to comply with the institutional requirements which are imposed before such funds may be allocated.

1.3 Movements in overheads and prices

Consumer products

An analysis of the relationships between overheads and prices in the fisheries carried out in Part II of this study revealed that the fishing fleet has been in a financial trap since 1977 between stagnating revenues and increasing costs. Prices at the first stage of the selling chain have thus been stagnating or falling on average, whereas the movement in overheads in 1977-78 was in line with the general rise in prices. There was a further movement in the level of overheads in 1979 as a result of steep rises in the price of oil in the latter half of the year.

Developments on the international market for crude oil indicate that further steep rises in the price of oil may be expected in the coming years, which, together with the anticipated continuing increase in the other operating costs of the fisheries (cf. Part II, Section 2.2) in line with the

general rise in prices, will make it necessary to increase the prices of consumer fish at the first stage of the selling chain in line with the general rise in prices. If this is not done, then the consumer fishing fleet, which on the whole produced a positive operating result in 1979, may be expected to encounter problems in maintaining this position in years to come.

Nevertheless, it is difficult to assess the extent to which it will be possible by means of general marketing policy to force the price of consumer fish to develop in line with the general level of prices ruling at any given time. As there is a great deal to suggest that price stagnation is not only a consequence of competition from third countries, but also a consequence of fluctuations in consumer demand (cf. Part II, Section 2.3.1), it may be anticipated that the available marketing policy funds will be insufficient on their own to guarantee the necessary level of prices for the fishermen. The reason why it is reasonable to expect this is due partly to the fact that ^{those} imports from third countries which have had the effect of disrupting more than one half of the market did, in fact, come from Norway and Iceland, with whom the European Communities have special trading agreements (except in the area of fisheries policy), the result of which is that these countries pay duty of only 3% on their exports of fresh and frozen fillets to the European Communities, and partly to the fact that the fluctuations in consumer demand are presumably attributable to the fact that the price of

consumer fish since 1975, in spite of the stagnation of recent years, has increased at a considerably higher overall rate than the prices of beef and pork, which may be regarded as alternative foodstuffs.

Thus, from the point of view of demand, it is possible to estimate that the margin within which it is possible to increase the price of fresh and frozen fish is relatively slender. This means that future marketing policy will only be able to make an effective contribution to the release of the fisheries from their financial trap if it is supplemented by measures which will have the effect of lowering the cost per unit produced in the fisheries.

By ignoring the fact that the margin for price increases will presumably be a slender one in years to come, and by

simply estimating the possibilities of guaranteeing the fishermen improved prices and selling conditions by means of the available marketing policy funds, then the prospects will be found to be uncertain.

Since the formulation of the present marketing scheme, changes in maritime law and internal fish stocks policy have brought about considerable changes in the internal marketing arrangements of the European Communities. The market is thus no longer self-sufficient, and calls for considerable imports from third countries, especially of gadoids and plaice.

The fact that the price of fish has usually been stagnating or falling in recent years is, as has already been mentioned, connected with the fact that the funds available under the existing marketing scheme made it difficult to control the supply and demand for both fresh and frozen fish in such a way as to satisfy the wishes of both the fishermen and the fish industry. The principal problems were in the area of deep-frozen products, for which England is the major market within the European Communities. Particularly in 1980, England imported considerable quantities of frozen semi-manufactured consumer fish products at prices adjacent to or below the reference prices of the European Communities. Since there was a simultaneous major fall in the price of fresh fish on the English and Irish markets, there can be no doubt that these imports had had a disruptive effect on the fresh fish market. The reason for the low import prices is, as has already been

mentioned, that the imports came mainly from Norway and Ireland, which on the one hand have a highly subsidized fishing fleet and fish industry, and on the other hand, thanks to favourable trading agreements, are either wholly or partially exempt from duties in respect of exports to the European Communities.

The dilemma facing the marketing scheme in respect of price controls has always been and will continue to be the fact that, on the one hand, it is necessary to guarantee the fishermen in the Community reasonable prices, and on the other hand to guarantee consumers fish at reasonable prices. Furthermore, the control mechanism in the marketing scheme is relatively inflexible, and requires any import prices below the reference price to be defined as being disruptive to the market before any control measures may be applied.

The problem in this context is that the expression 'disruption of the market' is not particularly well defined, and is therefore noted and acted upon only at a relatively late stage. Furthermore, the sanctions used against imports of both fresh and frozen products which disrupt the market are the banning or restriction of imports, which are drastic steps in view of the industry's need for imports. Sanctions of this kind have thus been applied only to a very limited extent.

The general marketing problems of the European Community market are reflected in the memorandum* from the Commission to the Council in respect of a forthcoming adjustment of the marketing arrangements to suit the changed market situation in years to come. The memorandum points to the fact that the ever increasing share of the market taken by imports of frozen products has led to a situation in which the pricing policy which has been in use for these imported goods must be revised if the situation is to be avoided in which import prices will in future, as they are claimed to have done over recent years, determine pricing levels at the first stage of the selling chain, i.e. the prices which Community fishermen may obtain.

The memorandum states that the means by which this may be achieved is the introduction of a more flexible import scheme with more levels of protective duties which may be applied on the basis of pre-determined criteria before the market reaches the point at which it is disrupted. It is also stated

that it will be necessary to extend the reference prices scheme so as to include a larger proportion of the range of products which determine price levels in the European Communities, at the same time as new preferential tariff agreements should be avoided or else entered into only in conjunction with an extension of the fisheries rights of the European Communities over third countries.

* Guidelines for the revision of the joint marketing arrangements for fisheries products, COM (80) 540.

As a means of raising prices at the first stage of the selling chain, the memorandum points out that a major prerequisite for the optimum effectiveness of the provisions of any revised marketing arrangements is for the PO to show greater self-control and increased activity in relation to production and sales; the memorandum states that this would be achieved only if most or all fishermen were members of the PO (Producers' Organization). It is claimed that this may be achieved by increasing the financial advantage of membership of the PO by raising the financial equalization payments, and by allowing the PO to undertake intervention measures with regard to the current market situation (i.e. intervention would be permitted in respect of minimum prices which will vary in accordance with seasonal fluctuations in prices and with the purpose for which the fish will be used, so that intervention will always take place in relation to the latest market situation for each product).

In summary, on the basis of the memorandum, the principal elements of a revised marketing scheme may be expected to be as follows:

- The position of the PO as the body controlling the market at the first stage in the selling chain should be strengthened, partly by increasing the level of financial equalization associated with intervention, and possibly by the establishment of exclusive agreements for the PO ;
- The PO should have a number of different intervention channels at its disposal, so that intervention may take

- place more or less in accordance with the current market situation for the product in question;
- Import arrangements, especially those for frozen products, should be revised in such a way that more precise protective measures may be implemented together with a more precise reference price system corresponding to the amended minimum price system;
 - The preferential customs tariffs for third countries (e.g. corresponding to those valid for Norway and Iceland) are only granted in return for compensation for the fisheries of the European Communities. Nevertheless, there is

apparently no reason to expect that an attempt will be made to abolish the existing preferential tariffs.

It is difficult to estimate the extent to which a revision of the type described here will have the desired effect on the level of prices at the first stage of the selling chain in Denmark. Movements in prices on the Danish market have not been affected to anywhere near the same extent as on the English market by the price of imports from third countries, which has to do with the fact that imports (with the exception of herring) are of modest, although increasing significance. At the same time Danish imports and the Danish market as a whole together form an excellent market for fresh fish, where demand is directed to a great extent towards the Central European market for perishable goods. The limited imports of frozen products by the industry does not, therefore, have any great effect on prices at the first stage in the selling chain. Thus it may be anticipated in the longer term that regular disruptions of the important English market will be repeated in the Danish market, since the Danish fish industry (cf. Part II, Section 2.4.3) has exported considerable quantities of fish to England in recent years.

A strengthening of the PO in line with the guidelines indicated in the memorandum will possibly have a certain effect in raising the price level in the first stage of the selling chain. In particular, a more varied and flexible system of minimum prices, of a kind which could be administered, would probably offer advantages in as much as it would allow

account to be taken of the very situation in which a large number of Danish fishermen were supplying fish of very high quality for consumption as fresh fish and which apparently would stand a slightly higher level of prices. The introduction of a system of this kind would presumably lead to the situation in which a large number of those fishermen who are not members of the Danish PO would feel obliged to become members, since they traditionally land fish of a quality which never falls below the present minimum price; cf. Part I, Section 2.7.

In conjunction with the efforts which are being made to raise

the level of prices in the first stage of the selling chain, account should be taken at all times, however, of the fact that this may be linked with major financial and selling problems within the fish industry. This situation is dealt with in the following Section.

1.4 Developments in the international market

1.4.1 Consumer fish market

When evaluating the future market for consumer fish and consumer fish products, it is necessary for a number of reasons to distinguish between the development of the market for gadoids and flatfish and the development of the market for herring and mackerel.

Firstly, there are considerable differences in the structure of the market, since gadoids and flatfish go primarily to the fresh and frozen market, whereas herring and mackerel are used mainly in the preserving industry. Furthermore, the effects of developments in these two market areas are felt at different levels in the different regions on Jutland. Thus any developments in the production and sales of herring products will be of importance mainly to North Jutland, where the Jutland herring industry is concentrated, and where it provides considerable employment. On the other hand, any developments in the market for gadoids and flatfish will be of importance to the entire Jutland area, and not least to the area of West Jutland, where these species represent the most important raw materials base for the fish industry and for the fresh fish trade.

Gadoids and flatfish

As a consequence of the introduction of national, 200-nautical-mile fisheries zones, recent years have seen major changes, as already discussed in Part II, Section 2.4.3, in the pattern of international trade in consumer fish products. The trend exhibited by these changes may be expected to continue in the years to come, since they are a direct result of amendments to maritime legislation which have given third countries, including Canada and Iceland in particular, considerable

increases in their potential catches of gadoids, whereas the European Communities on the whole have lost a considerable proportion of their available catch. Thus the major increase in the Canadian catch of cod referred to in Part II, Section 2.4.3 may be expected to continue to show an increase until 1985, when it is planned to catch approximately 700 000 t, corresponding to a doubling of the catch in 1978, and approximately 75% more than the total catch of cod by the countries of the European Communities in the same year. Icelandic catches of cod increased by just under 30% in the period 1976-79, and a further increase of 10% is expected in 1980, making a total of approximately 400 000 t. This must be viewed in the light of the fact that the combined potential catches of cod, haddock and coalfish by the European Communities in the years to come are expected to fall, and failing that to stagnate at a relatively low level, not only in relation to the catches in recent years, but also in relation to the overall raw materials requirement of the industry.

The changes which have taken place in the supply and demand ratios, above all in the case of gadoids, have been and will continue to^{be} expressed in terms of the intensification by Canada and Iceland of their marketing effort in the major markets for frozen consumer fish, these being the USA, Western Europe and Japan.

Canadian expansion has, until now, been concentrated in the

geographically close-at-hand USA market, which in recent years has meant that Denmark, and apparently Norway too of late, have lost major markets.

It is expected that the market for frozen fish products in the USA will increase in size in the years to come, and it may be predicted that this increase will be met partly by an increase in the level of self-sufficiency and partly by additional imports from Canada. The USA is accordingly planning to introduce significant import restrictions for the purpose of protecting its own fishermen and fish industry. This expansion will nevertheless be far from sufficient to absorb Canada's anticipated supply; Canadian plans for the development of the fisheries in the next five years thus include measures aimed at increasing the marketing effort on the Japanese market, and above all on the Western European market.

Increased competition on the US market and the shortfall in the supply of gadoids to the market of the European Communities have led to a situation, especially in 1979 and 1980, in which Norway and Iceland increased their marketing effort on the market of the European Communities, particularly on the English market, which is the largest single market for gadoids in the Community. Thus, more than half the imports by the European Communities from third countries in 1979 came from Norway and Iceland, and it may be anticipated that these countries will in future seek to maintain and expand that position. The basis of this assumption is partly that these countries will, in spite of extensive national subsidies to the fisheries, find it difficult to meet the competition on the US market, and partly that they are in a very strong competitive position on the market of the European Communities, due to their relatively close geographical situation and not least on the strength of the special trading agreements which give them preferential customs tariffs. It is also highly significant in this context that above all Icelandic, but also Norwegian fish and fish products have traditionally been of a quality on a level with the quality which the countries of the European Community themselves are able to achieve, whereas from the point of view of quality Canadian products have not yet been able to match the requirements which are generally set by the market of the European Communities. The Canadian Government is naturally aware of this situation, and has initiated information and training

campaigns aimed at improving the handling of the raw material, which thus mean that it is only a matter of time before Canadian fish products reach the same standard as those from western and northern Europe.

With regard to consumer demand for fish and fish products in the years to come, it appears that the current level of prices will call for a very specific effort to be made in the area of consumer information and advertising if demand is to be kept at its present level. Part II has already indicated that the overall price increase in fish products over recent years has been at a very much greater level than both the general increase in consumer prices and the increases in the price of meat and poultry. The statistics which are available in respect of the level of consumption of fish and fish

products do not allow a sufficiently basic analysis to be made of any change in consumption patterns, although the real fall in the price of fish recorded in the last year, in conjunction with the decline in the level of supply on both the Danish and the European markets, suggest that fish products are highly price-sensitive, and that prices have reached a level in relation to alternative foodstuffs at which consumers will choose the alternative. There has thus been a marked fall in the consumption of fresh and frozen fish on the English and German markets in recent years.

Accordingly, the market for fish and fish products in the next few years will very probably be marked by supply outstripping demand, and by a major effort by third countries on the market of the European Communities, which will not be self-sufficient in gadoids and flatfish. The nature of this attack will, not least, be price-related, since Norway, Iceland and Canada all provide major subsidies to their fisheries sectors, which will consequently be in a position to supply products at a lower price than the price at which the fishermen and fish industry of the countries of the European Communities will be able to produce.

As has already been mentioned in the previous paragraph, the European Communities are aware of this problem, since the level of prices for fresh products in the European Communities as a whole has fallen over the last few years, apparently as a result of the increase in the imports from third countries,

to a level which is no longer acceptable to the fishermen; cf. Section 1.3. Consequently, it is wished to attempt to force up prices by means of changes to the marketing arrangements in respect of both the European Communities' raw materials and imported raw materials. It is proposed to raise the price of imports partly by means of increases and/or adjustments to the reference price and partly by keeping the customs tariffs at their maximum level.

The Danish filleting industry will probably end up in a difficult position under market perspectives such as these. As a result of the changes in the raw materials supply position in recent years, cf. Part II, Section 3.1, Danish firms have been increasingly obliged to supplement the national supply of raw materials with fresh and frozen raw materials imported from third countries. As has already been

discussed in Part II, Section 2.4.3, the loss of market share on the American market for frozen cod fillets in blocks only began to be compensated for in 1979 with an increase in exports to the market of the European Communities of products with a higher degree of processing. Higher prices for imported goods, produced above all by the imposition of customs restrictions, in conjunction with the fact that prices at the first stage of the selling chain in Denmark in 1980 did not fall anywhere near as steeply as in England, for instance, may thus lead to a situation in which the level of prices for the raw materials in the Danish filleting industry will rise to a point at which the industry will find it difficult to purchase, process and sell products at prices which are sufficiently competitive.

The problem may be set in its proper perspective by the fact that Danish imports from third countries come from Sweden and Poland to a very great extent, whereas imports by the other countries of the European Communities come from Norway and Iceland, which have special agreements in respect of preferential tariffs. Any general adjustment of the autonomous customs tariffs will thus affect the imports of raw materials by the Danish fish industry, whilst it will not affect the considerably larger imports of raw materials by, for instance, the English fish industry.

The effects of this may be that the Danish fish industry will in future concentrate more on the export of fresh fish which apparently will stand a slightly higher level of prices

than, for instance, frozen blocks. The alternative to this is a switch in production towards more highly processed (ready-to-serve) products for sale directly to wholesalers supplying the retail trade and catering establishments.

Although Danish firms have begun to switch their production in this way, cf. Part II, Section 3.4, this is also associated with considerable marketing problems, since that segment of the market, above all in Germany, England and Sweden, is already monopolized by multinational firms which have influence in both the processing sector and the sales sector.

Pelagic fish (herring)

Developments in the market for herring are considerably more difficult to assess than developments in the market for bottom fish. The largest world markets (1978) for herring are West Germany (with total consumption of 210 000 t), Denmark and Sweden (each with a total level of consumption of approximately 50 000 t), the Netherlands (with total consumption of 27 000 t) and Japan (with total consumption of approximately 15 000 t).

The major herring producing countries are Canada, Denmark and Sweden, which in recent years have been the major net exporters of frozen and fresh herring. In addition to the above, Iceland is a major exporter of salt herring.

The European market for herring has been marked throughout the 1970s by the serious restrictions imposed on catches and on stocks within the herring fisheries. Domestic production has thus ceased to all intents and purposes in a number of countries, and considerable imports of fresh herring from Denmark and Norway, amongst others, has been supplemented by imports of frozen herring from Canada, whose herring catches have expanded in recent years.

There can be no doubt that the sellers of herring on the European and Japanese markets in the years to come will be Denmark, Sweden, Canada, Iceland and Norway. The quantity of herring which will be offered will, however, depend very much on whether and to what extent the herring fisheries will

be restricted in the North Sea, and, in the case of the Norwegian fisheries, in the Atlanto-Scandian herring grounds. The latter factor in particular may be of critical importance to the supply and demand ratios, since Norway could in this way become an important future supplier of fresh and frozen herring.

The demand for herring in future years is difficult to predict. Consumption has fallen considerably in recent years in West Germany, England, France and the Netherlands, mainly as a result of the major decline in these countries' own catches. In West Germany and England in particular a

tendency has also been observed for herring products to be replaced to a very great extent by corresponding mackerel products and, to some extent, sardine products. It is not possible to assess whether the decline in consumption in these countries has left a demand vacuum which will be filled as the supply increases once more, or whether the decline in consumption is to be regarded as a permanent reduction, even in the event of major falls occurring in the price of herring products in future.

Throughout the 1970s, Denmark has held a strong position in the market for fresh herring, which has to do, amongst other things, with its access to the Baltic, its traditional imports of large quantities of herring from Sweden, and the expansion of Danish fishermen into the consumer herring fisheries since the middle of the 1970s. This led to the situation in which Denmark was able to maintain and increase its market in the 'crisis period' of the last few years, which will put the country in an advantageous competitive position as the herring fisheries in the north-east Atlantic once more increase in the course of the next few years. Norway, which in this case would be one of the more important competitors, has not only lost a great deal of contact with its original markets, but has also taken out of service a great deal of the production equipment required, for example, to meet the demand from West Germany for semi-manufactured products for use in the herring preserving industry. Denmark has also been able to develop a number of

'special markets' in the Netherlands and Austria, for instance, which will presumably be fully developed once the catches are once more sufficient to allow this.

Frozen product from Canada offers a not inconsiderable level of competition on the West German market for semi-manufactured products for use in the herring preserving industry. There is a widespread belief, however, that these Canadian products fall far short of satisfying the desired quality standard. This situation may be expected to change in the longer term, however; see previous remarks on this subject. The reduced supply of fresh herring on the West European market will soon lead to a better supply and demand ratio, whereupon Canadian frozen semi-manufactured products will be able to obtain a

considerable influence on the market of the European Communities, and thus in future on the Danish selling market.

One other not inconsiderable factor in any assessment of the herring market in the 1980s is the developments which will take place in the Swedish pattern of catching and trading. The switch in Danish imports of herring from predominantly Swedish landings in Danish ports to predominantly commercial over-land imports is partly the result of a Swedish pricing policy, but also not least a result of the fact that Swedish fishermen have lost their potential catches in the Kattegat in return for improved potential catches in the Baltic, which has changed the pattern of landings. As yet this has had no major effect on the ability of Danish firms and/or wholesalers to supplement Danish catches by means of Swedish-caught fish; in the longer term, however, questions may be raised as to whether Danish wholesalers will be able to carry sufficient weight on the Swedish buying market. An examination of Swedish exports of fresh herring will show that Sweden achieved a relatively steep increase in its exports of whole fresh herring and herring off-cuts in 1978 and 1979 to West Germany. It is possible to imagine the situation developing to the point where Sweden, from being a supplier, will become a competitor to the Danish herring industry.

1.4.2 Fish-meal and fish-oil

An analysis of the price and cost ratios in the industrial

fisheries and in the fish-meal and fish-oil industry in Part II of this study indicated that the fish-meal and fish-oil industry has been able, due to its special price fixing system, to pass on the low prices for fish-meal in recent years almost entirely to the fisheries, which accordingly found themselves in a serious trap between falling revenues and increasing overheads per unit produced. A number of industrial trawlers thus turned in negative net results in 1979. Apart from their particularly low level in 1975 and 1976, fish-meal prices have remained more or less constant since 1973. This has led to a situation in which

the fishermen have continuously been forced to adjust their production to suit output prices which were falling in real terms. This they achieved partly by maintaining a high level of catches, and partly by increasing productivity within the fisheries. Of great importance at the same time has been the ability to sort considerable quantities of fish suitable for consumer purposes from the industrial catches, which has made a major contribution to the net result. The price/overheads trap of recent years is a combination of several factors; firstly, the extraordinary increase in overheads caused by the oil price rises; secondly, the inability to either increase or possibly switch fisheries resulting from stocks management and the closure of the Norway pout banks; and thirdly, the movement in the price of industrial fish and the unintentional catch of consumer fish.

Thus within the limits as defined here, the only possibility of escaping from the overheads/revenue trap appears to be a further reduction in the level of overheads per unit produced, at the same time as an effort is made to raise the price of the products of the fish-meal and fish-oil industry, and in so doing the price of the raw materials. This effort to reduce overheads has, as has already been mentioned, been under way for a couple of years and has been helped by the State support measures referred to in Parts I and II. There is, however, a continuing need for a systematic technological research and service facility to be introduced if major progress is to be made in this area.

As may be appreciated from the following, it will be a difficult, and in any case a lengthy process, to achieve any major increase in the prices of the output of the fish-meal and fish-oil industry. The future market and prices for fish-meal will, as stated in Part II, Section 2.4.4, be determined by the following factors:

- the supply position and the price of other protein-rich foodstuffs. It must be realized in this connection that the sale by the European Communities of their surplus production of skimmed milk powder could have a major influence on the price of fish-meal, especially in western Europe;

- the supply of fish-meal from other countries (Peru, Chile, Norway and Ireland), which produce fish-meal for export in very much greater quantities than Denmark. These countries' production is sold mainly on other markets (including the Eastern European markets), and is consequently not directly competitive. Nevertheless, these countries do have a considerable indirect influence on the world market price, due to their large share of world production;
- production and demand in those countries which have traditionally been self-sufficient, i.e. the USA, Japan and the Soviet Union, will be of critical significance to the potential sales of the exporting countries, due to the large share of world production (35% in 1978) of the self-sufficient countries.

As far as concerns the total supply of fish-meal in the years to come, it is difficult to assess the extent to which this will increase or remain at a more or less constant level. Thus Peru and Chile both showed a major increase in production, especially in 1979, whereas countries such as Norway and Iceland have suffered respectively from a major decline and from stagnation. Norwegian and Icelandic production is dependent to a great extent on the capelin fisheries, which are characterized by major fluctuations in quantities caught from one year to the next. In the case of Norway, production is also dependent on the mackerel, blue whiting and Norway pout fisheries. On the basis of an estimate of the available stocks, it may be anticipated that the supply

from these two countries will remain at a more or less constant level in the years to come, depending on any developments which take place in the capelin fisheries. Production in and the supply from the South American countries, on the other hand, is expected to show further increases in the years to come. Similarly, production in Japan and in the USA is also expected to be maintained at a high level in the years to come.

From the point of view of stocks, it is scarcely realistic to imagine that the supply position will change in such a way as to give rise to price increases. Regrettably, the

market is more likely to continue to develop in the direction of falling prices, since fish-meal, for which world production is being increased considerably, will continue to lose market share on the international animal feed market, cf. Part II, Section 2.4.4, and since those countries which, if the occasion should arise, are able to increase their production thanks to a highly subsidized fishing fleet and fish industry will be able to hold down prices at a relatively low level. Furthermore, the pricing policy of the European Communities in the area of agriculture creates unequal competition between fish-meal and other protein-rich feedstuffs of animal origin (skimmed milk powder), which are produced for and are sold from intervention stores with considerable financial assistance from the Community.

In terms of value, Danish production of fish-meal and fish-oil is limited (less than 10% of world production in 1978), with the result that Danish fish-meal producers are unable to any great extent to influence the international price of fish-meal, which is used in the traditional manner in compound feeds for pigs and poultry. Denmark does, however, achieve a considerably higher price for its exports than Norway, for instance, which is due to the fact that Denmark produces fish-meal with a very high protein content, which is regarded as an important quality parameter on certain markets.

The possibility for Danish fish-meal producers to raise the price of their products in the coming years will thus depend

on the application of a very determined product and marketing policy based on the fact that the Danish industry at this point in time is at a high level of technological development, which means that Danish products are of higher and more unique quality than the products of our competitors. Thus the fish-meal and fish-oil industry has the opportunity to continue to concentrate in future on the manufacture of products of very high quality which are suited to the specific requirements of the individual markets. The industry will be able in this way to find gaps in the market, in which

the price is less dependent than at the present time on the international market.

Thus the market for protein for use in animal food (for pigs, poultry, fish (fish farming) and pet food) continues to grow, and it will probably be possible to find the gaps referred to above because of the extremely high biological protein value of fish-meal in certain specific circumstances.

Nevertheless, a product and marketing policy of this kind calls for a great deal of research and development in the areas of both technology and marketing. As far as the industry itself is concerned, the initiative has already been taken, as stated in Part II, Section 2.4.4. It must, however, be stressed in this connection that as far as public assistance for such purposes is concerned, the fish-meal and fish-oil industry is only able to seek help from general schemes at national level. Thus no assistance is available from the EAGGF, and the possibility of aid being provided as part of the structural policy of the European Communities seems likely according to the above-mentioned proposal of the Commission (cf. Section 1.2), only in so far as there is a possibility of switching from fish-meal production to consumer fish production or to the production of non-fish goods.

The regional significance in terms of the economy and employment (cf. Part I, Sections 2.9 and 3) and the significance of the protein production of the industrial fisheries and the fish-meal and fish-oil industry, both in

relation to the ecological balance in the sea and in relation to the special nutritional characteristics of the fish-meal, makes it difficult to appreciate this, and on the whole the previous policy of the European Communities in respect of the special adaptation problems of the sectors.

2. Means by which the European Communities are able to influence the underlying conditions affecting the Jutland fisheries

2.1 Objectives and resources of the European Communities' fisheries policy

An attempt was made in Section I to evaluate the development trends in the Danish fisheries sector over the next few years in the light of the Proposal put forward by the Commission in respect of an overall policy in the fisheries sector. As has been seen, the development trends are also determined by a series of other factors such as increases in overheads and movements in international markets, etc.

The general objectives of the European Communities in respect of fisheries policy in accordance with the Treaty may be summarized as follows:

- to increase the productivity of the fisheries sector by the encouragement of technical development, by the rationalization of production and by the best possible use of production facilities;
- to guarantee the population in the fisheries communities a reasonable standard of living by increasing individual incomes;
- to stabilize the markets for fish and fisheries products;
- to guarantee the supply of fish;
- to guarantee the consumers reasonable prices for fisheries products.

The resources which the European Communities have at their disposal in order to ensure that these objectives are realized in the individual Member States are as follows, on the assumption that the Proposal put forward by the Commission is accepted:

- 1) The authority, pursuant to Article 43 of the Treaty of Rome and the Hague Resolution, to undertake the specific allocation amongst member countries of the total catch available to the Communities, and to lay down specific regulations in respect of the execution of the fisheries (technical measures), together with the authority to approve any national measures which it is wished to implement for the purpose of stocks conservation;

- 2) The authority, pursuant to the Marketing Directive, to control supplies from third countries to the market of the European Communities under certain circumstances by means of price fixing, customs tariffs and the suspension of trade;
- 3) The possibility, pursuant to the Structural Directives, of providing financial support for the structural adaptation of the fisheries sector to suit the changed conditions relating to stocks and marketing;
- 4) The possibility, pursuant to the Marketing Directive, of providing grants for the maintenance of a minimum prices scheme for fresh fish;
- 5) The possibility, via the Directive in respect of the European Fund for Regional Development, of providing grants for the installation of production plants and infrastructural equipment in the regional development areas of Member States;
- 6) The possibility, via the European Social Fund, of providing grants for training facilities and other measures to encourage employment in instances in which a special need exists;
- 7) The possibility, within the framework of the joint research policy in the areas of science and technology, of planning and providing financial support for the execution of joint research programmes within specific areas and sectors.

Whereas Member States are not usually able to oppose the application of the first two measures, the last five measures represent an offer from the European Communities to support member countries, under precisely defined conditions, in their own efforts to conform with the objectives of the fisheries policy of the Communities. Thus, as a general rule, the application of these measures calls for financial involvement at national level in the activity or project for which support is being provided.

2.2 Recommendations for the specific purpose of ensuring that the objectives of the European Communities' fisheries policy are applied on Jutland

2.2.1 Recommendations in respect of stocks management

1) The allocation of potential catches (quotas) of such a size as to permit the Jutland fisheries to continue to operate at their present level is, as will have been appreciated from Parts I and II of the study, of major significance to the Danish economy and of vital importance to the increase of incomes and employment in the many local communities on Jutland which base their existence on the fisheries. The majority of the Jutland fisheries communities are situated in regional areas which are characterized by very high levels of unemployment and few opportunities for alternative employment. Exclusion from employment in the fisheries sector or in associated firms will thus normally mean that the only alternative is unemployment.

It is of equally great importance that the traditional composition of the potential catches by species should be preserved to the greatest possible extent, so that the nature of the catch and the specialized processing skills which are characteristic of the individual fisheries communities may be maintained, and so that the existing capital equipment and labour force may be utilized in the most appropriate manner.

2) As discussed in Section 1.1, the Commission has compiled a general resources allocation model in conjunction with its

Proposal for the allocation of quotas in 1980. In spite of the fact that the implementation of an internal allocation code of this kind within the European Communities would help to improve the planning base of the fisheries sector, the TACs and the total potential catches for the countries of the European Communities for the coming year are still not known. This situation has obliged the decision takers in the fisheries firms to continue to undertake long-term planning on the basis of what appears to be pure guesswork. This situation is unacceptable in the long term and also goes against the aim of the measures contained in the Commission's structural proposals to a certain extent. Consequently, the European Communities should, possibly by means of direct

project assistance, take the initiative to expand as rapidly as possible the involvement of member countries in research into fisheries biology in order that more long-term forecasts may be worked out in respect of the development of the fish stocks, based on integrated, multi-species models. On the basis of these forecasts, the Commission could then work out strategies for the short-term and long-term utilization of resources by the European Communities by assessing the economic, social and biological considerations. This should include strategic proposals for the long-term management of resources based on principles containing fewer economic side-effects than stocks management by the use of quotas, e.g. general levies and/or subsidies.

Increased involvement in research into fisheries biology should, at the same time, be aimed at explaining the position of the species of industrial fish in the ecological system of the sea, so as to permit the role of the industrial fisheries in the utilization of resources by the European Communities to be defined.

3) No time should be lost in determining the manner in which future potential catches of herring in the North Sea are to be allocated between Member States.

4) Exemption should be granted from the proposal to increase the size of the net used in the consumer fisheries to 90 mm, since it can be shown that Danish fishermen are unable to utilize the whiting quota which has been allocated for reasons to do with catching methods.

5) In order to compensate for the loss of potential catches in the industrial fisheries, Danish fishermen should be allowed to retain their potential catch of capelin off the east coast of Greenland north of latitude 67° north.

2.2.2 Recommendations in respect of the adaptation of fishing gear to comply with the requirements relating to fish stocks

1) The European Communities should take active steps to ensure that any measures introduced pursuant to the Structural Directive do not involve an increase in the overall catching capacity, measured in units of efficiency, since this would go

against the aims of the Directive to improve and stabilize incomes and employment in the fisheries sector.

Nevertheless, expansion of capacity should still be possible where this is justified by special conditions relating to fish stocks (e.g. in conjunction with the establishment of fisheries based on the remote and unutilized stocks of, for instance, capelin and blue whiting).

2) As a means of helping to prevent an increase in the total catching capacity resulting from the introduction of efficiency and modernization measures, the level of the grant per g.r.t. which is payable in accordance with the structural proposal in respect of fishing vessels which are broken-up, should be raised to a level which makes breaking-up a genuine alternative to continued fishing. Consideration should be given to making the level of the grant per g.r.t. variable, depending on the type of vessel and the equipment on board.

3) An assessment should be made of the need for and the significance of a breaking-up scheme. If this need is found to be justified, then the weight limit proposed in the structural proposal of the European Communities should be lowered from 50 to 5 g.r.t. At the same time, the criteria for the allocation of assistance should be laid down in such a way that the purpose of the scheme is not distorted.

4) Exemption from the ban on the processing of raw materials

on board vessels in the EEC sea should be extended to include capelin, thereby enabling the water content of the catch to be reduced, since this is a prerequisite if, for example, Danish vessels are to land these catches profitably for processing in Denmark.

5) The minimum weight limit of 250 g.r.t. for the payment of assistance for experimental fisheries suggested in the structural proposal should be reduced, since there is a considerable need within the Danish fisheries to conduct experimental fisheries for whiting, coalfish and haddock, which to a considerable extent are unutilized resources in the Danish fisheries.

6) An increased research and development effort in the areas of catching and vessel technology is of major importance if the overheads per unit produced in the fisheries are to be reduced. Efforts in this area are important, not only as pure

research and development activities, but also in order to ensure the maximization of the net return on investments in individual (very different) vessels. The total of approximately Dkr 8 million proposed for research projects into fisheries technology in the period 1981-84 should be increased in the light of the importance of this area of research and the major overheads for materials and equipment which are normally associated with research into fisheries technology. It is also recommended that there should be coordination of the grants payable in respect of experimental fisheries and research into fisheries technology in accordance with the structural proposal which it is planned to implement on the initiative of the European Communities, since a number of experimental fisheries for unutilized species and/or new fishing grounds often call for or require work to be done in the area of technological development.

The yield from the experimental fisheries will be improved if the planning and execution are integrated into combined research projects into catching and processing methods. In this way the experimental fisheries can become serious attempts at increasing potential catches and/or reducing the overheads associated with the fisheries in the EEC sea, on which the criteria for grants under the structural proposal should be based.

An increased effort in this area will also strengthen the ability of the service companies and suppliers to compete in

the supply of technical fisheries equipment in conjunction with the establishment of a fisheries sector by the new fishing nations.

7) The draft structural proposal contains a suggestion for the payment of grants by the European Communities for the setting up of fisheries research and training centres. As has been previously mentioned, a centre of this kind is currently under construction in Denmark with the help of grants from the European Regional Development Fund. As part of the execution of the structural proposal, the Commission will implement a 'social action' programme which will be entitled to receive grants within the context of the Social Fund and which, amongst other things, will incorporate wide-ranging training facilities. Since Denmark offers only a very small number of training facilities for fishermen - above all for self-employed fishermen - it is suggested

that the possibility should be made available under this programme of receiving grants in respect of training activities (short courses) aimed at those in employment within the fisheries. Training facilities of this kind will be of the greatest importance in making users aware of new advances in the area of fisheries technology, and will thus be of importance in ensuring that modernization, improvements in efficiency and replacements all take place without unnecessary delay.

8) The European Communities should ensure that no direct or indirect industrial support schemes are continued or introduced in member countries if these could have the effect of distorting competition.

2.2.3 Recommendations in respect of amending the marketing regulations to suit the market situation

1) In conjunction with the amendment of the marketing regulations to suit the general market situation, it is important that any changes should make the marketing regulations sufficiently flexible that they may be applied in the individual Member States in accordance with the characteristics of the individual markets. Thus Denmark is a major market for fresh fish, and enjoys a higher average price level compared to other countries of the European Communities. It is important that the marketing regulations, for instance by means of a differential system of minimum prices, should allow this higher price level, which is due

to special factors related to quality and sales, to be maintained. Nevertheless, account should also be taken of the problems which the fishing industry will have to face in connection with this; a considerable increase in the reference price of semi-manufactured goods will thus be necessary if the products of the Danish filleting industry are to meet the competition on prices from, for instance, the products of the English fish industry, which is based to a very high degree on semi-manufactured goods imported from third countries.

2) With regard to the control of prices for frozen semi-manufactured goods by means of increased reference prices and the preservation of autonomous customs tariffs, it should be borne in mind that an optimum and/or adequate level of control by means of customs tariffs will be achieved only to the extent that any special preferential tariff

agreements are included. In the event of this not being done, the continued application of autonomous customs tariffs will have the effect of seriously distorting the competitive position of the Danish fish industry.

3) In conjunction with the control of supplies in relation to the market situation, it will be important to strengthen the Danish producers' organization (the PO). The suggestion* by the Commission to make the PO more attractive to non-members by increasing the level of financial equalization and by the establishment of a more precise minimum prices scheme will presumably have a considerable effect in Denmark.

4) In conjunction with the increased opportunities for intervention, financial assistance for the storage of consumer fish should only be provided where it is certain that the stocks will be capable of being sold at full price on the market at a later stage, for instance for reasons associated with the management of resources. The relatively short storage life of certain species of fish in cold storage should be borne in mind in this respect.

2.2.4 Recommendations in respect of modifying the fish industry to bring it into line with market conditions

1) From the point of view of the fish industry, it is of critical importance that a raw materials base is available in the years to come which will permit the rational utilization of the available production capacity. It should be possible

to undertake long-term production planning on the basis of reasonably reliable knowledge of the extent of the available resources. If the fish industry is to derive maximum benefit, for instance from the existing support scheme in respect of the processing of whiting, then it is important that the industry should in future be guaranteed a stable supply of raw materials which will allow the industry to maintain and/or

* COM 80 (540)

expand in the coming years the production and sales which it has built up with the help of financial assistance.

It is equally important for the raw materials to be available at a price which will allow the fisheries products to compete with other foodstuffs. Thus to a certain extent the interests of the fish industry are opposed to those of the fisheries, especially as far as concerns its attitude to the import of raw materials from third countries and the movement in the prices of imported goods.

As will have been appreciated from Section 1.3, the general level of prices for fish on the market of the European Communities has been stagnating in recent years, in spite of the fact that the overall supply has fallen in relation to previous years. Section 1.4 indicated that one of the reasons for this may be due to the start of a change in the consumption of foodstuffs. On the basis of this, it is proposed that the European Communities should take the initiative to implement a research project aimed at examining in greater detail the developments which have taken place in demand and consumption within the individual countries of the European Communities, which would include an assessment of the extent to which and in what areas a conflict exists between the agricultural policy and the fisheries policy of the European Communities.

2) It is also proposed that, on the basis of an initiative from the European Communities, a perspective plan should be

worked out in respect of the global development of the market for fish and fish products in the medium and long term. The reasoning behind this proposal is the major market changes which have occurred and which are expected to continue to occur in the years to come as a consequence of the global extension of fisheries limits to 200 nautical miles.

3) It is proposed that the efforts which are currently in progress to remove the technical obstacles to trade in the area of free trading in fisheries products within the European Communities should be intensified.

4) It is proposed that the grants which are payable pursuant to the structural proposal in respect of the conversion for other purposes of fish-meal and fish-oil factories should be capable of being extended to cover the switching of production to the manufacture of certain industrial fish products, such as food for fish farms and pet food, etc.

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