COMMISSION OF THE EUROPEAN COMMUNITIES
Directorate-General for Fisheries

Regional, Socio-Economic Study in the Fisheries Sector

DEUTSCHLAND
Schleswig-Holstein, Niedersachsen, Hamburg, Bremen

Document
1992

XIV/410/92

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MAIN CONTRACTOR

Landbouw-Economisch Instituut (LEI - DLO)
Afdeling Visserij
Postbus 29703
NL - 2502 LS Den Haag

PRINCIPAL CONTRIBUTORS

Pavel SALZ
Jan Willem DE WILDE
Jaap DE JAGER

ABSTRACT

1. Die Region D-1 hat insgesamt 12,2 Mio. Einwohner, von denen 5 Mio. erwerbstätig sind. Das Regionalprodukt beträgt 450 Mrd. DM. Auf die Küstengebiete entfallen 30 bis 40 % der Einwohner, der Beschäftigten und des Regionalprodukts der Region D-1.
2. Die Fischereiflotte der Region D-1 umfaßt 600 Schiffe, auf denen rund 2.000 Besatzungsmitglieder arbeiten. Die Anlandungen dieser Flotte in deutschen Häfen betrugen in den letzten Jahren 140.000 bis 150.000 t mit einem Gesamtwert von 220 bis 230 Mio. DM. Etwa die Hälfte des Werts entfällt auf die Anlandungen der 17 Schiffe der großen Hochseefischerei, die andere Hälfte auf die 580 Kutter, die vor allem im Küstenbereich operieren.
3. Die Region D-1 verfügt über eine bedeutende Fischverarbeitungsindustrie, die 1990 einen Bruttoumsatz von 2,2 Mrd. DM erwirtschaftete (ohne Großhandel). Sie beschäftigt rund 10.700 Vollzeitkräfte. Etwa 45 bis 50 % der Produkte werden aus Kabeljau hergestellt, 35 bis 40 % aus Heringsfischen, der Rest aus Krebs- und Weichtieren.
4. Abgesehen von der Muschelzucht kommt der Aquakultur nur geringe wirtschaftliche Bedeutung zu.
5. Es wird geschätzt, daß rund 1.000 Personen in angeschlossenen Gewerbezweigen tätig sind.
6. Insgesamt entfallen auf den Fischereisektor in der Region D-1 nur 0,2 bis 0,3 % der Beschäftigten bzw. des Regionalprodukts. Selbst an der Küste liegt sein Beitrag zur örtlichen Wirtschaft unter 1 %. Nimmt man die Fangflotte allein, so beträgt ihre wirtschaftliche Bedeutung in den Küstengebieten nicht einmal 0,1 %.
7. Die Verarbeitungsindustrie ist zu über 60 % in Bremerhaven und Cuxhaven ansässig. In diesen beiden Häfen - und nur hier - leistet der Fischereisektor einen wichtigen Beitrag zur örtlichen Wirtschaft: etwa 8 bis 9 % in Bremerhaven und 4 bis 5 % in Cuxhaven.
8. Quotensenkungen würden sich nur begrenzt auf die Fangflotte auswirken. Die örtliche Wirtschaft bliebe weitgehend unberührt.
   a) Ein Großteil des Bruttoertrags der Kutterflotte beruht auf Garnelen und Muscheln, die nicht quotengebunden sind. Eine Reduzierung der Quoten für Kabeljau oder Scholle könnte die deutschen Behörden veranlassen, die Zulassungen für eine Reihe von gecharterten Schiffen zurückzuziehen. So können die Fangmöglichkeiten für die deutsche Grundflotte mittelfristig aufrechterhalten werden.
   b) Die Hochseeflotte operiert hauptsächlich in Nicht-EG-Gewässern und beschäftigt nur ein paar hundert Mann. Die Fischerei gilt jedoch in der Region D-1 als charakteristische ländliche Tätigkeit und spielt eine wichtige Rolle für den Tourismus.
9. Die kurzfristigen Auswirkungen einer Quotensenkung auf die fischverarbeitende Industrie wären gering, da 80 % der Rohwaren aus dem Ausland kommen, die Hälfte davon aus Drittländern. Die Unternehmen sind davon überzeugt, daß ein Rückgang des örtlichen Angebots durch erhöhte Einfuhren ausgeglichen werden kann.
10. In den letzten Jahren hat sich die Beschäftigungslage in den meisten Bereichen verbessert. Die Behörden der einzelnen Länder haben umfangreiche Arbeitsplatzbeschaffungsprogramme durchgeführt.
11. Spezifische Programme zur Linderung der sozialen Folgen einer in Zukunft restriktiveren Gemeinsamen Fischereipolitik erscheinen kaum durchführbar, denn die Zielgruppe ist klein und geographisch weit verstreut.

ABSTRACT

1. The entire region D-1 has 12.2 mln inhabitants, of whom 5 mln are employed. The regional product amounts to 450 bln DEM. The coastal zones represent 30-40% of the region D-1 in terms of population, employment and product.
2. The fishing fleet of the region D-1 consists of 600 vessels, which employ almost 2,000 crew members. Its landings into German ports amounted in the recent years to 140-160,000 tonnes with a total value of 220-230 mln DEM. About half of the value is landed by the 17 distant vessels and the other half by 580 mostly coastal cutters.
3. The region D-1 has an important fish processing industry, which achieved in 1990 a gross turn-over of 2.2 bln DEM (excl. wholesale activities). It employs full-time about 10,700 people. About 45-50% of the output is based on codfish, 35-40% is based on 'herring-species' and the rest on crustacea and molluscs.
4. Apart from mussel culture, aquatic farming is of very little economic importance.
5. It is estimated that some 1,000 people are employed in ancillary actvities.
6. The overall role of the fisheries sector in the region D-1 is restricted to 0.2-0.3% in terms of employment or regional product. Even in the coastal zones its contribution to the local economy remains mostly below 1%. The role of the fleet alone is below 0.1% in the coastal areas.
7. Over 60% of the processing industry is located in Bremerhaven and Cuxhaven. In these two ports the fisheries sector does make a substantial contribution to the local economy - about 8-9% in Bremerhaven and about 4-5% in Cuxhaven.
8. Future reductions of quota would have only limited effect on the fishing fleet. The direct effect on the local economy would be negligible.
   a) A large share of the gross revenues of the cutter fleet is based on shrimp and mussels, which are not subject to quota. Reduction of quota for cod or plaice may oblige the German authorities to withdraw the annual permits of a number of chartered vessels. In this way fishing opportunities for the originally German vessels can be maintained in the medium term.
   b) Distant fleet depends largely on non-EC waters. The direct employment is only several hundred men. However, fisheries is considered characteristic for the rural areas of the region D-1, playing an important role for the tourist industry.
9. Reduction of quota would have little short term effect on the fish processing industry. It obtains 80% of the raw material from abroad, half of which from non-EC countries. The industry is confident that fall in local supply can be compensated by increased imports.
10. During the past several years the employment situation of the most areas has improved. The authorities of the individual Länder have undertaken large employment stimulation programmes.
11. Specific programmes to mitigate the social consequences of a future restrictive Common Fisheries Policy do not seem feasible, because of the low numbers and large dispersion of the target group.

ABSTRACT

1. L'ensemble de la région D-1 compte 12,2 millions d'habitants, dont 5 millions ont un emploi. Le produit régional s'élève à 450 milliards de DM. Les zones côtières comptent pour 30 à 40 % de la population, de l'emploi et de la production de la région D-1.
2. La flotte de pêche de la région D-1 comporte 600 bateaux avec un équipage de près de 2.000 membres. Les quantités débarquées dans les ports allemands représentaient ces dernières années de 140 à 160.000 tonnes pour une valeur totale de 220 à 230 millions de DM. La moitié de la valeur environ des produits débarqués revient à 17 navires de pêche lointaine et l'autre moitié à 580 cotres, pour la plupart des cotres de pêche côtière.
3. La région D-1 dispose d'une forte industrie de transformation du poisson dont le chiffre d'affaires brut en 1990 dépassait les 2,2 milliards de DM (à l'exclusion des activités commerciales de gros). Ce secteur emploie environ 10.700 personnes à plein temps. Quelque 45 à 50 % de la production est à base de morue, 35 à 40 % à base "d'espèces de hareng" et le reste à base de crustacés et de mollusques.
4. A part la mytiliculture, l'aquaculture n'a qu'une très faible importance économique.
5. On estime qu'environ 1.000 personnes sont employées dans des activités connexes.
6. La place globale du secteur de la pêche dans la région D-1 se limite à un chiffre de 0,2 à 0,3 % en termes d'emploi et de produit régional. Même dans les zones côtières, sa contribution à l'économie locale reste la plupart du temps inférieure à 1 %. La place de la flotte seule est inférieure à 0,1 % dans les zones côtières.
7. Plus de 60 % du secteur de la transformation est localisé à Bremerhaven et Cuxhaven. Dans ces deux ports, le secteur de la pêche apporte une contribution substantielle à l'économie locale, c'est-à-dire environ 8 à 9 % à Bremerhaven et environ 4 à 5 % à Cuxhaven.
8. Les réductions futures des quotas n'auraient qu'une incidence limitée sur la flotte de pêche. Son effet direct sur l'économie locale serait négligeable.
   a) Une grande part des revenus bruts de la flotte de cotres provient des crevettes et des moules, espèces qui ne sont pas soumises aux quotas. Une réduction du quota de morue ou de plie peut obliger les autorités allemandes à retirer les licences annuelles d'un certain nombre de bateaux affrétés. Ainsi, il est possible de maintenir à moyen terme les possibilités de pêche des bateaux d'origine allemande.
   b) La flotte de pêche lointaine travaille essentiellement dans des eaux non européennes. L'emploi direct de cette flotte ne concerne que quelque centaines d'hommes. Cependant, la pêche est considérée comme un élément déterminant des zones rurales de la région D-1, jouant un rôle important dans le secteur du tourisme.
9. La réduction des quotas n'aurait qu'un effet limité à court terme sur l'industrie de transformation du poisson. Celle-ci se fournit pour 80 % de ses matières premières à l'étranger dont la moitié en provenance de pays tiers. Ce secteur est convaincu qu'une baisse de l'approvisionnement local peut être compensé par une augmentation des importations.
10. Au cours des quelques dernières années, la situation de l'emploi s'est améliorée dans la plupart des régions. Les autorités des Länder ont lancé de vastes programmes de promotion de l'emploi.
11. Des programmes spécifiques destinés à atténuer les conséquences sociales de futures mesures restrictives prévues par la politique commune de la pêche semblent peu réalisables parce que les personnes du groupe cible sont peu nombreuses et très dispersées.

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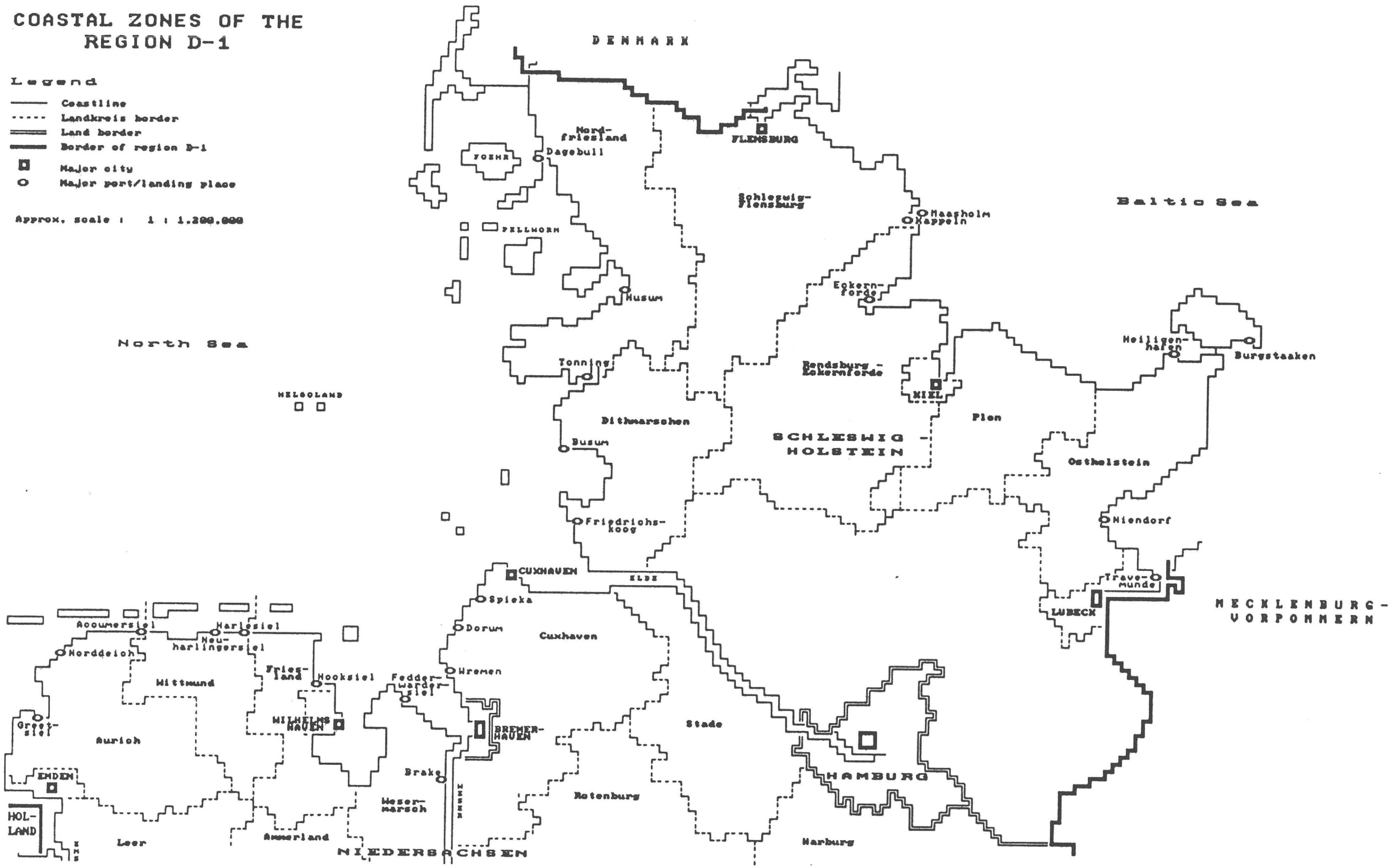

COASTAL ZONES OF THE REGION D-1
Legend
Coastline
Landkreis border
Land border
Border of region D-1
Major city
Major port/landing place
Approx. scale : 1 : 1.200.000
DENMARK
Baltic Sea
North Sea
HELGOLAND
FOEHR
PELLWORM
Nord-friesland
Dagebull
FLENSBURG
Schleswig-Flensburg
Maasholm
Kappeln
Husum
Eckern-forde
Tonning
Rendsburg - Eckernforde
KIEL
Plon
Heiligen-hafen
Burgstaaken
Dithmarschen
SCHLESWIG - HOLSTEIN
Busum
Ostholstein
Friedrichs-koog
Niendorf
CUXHAVEN
ELBE
Trave-munde
LUBECK
MECKLENBURG-VORPOMMERN
Spieka
Dorum
Cuxhaven
Wremen
Accumersiel
Harlesiel
Neu-harlingersiel
Norddeich
Wittmund
Fries-land
Hooksiel
Fedder-warder-siel
WILHELMS-HAVEN
BREMER-HAVEN
Stade
Greet-siel
Aurich
EMDEN
HAMBURG
Brake
Weser-marsch
Rotenburg
HOL-LAND
Leer
Ammerland
NIEDERSACHSEN
Harburg

Main Table : Indicators regarding the role of the fisheries in the region D-1, 1990

Zone	General data				Employment (man-years)			Value added (mln ECU)			Relative dependence (%)				Share of quota species in gross revenues
											Employment		Value added		
	Population (1000)	Employment (1000)	Total 'income' bln ECU	Income per cap. 1000 ECU	Fleet	Total other	TOTAL	Fleet	Other	TOTAL	Fleet	Total	Fleet	Total	
	a	b	c	d=c/b	e	f	g=e+f	h	i	j=h+i	k=e/b	l=f/b	m=h/c	n=j/c	o
BREMEN															
- Bremen	538	233.7	13.5	25.2	-	-	-								
- Bremerhaven	128	53.5	2.3	17.7	244	4500	4744	10.7	163.4	174.1	0.5	8.9	0.5	7.7	
Total	666	287.2	15.8	23.7	244	4500	4744	10.7	163.4	174.1	0.1	1.7	0.1	1.1	0.96
HAMBURG	1607	720.9	48.6	30.2	152	700	852	0.1	41.5	41.5	0.0	0.1	0.0	0.1	0.80
NIEDERSACHSEN															
- Cuxhaven	190	70.2	2.0	10.7	451	2355	2806	26.2	83.0	109.2	0.6	4.0	1.3	5.4	
- Wesermarsch	89	35.9	1.4	16.2	50	128	178	0.5	3.9	4.3	0.1	0.5	0.0	0.3	
- Friesland	93	34.7	1.3	14.3	27	127	154	1.1	3.8	5.0	0.1	0.4	0.1	0.4	
- Wilhelmshaven	90	35.6	1.8	20.3		28	28	0.0	0.7	0.7	0.0	0.1	0.0	0.0	
- Wittmund	52	17.9	0.6	11.9	47	114	161	1.0	3.5	4.5	0.3	0.9	0.2	0.7	
- Aurich	169	60.9	1.8	10.4	146	148	294	3.3	4.3	7.7	0.2	0.5	0.2	0.4	
Total coast	683	255.2	9.0	13.2	721	2900	3621	32.1	99.3	131.4	0.3	1.4	0.4	1.5	0.75
- Other	6601	2668.5	106.9	16.2	27	600	627	2.5	9.3	11.8	0.0	0.0	0.0	0.0	
Total	7284	2923.7	115.9	15.9	748	3500	4248	34.6	108.5	143.1	0.0	0.1	0.0	0.1	
SCHLESWIG-HOLSTEIN															
- Kiel	241	108.1	5.4	22.4		241	241	0.6	4.7	5.3	0.0	0.2	0.0	0.1	
- Lubeck	211	92.1	4.1	19.6	21	758	779	0.5	22.1	22.6	0.0	0.8	0.0	0.5	
- Ditmarschen	127	48.1	2.3	18.4	202	381	583	1.4	11.4	12.8	0.4	1.2	0.1	0.5	
- Nordfriesland	150	58.7	2.1	14.3	136	180	316	7.2	5.5	12.7	0.2	0.5	0.3	0.6	
- Schleswig-Flensburg	177	70.2	2.2	12.2	64	525	589	1.2	16.3	17.6	0.1	0.8	0.1	0.8	
- Rendsburg-Eckernforde	243	97.2	3.3	13.7	12	160	172	0.2	3.5	3.6	0.0	0.2	0.0	0.1	
- Plon	116	48.7	1.1	9.4	66	64	130	1.9	1.4	3.3	0.1	0.3	0.2	0.3	
- Ostholstein	185	76.1	2.2	12.2	189	90	279	0.0	2.1	2.1	0.2	0.4	0.0	0.1	
Total coast	1450	599.2	22.8	15.7	690	2400	3090	12.9	67.1	80.0	0.1	0.5	0.1	0.4	0.60
- Other	1121	510.6	17.7	15.8	113	600	713	0.0	14.6	14.6	0.0	0.1	0.0	0.1	
Total	2571	1109.8	40.6	15.8	803	3000	3803	12.9	81.7	94.6	0.1	0.3	0.0	0.2	
Total D-1	12128	5041.6	220.9	18.2	1947	11700	13647	58.3	395.1	453.5	0.0	0.3	0.0	0.2	
- coastal	3868	1628.8	82.7	21.4	1807	10500	12307	55.8	371.2	427.0	0.1	0.8	0.1	0.5	
- non coastal	8260	3412.8	138.2	16.7	140	1200	1340	2.5	23.9	26.4	0.0	0.0	0.0	0.0	

Note : See appendix 1 for explanations and comments

1. Introduction

1.1 Background and objective of the study

This study has been subcontracted to the Fisheries Division of the Agricultural Economics Research Institute by the Directorate General XIV of the Commission of the European Communities in September 1991. The study is a part a full regional socio-economic analysis of the entire European Community, which has been undertaken in order to provide to the Commission the socio-economic data required for the preparation of the second decade of the Common Fisheries Policy.

The study has been carried out between September 1991 and February 1992.

The objective of the study is to collect and analyze in the region D-1 (Schleswig-Holstein, Niedersachsen, Hamburg and Bremen) the data allowing :

- to identify and characterize the zones highly dependent on fisheries and ancillary activities;
- to analyze the socio-economic impact of the implementation of the Common Fishery Policy and more particularly of its structural aspects, and,
- to define the various measures, called 'support measures', that the Commission will have to implement in order to solve the socio-economic problems resulting from the implementation of the Common Fishery Policy and more particularly to generate alternative employment for fishermen and other people which will have to cease their activities.

1.2 Methodology

The study is largely based on official published documentation. This data has been supplemented by qualitative interpretation collected during various interviews.

Detailed sub-division of the region D-1 is based on the administrative structure of the German Federal Republics, i.e. Länder and Landkreisen. The Landkreis-level is statistically the 'Nuts III' level used by Eurostat. Such approach is also suggested by the 'Rapport de la Commission au Conseil et au Parlement sur la Politique Commune de la Peche' (Sec(91)2288). The size of the Landkreisen is such that it would fairly well correspond to the 'Travel To Work Areas'.

It should be noted that mostly rounded figures are presented in the summary report. Two reasons may be put forward for such approach. First, the text is easier to read. Second, specific characteristics of the published statistics may be left undiscussed, e.g. seasonal variations or adjustment of (un)employment data.

The statistical data is interpreted under a number of implicit assumptions :

1. Employment in a specific region is assumed to regard the inhabitants of that region; e.g. there is no net migration. In case of the proximity of large cities such assumption is not quite justified.
2. Landings of fish in a region originate from vessels of that region, e.g. no net transregional landings. In reality vessels from other regions land mainly codfish in Cuxhaven and Bremerhaven.
3. No explicit distinction is made for income indicators like national product or national income whether it is against factor costs or market prices. As many of these data for the fisheries sector had to be estimated, such 'details' are expected to fall well within the unavoidable error of the estimate. Unless otherwise stated gross values are used, e.i. incl. depreciation.

The report is organized in two parts. Part A presents the general economic situation (ch.2) followed by a sectoral analysis of the fishing fleet (ch.3), aquaculture (ch.4), processing industry and trade (ch.5) and finally the auxiliary activities (ch.6). Part B elaborates further on the regional analysis. The two main regions - Niedersachsen (ch.7) and Schleswig-Holstein (ch.8) - are discussed at the level of Landkreisen, giving the regional distribution of fleet and processing. Bremen and Hamburg are discussed in ch. 9. These chapters devote also some attention to the labour promotion programmes.

Part A. SECTORAL ANALYSIS

2. General description of the region

2.1 Physical and administrative aspects

The region D-1 has little over 12 mln inhabitants on a total area of 64,200 km2. The coastline is about 800 km long (excl. islands and estuaries) of which about 450 km along the North Sea and about 350 km along the Baltic.

The region is composed administratively of four Länder : Bremen, Hamburg, Schleswig-Holstein and Niedersachsen. The latter two are further sub-divided into a number of Landkreisen. However, because of the size of these Länder, only about 28% of the area and 32% of the population has any relevance to this study. The total population of the coastal zones (Landkreisen) is about 3.9 mln

Table I. Main data on area and population in the region D-1, 1989

Länder	Area (km2)	Population (1000)	Population %
Bremen	327	538	4.4%
Bremerhaven	77	128	1.1%
Hamburg	755	1607	13.3%
Schleswig-Holstein	15730	2571	21.2%
- coastal Landkreisen	10510	1450	12.0%
- non-coastal Landkreisen	5220	1121	9.2%
Niedersachsen	47349	7284	60.1%
- coastal Landkreisen	5543	683	5.6%
- non-coastal Landkreisen	41806	6601	54.4%
Total region D-1	64238	12128	100.0%
- coastal regions	16885	3868	31.9%
- non-coastal regions 1)	47353	8260	68.1%

Source : Statistisches Jahrbuch 1991
1) Incl. Bremen

The Landkreisen are further divided into Gemeinden (communities). For some administrative matters there is an authority level between the Leandern and Landkreisen called Bezirk. At this level there are special offices, among others for fisheries (Fischereiamt) and labour (Arbeitsamt).

2.2 Economic structure

The total employment in the region D-1 was about 5 mln in 1990. At that same time there were some 457,000 unemployed. However, the generally favourable economic development of the previous years could be maintained so that by the end of 1991 the employment increased to 5.2 mln while the unemployment dropped to 400,000.

The employment in the coastal Landkreisen alone amounted to some 1.6 mln persons, while the unemployment was about 151,000 The large merchant ports Hamburg, Bremen, Bremerhaven and Wilhelmshaven exercise a major impact on the economy of regions in their vicinity. This applies also to Kiel and Lübeck on the Baltic.

Table II. Employment, unemployment and GNP, (average 1990)

Länder	Employment (1000)	Unemployment (1000)	Regional GNP 1)
Bremen	233.7	30.6	27.7
Bremerhaven	53.5	8.3	4.6
Hamburg	720.9	69.9	99.6
Schleswig-Holstein	1109.8	73.2	83.2
- coastal Landkreisen	599.2	44.7	46.8
- non-coastal Landkreisen	510.6	28.5	36.4
Niedersachsen	2923.7	274.8	237.7
- coastal Landkreisen	255.4	28.5	18.5
- non-coastal Landkreisen	2668.3	246.3	219.2
Total region D-1	4988.1	482.8	452.8
- coastal Landkreisen	1629.0	151.4	169.5
- non-coastal Landkreisen	3412.6	305.4	283.3

Source : Statistisches Jahrbuch 1991
1) Regional income, bln DEM - extrapolation of 1988 figures by the general nominal growth rate of 17.6%.

Table III. Employment by main sectors, 1990, (%) 1)

Sector	Schleswig-Holstein	Hamburg	Niedersachsen	Bremen	Total D-1
Agr., for., fish.	2%	0%	2%	0%	2%
Energy, mining	1%	1%	2%	2%	2%
Processing ind.	29%	20%	36%	29%	31%
Construction	8%	5%	7%	5%	7%
Trade	16%	18%	14%	17%	15%
Transp., communic.	5%	12%	4%	12%	6%
Banking, insurance	3%	7%	4%	4%	4%
Services and other	36%	36%	32%	31%	33%
Total	100%	100%	100%	100%	100%

Source : Statistisches Jahrbuch 1991
1) Based on employees only, excl self-employed.

The primary industries are of little significance in the region D-1. Some 70% of all employment is in the processing industry, trade and services. This applies also to the individual Länder. As could be expected transport plays an important role in the ports of Bremen and Hamburg.

The total regional income amounted to some 385 bln DEM in 1988. The total West-German economy grew between 1989 and 1990 by about 17.6% so that if this also applies to the region D-1, the regional income would be about 450 bln DEM in 1990. About 52% of this value was realized in Niedersachsen, 18% in Schleswig-Holstein, 23% in Hamburg and 7% in Bremen. This distribution is consistent with that of the population, but the 'product' of Bremen and Hamburg is relatively greater.

Table IV. Relative shares of gross value added by sector and region, 1988

Sector	Schleswig-Holstein	Hamburg	Nieder-sachsen	Bremen	Total D-1
Agr., for., fish.	4%	0%	3%	0%	2%
Energy, mining	5%	1%	4%	3%	3%
Processing ind.	22%	17%	29%	26%	25%
Construction	5%	3%	5%	4%	4%
Trade	9%	12%	8%	10%	9%
Transp., communic.	6%	11%	5%	14%	7%
Banking, insurance	4%	7%	4%	5%	5%
Services and other	47%	49%	42%	39%	44%
Total	100%	100%	100%	100%	100%

Source : Arbeitskreis Volkswirtschaftliche Gesamtrechnungen der Bevölkerungstruktur und Wirtschaftskraft der Bundesländer.

2.3 General role of the fisheries sector

In 1988-'90 the West German fleet has landed on the average little over 200,000 tonnes of fish per year with a value of 285 mln DEM. There are traditionally five major species : cod, herring, mussels, saithe and shrimp. In these years the landed volume increased by 16% and the value by 26%. This growth was a result of rising landings to foreign ports, partially by chartered vessels. The landings of fish in the region D-1 have in fact remained rather constant at 125-135,000 tonnes with a value of 225 mln DEM.

By mid 1991 the fleet consisted of 599 vessels with 54,400 grt and 144,600 kw. Four main categories of vessels can be distinguished : about 17 distant (factory) trawlers, 37 larger cutters (24-33 m), 526 smaller cutters and 19 vessels used for the mussel culture. The fleet employs a total of some 1,950 men Of this fleet 2 trawlers and 10 larger cutters were chartered from The Netherlands. Furthermore some 600 small coastal craft (below 10m) are operated by a similar number of fishermen, many of whom fish on part-time basis only.

The gross value added generated by the fleet could be estimated at some 160 mln DEM of which 120 mln DEM was realized in Germany and the rest abroad. These figures imply that the catching sector represents about 0.03% to the economy of the total region D-1. The contribution of the fishing fleet to the income of the coastal zones can be estimated at about 0.07%.

The fish processing industry of the original 'Bundesrepublik' is composed of some 170-180 enterprises, employing some 11,600 people. Its total gross turn-over was about 3.7 bln DEM in 1990 (incl. trade activities). About 90% of this industry is located in the region D-1. Another 6-7,000 people are employed in wholesale and retail trade. In view of the low investment levels in the fleet, the employment in ancillary activities is estimated at 1,000 persons. There is no explicit data regarding the gross product created in trade and ancillary activities. An estimate is presented in table V.

Table V. General role of the fishing industry in region D-1, 1990

	Schleswig-Holstein	Hamburg	Nieder-sachsen	Bremen	Total
Fleet					
- number	360	29	188	22	599
- gross reg. ton.	13200	2600	24500	14100	54400
- engine power (kw)	54600	7800	58900	23300	144600
Employment					
- crew	800	150	750	250	1950
- processing 1)	2400	700	3300	4300	10700
- ancillary 2)	600	0	200	200	1000
Total	3800	950	4250	4750	13650
Gross revenues (mln DEM)					
- fleet 3)	53	0	142	44	239
- processing	550	340	850	1300	3040
- ancillary	na	na	na	na	na
Value added (mln DEM)					
- fleet 4)	27	0	71	22	120
- processing 5)	138	85	213	325	761
- ancillary 6)	30	0	10	10	50
Total	195	85	294	357	931

Source : various
1) Estimate based on extrapolation of 1987 survey, incl. wholesale activities of the processors; 2) Estimate, see ch. 6; 3) Landings in the Länder only, excl. landings abroad; 4) Regional distribution is estimated on the basis of the total value added and the relative regional distribution of the gross revenues; 5) 25% of the gross revenues; 6) Estimated on the basis of 50,000 DEM per employed.

On the basis of the above figures it can be concluded that overall the fisheries sector represents about 0.3-0.4% of the employment of the region D-1. In the coastal Landkreisen alone, the share of the employment of the total fisheries sector is about 1%.

The fisheries sector contributes about 0.3% of the total income (value added) of the region D-1. Its contribution to the income of coastal zones alone is about 0.7%.

3. Fishing fleet

3.1 Development between 1980 and 1990

3.1.1 Fleet

The number of active fishing vessels decreased between 1980 and 1990 from 700 to 600 units and the total gross tonnage from about 108,000 to 54,400 grt. This decrease is mainly a consequence of general conditions in the fishing sector (restricted fishing possibilities, alternative employment opportunities, etc.) rather than of a policy aimed at a reduction of the fleet.

The composition of the fleet changed considerably. At the end of 1980 there were 24 high sea freezer trawler (69,800 grt), 13 fresh distant trawlers (11.800 grt) and 660 cutters (26,400 grt). At the end of 1991 there were only seven factory trawlers left (21,400 grt), 10 distant fresh fish trawlers of over 300 grt (7,200 grt) and about 580 cutters (25,800 grt), including the fleet employed in mussel culture.

It should be noted that since the end of the eighties chartered vessels from The Netherlands (included in the above overview) have played an increasingly important role. This regards two pelagic freezer trawlers (4,200 grt) and 10 cutters (1,700 grt).

3.1.2 Landings

The total landings by vessels under German flag have dropped from some 210,000 t in the period 1980-1984 to an average of 145,000 t in the years 1985-1988. In the years 1989-'90 175,000 tonnes of fish was landed.

The average annual value decreased in the same periods from 350 mln DEM to 270 mln DEM. In 1990 the total value of landings increased to 322 mln DEM, a record level since 1985.

Since 1988 an increasing percentage of the catches was landed abroad. While before that year it was only 5-10% of the total volume, by 1990 it was 29%. Evidently the values show a similar trend. This development has been largely caused by the chartered vessels and enterprises with a high component of foreign capital. To a lesser extent some 'originally German' vessels switched to landings in The Netherlands or Denmark as better prices could be obtained.

In fact production landed into the German ports has been stagnating since 1986 at 155,000 t and 230 mln DEM. The growth realized since 1988 can be fully attributed to landings of cutters and trawlers abroad.

The following analysis is based on data regarding catches of German vessels landed in Germany. These figures may be considered representative of the economic relevance of the sector, as large part of landings abroad is made by chartered vessels.

There was a certain shift in the composition of the landings. The total catches of cod and saithe decreased from 83,000 tonnes in 1980 to 55,000 t in 1990. Despite the decrease in volume its relative significance remained constant. The importance of herring, shrimp and mussels increased. The importance of redfish diminished along with the disappearance of the distant fleet.

The nominal value of the landings in Germany was in 1990 some 23% lower than in 1980. In real terms the drop was 40% as the inflation amounted to about 29% in the decade under consideration.

Table VI. Catches by species, 1980, 1990, (1000 t live weight; mln DEM)

Species	1980 Volume	1980 Value	1990 Volume	1990 Value
Landings in Germany				
Cod	59	79	42	95
Herring	10	8	35	17
Saithe	24	36	13	17
Redfish	53	94	5	10
Shrimp	16	37	7	36
Mussels	13	5	20	11
Other	113	45	33	49
Total in Germany	287	304	154	235
Abroad	13	16	61	87
Total German fleet	300	320	215	322

Sources : Jahresbericht über die Deutsche Fischwirtschaft, Das Fischerblatt

The employment on board (excl. small coastal vessels) decreased from some 3,700 men in 1980 to 1,900 in 1990. This implies that the gross revenues per crew member increased from 86,000 DEM to about 160,000 DEM (incl. chartered vessels)!

From the point of view of fleet segments, the role of the distant trawlers deteriorated as their total gross revenues (from landings in Germany) decreased from an average of 226 mln DEM in the years 1980-1983 to 108 mln DEM in the period 1987-'90. On the other hand the cutter fleet has slightly gained on relative importance, the value of its landings rising in the same period from 106 mln DEM to 118 mln DEM.

3.1.3 Regional shifts

Significant regional shifts have taken place. The fisheries almost disappeared from Hamburg where the value of landings dropped from over 21 mln DEM in 1980 to 0.3 mln DEM in 1990. The importance of Bremen has also diminished, the value of landings decreasing from almost 120 mln DEM in 1980 to 39 mln DEM ten years later. The large ports have lost ground mainly due to the vanishing importance of the distant fleet and its rising landings abroad.

The value of the fisheries production of Niedersachsen has fluctuated as a result of cyclical developments of the trawler and cutter fleet, Cuxhaven being a major distant trawler port. The production of the cutter fleet of Schleswig-Holstein has increased from some 47 mln DEM in 1980-'83 to 56 mln DEM during 1987-'90.

Consequently, the share in the total value of landings of Bremen and Hamburg has decreased from 34% resp. 7% in 1980 to 17% resp. 0%. On the other hand the relative role of Niedersachsen and Schleswig- Holstein rose in the same period from 39% resp. 15% to 60% resp. 22%.

3.2 Current structure of the fleet

The fishing fleet of the region D-1 can be sub-divided into the following segments :

- distant freezer (factory) vessels
- off-shore wet fish trawlers
- larger cutters, fishing mainly cod and/or herring
- medium cutters, carrying out mixed fishery for fish and shrimp
- small cutters, fishing mainly shrimp
- vessels employed in mussel culture
- small coastal craft, used for part-time fishing mostly

Evidently, the cutter fleet is the most numerous, but in terms of gross tonnage or engine power the share of the trawlers is almost 50% and 27% respectively. Over 60% of the crew is employed on board the small cutters. For the sake of completeness it should be noted that there are several hundred small coastal vessels which offer part-time employment to a similar number of people. About 200 of these vessels are registered.

Table VII. Structure of the fleet, mid 1991, 1)

Type of fishery	Number	kw	Grt	Employment 2)
Trawlers (over 300 grt)				
- pelagic	3	8950	8700	100
- factory	4	14120	12720	230
- wet fish	10	15830	7220	160
Cutters (below 300 grt) 3)				
- fish, Baltic	206	24370	5370	420
- fish, North Sea	87	32300	9990	410
- fish and shrimp	148	23980	4770	330
- shrimp	122	19260	2900	250
Mussel culture	19	5780	2760	50
Total	599	144590	54430	1950
- charter fleet	12	11560	5860	100

Source : Official fleet register
1) Incl. chartered vessels : two pelagic trawlers and 10 larger cutters; 2) Estimate based on DFW; 3) Incl. 89 vessels below 10 grt (4140 kw, 640 grt).

The trawlers operate from Bremen and Cuxhaven (Niedersachsen). Only a few cutters are registered in the ports of Bremen or Hamburg.

About 380 cutters operate in the North Sea and about 200 in the Baltic. The cutters in the Baltic are on the average smaller, so that the North Sea share in gross tonnage or engine power is higher than the above figures would indicate. On the other hand the cutters operating from Bremen and Hamburg are in their category relatively large. The larger Baltic cutters fish seasonally in the North Sea as well.

Some 1,950 fishermen are employed on board of the whole fleet. There is no fleet segment with a significantly high share in the total employment. The chartered vessels employ some 100 people, part of whom are not Germans. The employment significance of mussel culture is very restricted.

Table VIII. Regional distribution of the fleet, mid 1991

	Bremen	Hamburg	Nieder-sachsen	Schleswig-Holstein		Total
				North Sea	Baltic	
Fleet						
- number	22	29	188	154	206	599
- grt	14120	2630	24500	7810	5360	54420
Employment 1)	240	150	750	380	430	1950

Source : Official fleet register
1) Estimate based on DFW.

3.3 Economic performance

3.3.1 Distant fleet

An unambiguous assessment of the economic results of the distant fleet is complicated by the following factors :

1. Small number of vessels operated by an even smaller number of enterprises, would require insight into the situation of the individual units.
2. Statistics on landings by fleet segment and those of fleet itself are not entirely comparable. Cutters of over 300 grt are included under cutter fleet, but their landings are put under high seas fleet (e.i. mostly trawlers).
3. It is not clear which share of the landings in German ports should be attributed to the two chartered pelagic freezer trawlers.
4. It is not clear which share of the landings abroad should be attributed to original (i.e. not chartered) German vessels.

Table IX. Composition of the production of distant fleet, 1990, (1000 t live weight, mln DEM)

Species	Landings in Germany		Landings abroad	
	Volume	Value	Volume	Value
Herring	29.3	14.2	20.4	10.2
Cod	31.2	65.6	4.1	9.5
Saithe	4.6	6.2	0.8	1.0
Redfish	4.8	9.4	0.4	0.6
Mackerel	13.7	10.0	8.0	5.2
Horse mackerel	6.5	3.3	5.6	3.1
Halibut (black)	0.5	3.1	0.2	0.8
Other	1.7	6.1	2.0	1.6
Total	92.3	117.9	41.3	32.0

Source : DFW

The operation of the entire distant fleet depends mainly on cod, which represented in 1990 about 55% of the total value landed in Germany. Herring, redfish and mackerel contributed 28%.

3.3.1.1 Factory trawlers

The factory (freezer) trawlers are operated by two companies. The total value of their landings in Germany was about 94 mln DEM in 1990, of which 57 mln DEM was realized by frozen cod fillets, produced from non-EC waters. Frozen herring and mackerel accounted for 14 resp. 10 mln DEM. This implies that only about 14% of the total amount was realized with other species. The landings of small pelagic species abroad can be probably largely attributed to the two chartered freezer trawlers Regarding the other species, a clear division between the factory and wet fish trawlers cannot be made.

On the basis of the above considerations it could be assumed that the value of the landings of the seven distant factory trawlers (incl. two chartered ones) is approximately 110 mln DEM. This would imply average gross revenues of about 16 mln DEM per vessel. In view of the average size of these vessels (about 3,200 grt, 90-95 m) and the likely production costs (specifications are not available) such revenues indicate very satisfactory financial results.

3.3.1.2 Distant wet fish trawlers

The value of the landings of the 10 distant wet fish trawlers amounts than to some 40 mln DEM, of which 24 mln DEM is landed in Germany and 16 mln DEM abroad. Cod accounts for some 45% of the total revenues, saithe for 17% and redfish for about 15%. The average gross revenues per vessels would be about 4 mln DEM per year. Such revenues are on the average not sufficient for a profitable operation these 50-60m vessels, especially in view of high costs of long fishing trips during which a high percentage of time is spent steaming to and from the fishing grounds.

3.3.2 Cutter fleet

Five major segments can be distinguished within the cutter fleet. The cutters fishing in the North Sea or Baltic mainly for fish, cutters fishing for fish and shrimp and those depending mainly on shrimp. A separate distinct group are the mussel vessels.

Table X. shows that cod is the most important species, which generated in 1990 some 27% of the total gross revenues. Other important species are plaice, sole and shrimp, which accounted together for another 43% of the gross revenues.

Table XI gives estimates of the average gross revenues per vessel of the various fleet segments. These revenues may be considered sufficient for older vessels with low debts, e.g. operation on cash-flow basis. Larger investments (new construction for replacement) do not seem feasible.

Most cutters are skipper-owned. This means that not only the profitability, but also 'maintaining the way of life' is an important criterium to continue the enterprise. Furthermore, the education of the skippers and crew (usually vocational training) is such that they belong to skilled workers within the fishing sector, but cannot apply their skill anywhere else. To stop fishing means to fall on the social ladder to the group of unskilled labourers.

The investments in new cutters have decreased significantly in the years 1989/90 as compared to the period 1983-'88. Only one small vessel was added to the fleet in 1991. Only subsidized modernization investments (subsidy up to 40% from EC, Federal and State funds) are feasible. The limit imposed on the total size of the fleet by the MAGP (see section 3.4.2) has seriously restricted the flow of these subsidies. Modernization of the existing vessels (new engines) does take place regularly, but no specific data is available.

Table X. Production of the cutter fleet, 1990 (1000 t live weight, mln DEM)

Species	North Sea		Baltic	
	Volume	Value	Volume	Value
Cod 1)	6.0	20.0	4.9	9.0
Plaice	1.5	3.4	-	-
Sole	1.5	11.5	-	-
Saithe	8.2	11.1	-	-
Herring	-	-	5.1	2.3
Shrimp	7.1	35.7	-	-
Mussels	24.0	12.9	-	-
Other	13.6	1.7	2.0	9.0
Total	61.9	96.3	12.0	20.3
Species	Landings abroad		Total	
	Volume	Value	Volume	Value
Cod 1)	7.0	17.8	17.8	46.8
Plaice	7.4	17.5	9.0	20.9
Sole	0.8	7.6	2.3	19.0
Saithe	2.9	4.0	11.1	15.2
Herring	-	-	5.1	2.3
Shrimp	-	-	7.1	35.7
Mussels	-	-	24.0	12.9
Other	2.0	8.1	17.6	18.8
Total	20.1	55.0	94.0	171.6

Source : DFW 90/91
1) Values North Sea and Baltic estimated on the basis of total.

Table XI. Estimate of the gross revenues per type of vessel

Type of vessel	Number	Average grt	Average kw	Annual revenues (1000 DEM) 1)
North Sea - fish	82	120	386	700-900
Baltic - fish	127	39	166	250-350
Fish and shrimp	143	33	166	250-450
Shrimp	122	24	158	200-300
Mussels	19	145	304	500-700

1) Estimate is based on data on fleet and landings and on costs and earnings figures published by Institut für Landwirtschaftliche Markt-forschung.

Table XII. Construction of new vessels, 1983-1990 1)

Year	Number	Grt	kw
1983/84	44	2515	8125
1985/86	32	1798	6721
1987/88	21	2469	7635
1989/90	14	558	2265

Source : Official fleet register
1) Based on construction year of vessels operating mid 1991, incl. cutters, mussel vessels and boats below 10 grt, excl. distant fleet and chartered cutters.

3.4 Past effects of the CFP

3.4.1 TAC and quota policy

The TAC and quota policy obliged the German fleet to rely largely on cod and saithe in the North Sea and on cod and redfish outside the EC-waters (mainly Greenland). Germany disposes also of considerable quota for herring, mackerel, plaice and sole (due to its high unit value). However, the German cutter fleet started exploiting the flatfish species only towards the end of the eighties. The economic significance of mackerel and herring for the 'original' German fleet is also restricted.

Within the German quota, the cutter fleet is allocated almost all demersal quota in the European waters and the trawler may exploit the stocks in the non-EC areas. The trawlers are allowed to fish 1-2,000 tonnes of saithe and cod each in the Eurosea as well as the pelagic species, except the Baltic herring. By-catch restrictions of sole are imposed on the shrimp fleet.

In general the TAC and quota policy has not caused grave restrictions for the German fleet as many major quota have not been fully utilised until 1990-'91. This underutilisation made it possible to allow the chartered vessels mentioned earlier to participate in the fishery.

Table XIII. Utilization of the main quota, 1989-'91

Species	Area	1989	1990	1991
Cod	IIIbcd	90.9%	28.4%	45.9%
	IIa, IV	83.5%	75.4%	45.9%
	Greenland	97.0%	95.4%	31.5%
Saithe	IIa, III, IV	66.4%	91.6%	99.2%
Herring	IIIbcd	72.7%	29.8%	13.9%
	IIa, IVab	73.7%	100.1%	89.9%
Plaice	IIa, IV	56.6%	86.6%	72.2%
Sole	II, IV	100.7%	99.5%	98.1%
Mackerel	II, Vb, VI, VII	79.1%	107.4%	79.0%
Redfish	Greenland	4.8%	6.8%	15.0%
Halibut	Greenland	12.2%	9.0%	6.1%

Source : EC data on landings.

3.4.2 Structural policy

The German fleet was significantly reduced already prior to the introduction of the EC structural policy. A national decommissioning scheme was already introduced in 1977. At the beginning of 1984 the fleet was composed of 27 distant trawlers and 650 cutters. At the end of 1983 a new decommissioning scheme was introduced (650 ecu/grt). By the beginning of 1987 the fleet was further reduced to 14 distant vessels and about 640 cutters. This size of the fleet was considered acceptable for the medium term and the new Multiannual Guidance Programme (EC reg. 4028/86) did not require any significant further fleet reduction. Between 1988 and 1990 29 vessels (1,100 grt) were decommissioned.

Table XIV. Multiannual Guidance Programme, 1987-1991

Type of fleet	Engine power (1000 kw)		Gross reg. tonnage (1000 grt)	
	situat. 1.1.87	object. 31.12.91	situat. 1.1.87	object. 31.12.91
Distant fleet	29.5	32.2	22.6	21.2
Pelagic fleet	6.2	6.2	4.5	4.5
Middle water fleet	17.3	17.3	5.8	5.8
Cutter fleet	86.1	82.3	18.6	17.7
Total	139.1	138.0	51.5	49.2

Source : EC Official Journal, 14.3.90, No. L66/5

Limited funds were made available for modernization of the fleet. Subsidies of up to 40% of the investment amount could be obtained. However, new construction projects are only approved when an equal capacity is withdrawn from the fleet concurrently. The total amount of construction and modernization subsidies can be estimated at about 12 mln DEM per year (total of EC, national and local support). Furthermore funds were available for temporary laying-up of the vessels.

In general the structural policy does not seem to have had a major impact on the German fishing fleet. Formally it made expansion of the fleet impossible, but in practice the average financial results of the vessels would not have allowed for unsubsidized investments anyway. As the chartered vessel are not included in the MAGP, Germany has achieved well its objectives by mid 1991, incl. the 2% reduction which is to be set for 1992.

3.4.3 Technical measures

The increase of the minimum mesh sizes has effected the catches, but it is not certain to which extent.

The introduction of the plaice box between April and September has enabled the small cutters below 221 kw to exploit plaice when catches of shrimp are too small. However, dubious measurement of the engine power may jeopardize the effectiveness of this measure in the future.

3.4.4 Market policy

The price support policy is of very little importance in Germany. Due to the high demand it is rather exceptional that good quality fish would remain unsold. An exception to this rule is Baltic herring as its seasonal variation of quality does not always suit the processors. The total volume of withdrawn fish may be estimated at a few hundred tonnes per year at most.

The tariff imposed on import on fresh and frozen whole cod, saithe and haddock (12% or 15%) does offer certain protection to the German cutters against landings by Norwegian or Icelandic vessels. On the basis of 1990 figures (table X.) it can be concluded that if free trade would lead to a price reduction of 10% for cod and saithe, the total gross revenues of the cutter fleet would be reduced by about 3-4%.

3.4.5 External policy

The EC policy regarding third countries is of eminent importance to the German distant fleet. The factory trawlers depend largely on the access to the Greenland waters, while the wet fish trawlers operate in the Norwegian and Faeroese waters. The division of the landings between trawlers and cutters indicates that up to 50% of the value and 60% of the volume may originate from non-EC waters.

The fishing opportunities in the Baltic are restricted since the seventies, not only in terms of quota but also as far as the accessible fishing grounds are concerned. The German fleet may fish only in about 10% of the entire Baltic Sea. The German Baltic fleet hopes that under the new geo-political situation it will be possible to set up a new fishery management system in the Baltic which would offer greater flexibility and allow access to a greater part (if not all) of the Baltic.

3.5 Consequences of future restrictive CFP

Restrictive CFP can be only interpreted in terms of further cuts in TAC's and quota. It is likely that such cuts will reduce the total value and volume of the German landings. However, the extent of such reductions cannot be determined unambiguously as it will depend on the specific species.

Certain special conditions should be pointed out in this context :

1. The 'original' German fleet did not fully utilize the available quota, so that chartered vessels could be allowed to enter.
2. In case quota would not seem sufficient, the chartered vessels, which operate on annual permits, will not be allowed to participate in the fishery, giving extra fishing opportunities to the 'original' German fleet.
3. An important part of the smaller North Sea vessels depends on shrimp, which is not subject to CFP. In fact smaller fish cutters (below 70 grt/220 kw) may switch to this fishery if fish quota would not be sufficient. The economic feasibility of such move will depend on the shrimp stock and prices (i.e. productivity) at that time and thus cannot be foreseen.
4. The decision to continue or stop the enterprise will depend on the realized productivity and production costs rather than on administrative measures or quota reductions.
5. In view of the high average age of the fleet (22 years), the fixed costs should be fairly low, so that the enterprises can be continued even under unfavourable conditions for several years on cash-flow basis, depending on their financial reserves.

For these reasons, reductions of main quota by 20% compared to the 1989 level will not have any serious impact on the 'original' German fleet in the medium term. Evidently, a deterioration of the stocks will lead to a lower productivity which will negatively influence the financial results (see also ch. 10).

4. Aquaculture and inland fisheries

Very little recent data is available regarding the aquaculture in the region D-1. The only census was carried out in 1981/82. The next one was planned for 1991/92 but it had to be postponed because of the German reunification. The second source is the EAFE Report nr. 4 on the Evaluation of EC Aquaculture support in Germany. In case of fresh water species it is not always possible to distinguish between culture and fishing.

For 'West Germany' as a whole the following species are of importance : in salt water it is mussels and to much lesser extent oysters and turbot. In fresh water there is production of trout and carp, and small quantities of catfish and eel. However, most of the fresh water production does not take place in the area D-1, but rather in southern Land of Bayern.

By far the most important culture in the region D-1 are the mussels. In chapter 3 it was indicated that the annual production amounted in the recent years to some 20-30,000 tonnes valued at 5-10 mln DEM. Officially there are 19 vessels registered for this fishery but in practice only 14 are active. This fleet employs about 50 people. One mussel processing plant in Schleswig-Holstein employs about 100 people.

Three farms were set up in 1986 to produce flat oyster, one on the North Sea coast and two on the Baltic one. Their production reached about 150 tonnes in 1990, which could be valued at about 1.6 mln DEM. These farms employ 30-40 people, of whom about two thirds on part-time basis.

There is one enterprise involved in the production of turbo and turbot fingerlings. The value of its output amounted to 0.2 mln DEM in 1989.

The production of trout and carp in the whole 'West Germany' amounts to about 15,000 resp. 6,000 tonnes with a total value of some 80 resp. 20 mln DEM. Some 400 people are employed in these activities full time and may be as many as 13,000 part-time. Most of the part- time employees worked less than 50 days/year. It may be safely assumed that no more than 10% of the total activity takes place in the region D-1. This would imply that fresh water culture (and fishing) in the region D-1 produces some 2,000 t of fish valued at 10 mln DEM. The sector (culture and inland fisheries) would give employment to some 40 people on full time and 1,000-1,500 on part-time basis. According to various personal communications there are about 20 fish farms in Niedersachsen and about five in Schleswig-Holstein. About half produces trout and the other half carp. Most of this culture should be viewed as a 'side-activity' on agricultural farms. the production of eel and catfish is of even less importance.

From the above it can be concluded that the aquaculture sector in the region D-1 realizes annually gross revenues of some 20 mln DEM and employs about 100 people on full time basis. The share of mussel culture (already included in ch. 3) amounts to about 50%. In future further growth of aquaculture in the region D-1 may be expected. However, in view of the small current size of this sector, aquaculture will remain of very limited economic importance.

5. Fish processing industry and trade

5.1 Structure

Despite the small size of the German fishing fleet, there is a relatively important fish processing industry. This sector originates from the sixties and seventies when the large German distant fleet made up a part of integrated enterprises (fishing - processing - trade) and supplied considerable quantities of raw material for further processing. The reduction of the distant fleet only forced the processors to turn to other (foreign) sources of raw material. The turn-over continued to grow, but the number of employees was significantly reduced.

In 1990 there were some 180 plants, employing about 11,600 people. The total turn-over in 1990 reached 3.7 bln DEM, of which 2.2 bln DEM was realized in fish processing and the rest in trading activities. The total production amounted to 350,000 tonnes.

The size of the enterprises varies very considerably, between small family processing and large industrial units with over 1,000 employees. The small businesses are mostly involved in smoking, filleting of fresh fish and specialties. Larger ones operate canning and freezing plants. Production of marinated products is undertaken by small as well as large enterprises.

Table XV. Processing industry by number of employees, Sept. 1990 1)

Number of employees	Number of plants 2)	Total employment (1000)	Gross revenues (mln DEM)
1-4	43	0.1	36
5-9	30	0.2	54
10-19	26	0.3	133
20-49	31	0.9	218
50-99	14	0.9	169
100-199	15	2.1	409
200-299	7	1.6	385
300-399	3	1.1	300
400-499	5	2.3	1321
over 500	3	2.0	675
Total	177	11.6	3700

Source : Statistisches Bundesamt, Produzierende Gewerbe, Fachserie 4, Reihe 4.1.2, 1990.
1) Whole West Germany in September 1990; gross revenues (processing and trade) extrapolated from data on Jan-Sep/1990 to the given year total; 2) According to other sources there were additionally some 200 very small processors/traders.

Table XV shows that the bulk of production takes place in the 33 larger enterprises with over 100 employees. This group offers 79% of the total employment and realizes 83% of the total gross revenues. On the other hand the share in employment and output value of the 99 small enterprises with less than 20 employees is only 6%.

Many of the enterprises are located in Cuxhaven and Bremerhaven, which are also the two ports used by the distant fleet. Bremerhaven alone accounts for some 60% of the total gross revenues of the fish processing industry and about 40% of the total employment. The relatively larger plants are located in this area.

Table XVI. Regional distribution of fish processing, 1990 1)

	Schleswig-Holstein	Niedersachsen	Bremen	Hamburg	Total
Number of plants	23	20	24	10	77
Turn-over (mln DEM)	550	850	1300	340	3040
Employment	2400	3300	4300	700	10700

Sources : SLA Hamburg, Statistisches Taschenbuch 1991; SLA Bremen, Statistische Berichte, okt. 1991; SLA Schleswig-Holstein, Statistische Berichte, 30.9.1991; SLA Niedersachsen, Bergbau und Verarbeitende Gewerbe, 1988.
1) Plants with more than 20 employees; see notes table IV.

For the completeness it should be mentioned that Germany also possesses a small fish meal industry which produces about 27,000 tonnes o fish meal and 7,500 tonnes of fish oil. About 20% of the meal and less than 10% of the oil is produced at sea and the rest in land based installations. It achieves gross revenues of 20-30 mln DEM.

5.2 Economic performance

The output of the German fish processing industry has been gradually growing throughout the eighties, which implies that the enterprises have on the average achieved fairly good results. I should be stressed that, West Germany is a large market for fish - 64.2 mln inhabitants with an average annual fish consumption of about 14 kg, i.e. a total of 900,000 tonnes of fish live weight.

There were, however, changes in the composition of the output as far as products are concerned. The importance of products based on codfish species has grown between 1980 and 199 by 56% in volume and 69% in value. This growth can be ascribed almost exclusively to the breaded products and to much lesser extent to frozen fillets. The processed volumes of most other codfish products have decreased, but the value did rise thanks t rising nominal prices.

The processing of herring has stagnated. The nominal value has increased by only 5%, so that in real terms there was a decrease of some 19%. This drop can be partly explained by the exceptionally high herring prices in 1980 because most herring fisheries were stopped.

The volume of processed other products, crustacea and molluscs, has stagnated, but the value increased by almost 50%.

The regional distribution of the fish processing cannot be unambiguously determined as statistics regarding some 15-20% of the production are confidential and thus are not be published. Table XVIII shows that in the second half of the eighties on the average at least 30-35% of the processing took place in Bremen, i.e. Bremerhaven. Another 20-25% is located in Niedersachsen, a large part of which is in Cuxhaven. The share of Niedersachsen is about 15% and that of Hamburg only about 5%.

There seems to be a certain regional specialisation. Processing in the Land Bremen is mostly based on codfish. In Schleswig-Holstein it is herring and other products (crustacea and molluscs). In Niedersachsen there is processing of codfish as well as of herring. This specialisation implies that especially the employment in the processing industry in Bremerhaven is sensitive to a drop in supply of quota species like cod or saithe.

Table XVII. Composition of output, 1980 and 1990, (mln DEM, 1000 t)

Product group	1980		1990		Change	
	Volume	Value	Volume	Value	Volume	Value
Fresh fish						
- whole	7.7	23.8	6.5	37.9	-16%	59%
- fillets	17.8	76.8	14.7	112.4	-17%	56%
Frozen fish						
- whole	1.7	2.5	1.2	26.9	-29%	965%
- fillets	12.2	63.1	18.5	93.6	52%	48%
- breaded	37.2	152.2	97.4	458.6	162%	201%
- other	24.6	191.8	24.9	190.0	1%	-1%
Fish in oil 1)	8.9	96.5	8.2	106.6	-8%	10%
Smoked						
- herring/sprat	3.1	18.4	2.8	20.3	-9%	10%
- other	10.6	140.4	14.3	214.2	34%	53%
Marinades	76.4	367.4	71.9	312.8	-6%	-15%
Canned	48.6	248.2	45.7	282.2	-6%	14%
Anchosen	7.1	68.2	16.0	98.0	126%	44%
Fish salads	16.4	84.4	18.2	112.7	11%	33%
Shellfish	6.5	40.8	6.8	71.7	4%	76%
Other	6.1	38.4	1.9	41.8	-69%	9%
Total 2)	285.1	1613.0	349.2	2179.6	22%	35%
- codfish products	110.2	606.8	171.4	1026.0	56%	69%
- 'herring' prod.	151.5	786.6	154.7	825.9	2%	5%
- other	23.3	219.6	23.0	327.7	-1%	49%

Source : DFW
1) mostly saithe and salmon; 2) Division into the three product groups is an estimate.

Table XVIII. Fish processing by species and region, value and volume, average 1985-1989

Land	Fish products		Herring products		Other products	
	1000 t	Mln DEM	1000 t	Mln DEM	1000 t	Mln DEM
Schleswig-Holst.	1.9	9.8	36.2	224.1	3.9	35.1
Hamburg	2.9	95.4	5.1	47.5	0.0	0.0
Niedersachsen	31.0	166.6	38.0	233.8	0.6	9.7
Bremen	93.5	536.2	6.5	30.0	0.2	3.2
Other Länder	0.0	0.0	24.6	107.1	0.0	0.1
Unknown 1)	22.2	276.4	11.0	64.0	8.8	15.4
WEST-GERMANY	151.5	1084.5	121.5	706.6	13.5	63.5

Source : Sommer
1) Data not published because of obligation to maintain secrecy, but included in totals.

The gross value added of the fish processing industry was about 714 mln DEM in 1988 (market prices). Of this amount about 580 mln DEM was realized in the region D-1. The share of the four Länder was approximately the following:

Bremen 42%, Niedersachsen 29%, Schleswig-Holstein 19% and Hamburg 10%. Thus the fish processing industry is about five times as important for the economy of the region as the fleet is.

5.3 Future outlook and sensitivity to CFP

The German fish processing industry does not depend to any significant extent on supplies from the German fleet. On the average it is estimated that only 20% of the raw material is obtained from German vessels. A large share of the domestic supplies is produced by the distant fleet. Most of cod and saithe is caught by the distant fleet in non-EC waters, which further reduces the dependence of the German fish processing on quota in the EEZ of the EC.

Table XIX. German landings of main species for processing, 1990, (tonnes live weight) 1)

Species	Cutters	Trawlers	Total
Cod	10900	31200	42100
Saithe	8200	4600	12800
Herring	5200	29300	34500

Source : DFW 1990/91
1) Landings in Germany only.

It is estimated that some 80% of the raw material is imported. In 1990 the total imports achieved some 615,000 tonnes (product weight) with a total value of almost 2.8 bln DEM. About two thirds consisted of fresh and frozen fish, which is mostly destined for further processing. The most important species in terms of volume were herring (105,000 t), saithe (63,000 t) and Alaska pollack (49,000 t). Germany imported over 100,000 t of frozen fillets of saithe, hake and Alaska pollack alone.

About a half of the imports originates from third countries outside the EC. Therefore it may be expected that a further reduction of quota in the European waters will be compensated by increased imports. Such assumption is well supported by the developments during the eighties. Reduction of employment above the general trend is therefore rather unlikely (see also ch. 10).

Table XX. German imports of fish and fishery products, 1990, (mln DEM)

Product/species	Origin		Total
	EC	Non-EC	
Whole fresh fish	335	308	643
Whole frozen fish	112	100	212
Fillets	306	475	781
Dried, smoked, salted	175	53	228
Shellfish, fresh/frozen	112	131	243
Preparations of fish	259	195	454
Preparations of shellfish	149	63	212
Total	1450	1324	2774

Source : Eurostat

6. Ancillary activities

There is no data available regarding the secondary effects of the small German fishing sector, e.i. vessel construction and maintenance, supply of intermediate inputs (fuel, lubricant, nets) and services (ports, administration of enterprises and fisheries organizations, banking, insurance, transportation, etc.). The crucial problem in quantifying the secondary effects is that most of these suppliers do not only depend on German fisheries, but also on other economic sectors or on export to fishing fleets in other countries.

Therefore table XXI presents an estimate of employment involved in the secondary activities based on the approximate value of the intermediate inputs of the fishing fleet and the share of labour costs within the intermediate deliveries. It is assumed that the costs of the intermediate deliveries are 50% of the gross value of landings and that the labour component amounts to 30% within the value of intermediate deliveries. One man-year is valued at 45,000 DEM. The calculation is made on the basis of data on 1990 as well as on an average of the period 1986-'90 to eliminate short term fluctuations.

The basic estimate indicates that about 1,000 man-years are involved in these ancillary activities. The sensitivity analysis presents the results when slightly different assumtions are made. It shows a range between 700 and 1,500 man-years. This approach does not take into account the share of imported inputs.

Table XXI. Estimate of employment in ancillary activities

		Average 1986-'90	Year 1990
		Mln DEM	
Gross value of landings		276	322
- gross value added, 1)	50%	138	161
Intermediate inputs		138	161
- share of labour costs	30%	41	48
		Man-years	
Costs of one man-year	45000		
Employment in ancillary act.		920	1073
Sensitivity analysis 2)			
	New assumpt.	Man-years	
Gross value added, fishing	40%	1324	1546
	60%	883	1030
Share of labour costs	40%	1104	1288
	25%	690	805
Costs of one man-year	55000	753	878
	40000	1035	1207

1) Labour, profit and depreciation; 2) The sensitivity analysis shows total man-years when a new assumption is introduced, while all other assumtions remain as in the basic estimate above.

The regional distribution of this employment is even more difficult to estimate as evidently the origin of the intermediate deliveries is not necessarily linked to the regional affiliation of the vessels. If the value of landings would be taken as a proxy, the ancillary employment would be distributed as follows : 600 in Schleswig-Holstein, 200 in Bremen and 200 in Niedersachsen.

Part B. REGIONAL ANALYSIS

Part B discusses the role of the fisheries sector within the regional economy by Land and Landkreis. Apart of these two administrative levels, some larger cities have a status of a "Kreisfreie Stadt", i.e. in fact a separate community. Usually separate statistics are collected for these cities and they are presented whenever relevant and available. In the last section of each chapter attention is given to the major employment stimulation programmes which were undertaken in the recent years.

It should be kept in mind that the regional data cannot fully be taken at their face value due to migration of people an capital and due to the flexibility of the vessels to land their production in different ports.

First two chapters (7 and 8) of this part deal with the two large Länder Niedersachsen and Schleswig-Holstein, where also most of the fleet is harboured. Chapter 9 deals with Hamburg an Bremen, or rather Bremerhaven. Finally, chapter 10 present a quantitative estimate of the possible consequences of reduction in quota on the employment in fishing and fish processing.

7. Niedersachsen

7.1 General

Niedersachsen encompasses the area of northern Germany between the frontier with The Netherlands in the west and the river Elbe and Mecklenburg-Vorpommern in the east. Administratively it is composed of four Regierungsbezirken, 38 Landkreisen and 9 Kreisfreie Stadte. From the point of view of fisheries only five Landkreisen along the North Sea coast are relevant. They mostly cover areas of up to 70-100 km inland, which seems well the limit of a 'Travel to Work' distance.

The Landkreis Leer, in the very north-west corner of Niedersachsen, has a coastline of about 10 km along the Dollart Bay and a small fishing port Ditzum. The landings there amounted in 1990 to about 500 tonnes worth 1.3 mln DEM. Because of the evidently marginal economic role of fisheries for this Landkreis, it is excluded from further consideration. The city of Emden is also excluded. The fisheries production and fleet is included either under Aurich or Other.

The coastal Landkreisen represent about 9-12% of the five indicators included in the table XXII. The share of coastal GNP in the total Niedersachsen is lower than that of employment and population. This means that the average per capita income in the coastal areas is lower than that for the whole of Niedersachsen. The above figures show that the unemployment in the coastal area is higher than the average for the whole of Niedersachsen. Furthermore the unemployment in Friesland, Wittmund and Aurich is relatively higher than in the eastern Landkreisen of Wesermarsch and Cuxhaven. This is probably due to the fact that these two are in the proximity of major industrial centres - Hamburg, Bremen and Bremerhaven.

Table XXII. Niedersachsen - General data by Landkreis, 1989-1990

Landkreis	Area (km2)	Population (1000)	Employment (1000)	Unemployment (1000)	Regional GNP 1) (mln DEM)
Coastal Landkreisen					
- Cuxhaven	2072	190	70	6	3556
- Wesermarsch	822	89	36	3	2515
- Friesland	607	93	35	4	2324
- Wittmund	656	52	18	2	1082
- Aurich	1283	169	61	7	3075
- Wilhelmshaven	103	90	36	6	3182
Total coast	5543	683	256	28	15734
Non-coastal Landkr.	41806	6601	2668	247	186374
Total	47349	7284	2924	275	202108

1) Regional GNP at market prices for 1988.

Table XXIII. Employment by main sector, 1990, (1000 persons) 1)

Sector	Cuxhaven	Wesermarsch	Friesland	Wittmund	Aurich	Wilh. haven
Agric., for., fish	2.2	0.6	0.5	0.4	1.4	0.1
Energy, mining	0.3	0.5	0.1	0.1	0.3	0.5
Processing ind.	9.6	14.1	7.0	2.2	6.5	9.0
Construction	4.0	1.9	1.6	1.0	4.3	1.8
Trade	5.2	1.9	3.2	1.6	6.1	3.9
Transp., communic.	1.7	1.8	1.0	0.5	1.0	1.2
Banking, insurance	1.2	0.5	0.7	0.4	1.1	0.7
Services and other	14.4	6.4	8.2	5.8	15.6	16.9
Total	38.6	27.7	22.3	12.0	36.3	34.1
- % total employment	56%	78%	63%	67%	59%	94%

Source : Niedersachsisches Landesamt für Statistik.
1) Figures based on social insurance, thus excl. self-employed.

Considering the employment by sector, there is an overwhelming importance of services, trade and processing industry. These three make up in most areas some 80% of all employment. The fact that the self-employed are not included in the figures of table XXIII will not alter the overall distribution significantly. The importance of primary industries (agriculture, forestry and fisheries) is limited to some 2-4%

7.2 Fishing fleet and landings

The fleet based in the ports of Niedersachsen is composed of 188 vessels with almost 60,000 grt and 24,500 kw. In 1989 the fleet landed into German ports a total of some 75,000 tonnes of fish (live weight) with a total value of about 140 mln DEM. This implies that over 50% of the total landings into German ports takes place in Niedersachsen. There are about 750 crew members on board of vessels registered in the Landkreis.

Table XXIV shows that over a half of the crew works from Cuxhaven. This is the base port of 35 mostly larger vessels, which account for some 75% of the total gross tonnage and over half of the aggregate engine power. Among these 35 vessels there are 8 distant trawlers (21,700 kw, 16,500 grt). Most other ports are only suitable for small cutters of 20-30 grt (150-200 kw).

Of the 180 cutters some 120 fish mainly for shrimp. 17 larger ones are coastal wet fish trawlers (90grt/320kw). There are 6 cutters used in harvesting mussels and the remaining 37 vessels carry out various types of fisheries.

There are only three major home ports for the cutter fleet : Cuxhaven, Greetsiel and Norddeich with 20-30 vessels each. Otherwise the cutter fleet as well as the production is thinly spread along the coast. The fleet contributes less than 0.3% of the employment in the coastal Landkreisen of Niedersachsen. If the gross value added is assumed to be about one half of the gross revenues, the fleet would contribute about 0.4% to the 'GNP' of the coastal Landkreisen.

Table XXIV. Distribution of fleet and landings by Landkreis and port 1)

Landkreis/ port	Number of vessels	Grt	kw	Crew	Landings 2)	
					mln DEM	1000 t
CUXHAVEN						
- Cuxhaven						
* trawlers	8	16522	21709	315	88.6	27.3
* cutters	27	2741	9170	87	13.3	5.4
- Spieka-Neufeld	7	140	1071	13	1.3	0.3
- Dorum	8	168	1312	16	2.0	0.3
- Wremen	9	248	1451	20	2.2	0.3
Total	59	19819	34713	451	107.4	33.5
WESERMARSCH						
- Brake	8	676	2103	26	-	-
- Fedderwaddersiel	12	290	1982	24	1.9	0.3
Total	20	966	4085	50	1.9	0.3
FRIESLAND						
- Varel	4	71	591	8	0.5	0.1
- Hooksiel	6	444	1861	19	4.2	2.6
Total	10	515	2452	27	4.7	2.7
WITTMUND						
- Harlesiel	9	221	1585	19	2.1	0.3
- Neuharlingersiel	13	297	1955	28	1.9	0.3
Total	22	518	3540	47	4.0	0.6
AURICH						
- Accumersiel	13	384	2275	28	3.0	0.5
- Norddeich	19	560	3033	41	4.5	2.4
- Greetsiel	31	1395	6695	77	6.1	2.9
Total	63	2339	12003	146	13.6	5.8
Other ports	14	340	2086	27	10.3	3.5
Total	188	24497	58879	748	141.9	46.4

Sources : Official register of vessels, Das Fischerblatt

1) Fleet by mid 1991, landings in 1990. 2) Landed weight by vessels originating from Niedersachsen or Bremen; some further landings may have taken place by vessels of other origin.

The cutter fleet depends mainly on shrimp, cod and sole. However, of the total value of 62.6 mln DEM shown in table XXV over 10 mln DEM worth of fish is landed abroad, mainly in The Netherlands and to much lesser extent in Denmark. These landings consist mainly of cod, sole and plaice so that the importance of shrimp for the local economy is in practice even more pronounced than the above figures indicate.

Table XXV. Landings of cutters and trawlers by species, 1990

Cutters 1)			Trawlers 2)		
Species	1000 t	mln DEM	Species	1000 t	mln DEM
Cod	3.5	12.1	Herring	8.0	3.6
Saithe	3.7	6.4	Cod	30.5	68.0
Plaice	2.2	5.9	Saithe	1.3	1.9
Sole	1.2	10.4	Redfish	4.0	8.5
Shrimp	2.4	17.7	Other	5.8	6.5
Cockles	0.7	2.1			
Mussels	4.6	3.2			
Other	2.7	4.8			
TOTAL	21.1	62.6	Total	49.6	88.5

Source : Das Fischerblatt (cutters); DFW (trawlers).
1) Incl. landings in other Länder and abroad, volume in landed weight; 2) Volume in live weight, value by species - own estimate, excl. landings abroad.

The production of the trawlers depends mainly on cod, which accounts for some three quarters of the total value. An important share of the catches of cod is realized in non-EC Atlantic waters.

The consequences of a seriously restrictive future Common Fisheries Policy will be in case of Niedersachsen very limited and difficult to mitigate due to the expected wide regional distribution. Most cutters are dedicated to fishing of non-quota species (shrimp, mussels). If the landings of cod by the cutter fleet would be reduced by 50% as compared to 1990, the total value of production would drop by about 10%. Thus at most about 10% of fleet and crew would be threatened, e.i. some 40-50 crew members. It should be repeated that the first 'shock' can be absorbed by withdrawing the fishing permits of the three chartered vessels. This would transfer at least a part of the social consequences from Germany to The Netherlands.

A similar restriction of cod fishing by the trawlers would have more pronounced consequences. The potential revenues would drop by some 40% which may jeopardize jobs of some 120 crewmen. This loss of employment would occur in Cuxhaven, assuming that is the origin of the crews. However, the question to which extent the distant vessels may turn to other grounds or fisheries cannot be answered. This makes the above quantification rather speculative.

The total unemployment amounts in coastal regions to about 31,000. 100-200 more would represent only an additional 0.3-0.6%. The increase in the unemployment rate of the coastal Landkreisen would remain below 0.1 percentage point!

7.3 Fish processing industry

The fish processing industry of Niedersachsen is composed of some 20 larger units (over 20 employees) and about 50 small ones. The total employment is some 3,300 people.

Regional distribution of the processing industry is only available by 'Regierungsbezirk' and for the units with more than 20 employees. Despite the incompleteness of the table XXVI, it shows very clearly that 70-80% of the fish processing of Niedersachsen is concentrated in Cuxhaven (Lünenburg). The average size of the plants in Cuxhaven is also five times larger than that of the 10 larger units in other areas.

Table XXVI. Regional distribution of the processing industry, 1990

Regierungs-bezirk	Number of units	Total employment	Gross revenues 2) (mln DEM)
SMALL UNITS	55	400	60
LARGE UNITS (>20 employees)			
Coastal 1)			
- Lüneburg	10	2200	670
- Weser-Ems	3	na	na
Non-coastal			
- Hannover	5	400	60
- Braunschweig	2	na	na
Total	20	2900	790
Total	75	3300	850

Source : Statistik Niedersachsen, Bergbau und verarbeitende Gewerbe, 1988.
1) Lüneburg contains Cuxhaven, Weser-Ems all other coastal Landkreisen; 2) Processing incl. wholesale trade activities, estimate on the basis of data for 1988.

The three most important product groups are frozen, marinated and canned products. The first group is based on codfish while the other two are based on herring, sprat and mackerel. About 20-30% of the output value depends on codfish and most of the rest on herring. This relations shows approximately the dependence on the supply of various species.

Table XXVII. Fish processing by type of product, 1989

	Volume	Value
Fresh	6%	6%
Frozen	18%	16%
Smoked	1%	4%
Marinated	17%	18%
Salted, cured, matjes	6%	9%
Canned	17%	19%
Crustacea and molluscs	1%	3%
Salads and other	7%	6%
Unspecified 1)	28%	19%
Total	100%	100%

Source : Sommer
1) Data not published for reasons of confidentiality.

7.4 Employment programmes

Throughout the eighties the Land of Niedersachsen has undertaken a very significant effort to improve the employment situation. The unemployment level did decrease, along with the general improvement in the whole of West Germany.

The main current employment programme was launched in June 1989 under the name "250-Million-Programme". It is aimed at creating lasting jobs for long term unemployed and others who are difficult to employ. It subsidizes various costs of training, personnel and even investment.

The following programmes were in force as of 21 January 1992 :

1. Promotion of initiatives regarding unemployed and socially needy.
2. Creation of Office for Advise and Information regarding employment programmes (LaBIB).
3. Promotion of long term employment.
4. Promotion of employment of young disadvantaged unemployed.
5. Subsidy to employ disabled older long term unemployed at the Authorities of the Land.
6. Subsidies for the improvement of social infrastructure.
7. Promotion of employment of young people within the programme 'Work and Learn' of the Federal Labour Office.
8. Subsidies to strength labour promotion programmes.
9. Funds for labour creation measures of the Authorities of the Land.
10. Improvement of social security relations.
11. Promotion of the participation in the 'Practical Training Year'.
12. Regional labour offices for employment of young people.
13. Promotion of re-employment of long term unemployed women with the funds of the European Social Fund (ESF).
14. Promotion of qualification of long term unemployed receivers of social security with the funds of the Land and the ESF.
15. Promotion of qualification of 'Nichtsesshaften' with the funds of the Land and the ESF.
16. Promotion of the re-employment of long term unemployed with the funds of the Land and the ESF.
17. Promotion of professional training of young and long term unemployed with the funds of ESF.
18. Subsidies for work and employment project for youth.
19. Promotion of projects in the areas 'Emden' and 'Peine/Salzgitter' to modernize and strengthen small and medium enterprises in order to diversify the industrial structure of the area.
20. Relocation assistance for agricultural entrepreneurs.

8. Schleswig-Holstein

8.1 General

Schleswig-Holstein is the most northern province of Germany. Its borders are delimited by Denmark in the north, river Elbe and Hamburg in the south-west and Mecklenburg-Vorpommern in the south-east. Schleswig-Holstein has coast on the North Sea as well as on the Baltic side. Administratively it is composed of 11 Landkreisen and 4 Kreisfreie Stadte. However, only 6 Landkreisen have any coastline. There are no major cities on the North Sea side. On the Baltic side there is Flensburg, Kiel and Lübeck.

The coastal Landkreisen represent about 50-60% of the total economy of Schleswig-Holstein. The unemployment rate is higher than in the non-coastal areas. It should be noted that Kiel and Lübeck have a share of 31% of the total coastal population but they produce 41% of the coastal GNP.

Table XXVIII. Schleswig-Holstein - General data, 1989-1990

Landkreis	Area (km2)	Population (1000)	Employment (1000)	Unemployment (1000)	Regional GNP 1) (mln DEM)
Coastal Landkreisen					
- Nordfriesland	2048	150	59	3	3742
- Dithmarschen	1405	127	48	3	4064
- Schleswig-Flensb	2072	177	70	5	3772
- Rendsb.-Eckernf.	2186	243	97	7	5786
- Plön	1082	116	49	3	1905
- Ostholstein	1391	185	76	5	3920
- Kiel	112	241	108	11	9395
- Lübeck	214	211	92	9	7209
Total coast	10510	1451	599	45	39793
Non-coastal Landkr	5220	1120	510	28	30915
Total	15730	2571	1109	73	70708

Sources : Volkswirtschaftliche Gesamtrechnungen der Länder; Statistisches Jahrbuch 1991;
1) Regional GNP at market prices for 1988.

The most important economic sectors in almost all Landkreisen are services and banking. It is often followed by 'Other' activities, e.g. government institutions and public and private organizations. The primary industries (agriculture, forestry and fisheries) contribute an average of 5% to the GNP of the coastal regions. This sector contributes over 10% in Nordfriesland, Plön and Schleswig-Flensburg. Processing industry plays an especially important role in Dithmarschen and Lübeck, while other industries are important in Rendsburg-Eckernforde.

Table XXIX. Regional GNP by Landkreis and main sector, 1988 1)

Landkreis	Agric. forest. fisher.	Processing ind.	Other indust. 2)	Trade and communic.	Services banking insurance	Other
Coastal Landkreisen						
- Nordfriesland	11%	8%	8%	16%	32%	26%
- Dithmarschen	7%	38%	9%	14%	20%	12
- Schleswig-Flensb	12%	14%	7%	12%	25%	31%
- Rendsb.-Eckernf.	7%	15%	22%	14%	22%	20%
- Plön	10%	13%	9%	14%	31%	23%
- Ostholstein	6%	15%	7%	17%	32%	23%
- Kiel	0%	19%	6%	18%	27%	30%
- Lübeck	0%	23%	13%	19%	28%	17%
Total coast	5%	19%	10%	16%	27%	14%
Non-coastal Landkr.	3%	28%	9%	16%	30%	14%
Total	2932	16064	7033	11328	19785	13566

Source : Wirtschaftliche Gesamtrechnungen der Länder.
1) The percentges are related to the regional GNP given in table XXVIII; 2) Energy, mining and construction.

8.2 Fishing fleet

The fishing fleet of Schleswig-Holstein is composed of 360 vessels, with a total of 54,600 kw and 13,200 grt. There are in all about 800 crew members. Table XXX gives the regional distribution of the fleet by Landkreis and home port. It should be stressed again that the relation between landings and home ports is very weak. The larger vessels based in the Baltic ports

Table XXX. Distribution of fleet and landings by Landkreis and ports, mid 1991

Landkreis/ port	Number of vessels	Grt	kw	Crew	Landings 1990 4) mln DEM	Landings 1990 4) 1000 t
NORDFRIESLAND						
- Dagebüll 3)	-	-	-	-	7579	15624
- Wijk auf Föhr	13	1420	3300	35	-	-
- Husum	20	860	3280	45	4055	552
- Tonning	23	920	4330	56	4180	558
Total	56	3200	10910	136	15814	16734
DITHMARSCHEN						
- Büsum	38	2570	9480	108	13774	2368
- Friedrichskoog	42	1140	6760	94	4478	590
Total	80	3710	16240	202	18252	2958
OTHER PORTS 2)	18	900	3110	41	1075	268
TOTAL NORTH SEA	154	7810	30260	379	35141	19960
SCHLESWIG-FLENSBURG						
- Arnis	6	130	500	11	-	-
- Maasholm	16	180	1100	34	na	837
- Kappeln	10	190	1080	19	na	1652
Total	32	500	2680	64	na	2489
Plön						
- Gothmund	6	110	640	12	-	-
- Laboe	8	210	1130	15	-	-
- Heikendorf	19	560	2280	39	-	-
Total	33	880	4050	66	-	-
OSTHOLSTEIN						
- Heiligenhafen	45	1740	6470	118	na	1488
- Burgstaaken	29	710	3900	44	na	1555
- Niendorf	10	210	1260	19	na	783
- Timmendorf	5	50	410	8	na	-
Total	89	2710	12040	189	na	3826
Travemunde/Schlut.	9	350	1640	21	na	1175
Eckernforde	7	130	630	12	na	443
OTHER PORTS 2)	36	800	3330	72	na	9283
TOTAL BALTIC	206	5370	24370	424	na	17216
TOTAL SCHL.-HOLST.	360	13180	54630	803	na	37176

Source : Das Fischerblatt
1) Landed weight; 2) Various small ports along the coast;3) Dagebüll has no fishing port, exclusively landings of mussels; 4 Values for Baltic ports are not available.

fish regularly in the North Sea. The vessels based on the islands (Helgoland, Föhr, etc.) land their fish on the mainland. Finally, the landings into Bremen, Niedersachsen and abroad are quite considerable. Therefore the data on landings into specific ports should be interpreted only as an indication of the contribution to the local economy.

The North Sea fleet (154 vessels, 7,800 grt) is largely concentrated in 5 ports. These ports receive also the bulk of the landings. The most important port on the North Sea coast is Büsum, which receives about 70-80% of all landings of fish and about one third of the production of shrimp. The share of fish in the total turn-over of the Büsum port represented in 1990 about 60% and that of shrimp 40%. In Husum, Tonning and Friedrichskoog shrimp landings are much more important than those of fish. In Husum and Tonning fish represented only about 5-10% of the total turn-over. In Friedrichskoog there were no fish landings at all in 1990. Dagebüll is only a landing place for mussels, and has no fishing port. In 1990 28% of the total gross turn-over on the North Sea coast was realized with fish, 50% with shrimp and 22% with mussels. This implies that future quota restriction will not have a significant impact on the fisheries economy of this region. The contribution of the fishing sector to the employment represents in this area about 0.3%.

The Baltic fisheries are much more dispersed. The only two larger ports are Heiligenhafen and Burgstaaken. These two ports harbour 74 of a total of 206 vessels. These are the relatively larger vessels too, representing some 45% of the total gross tonnage of the Baltic fleet. Because of this large dispersion and the proximity of the larger cities, the relative contribution of the fishing fleet to the regional economy is very limited. The total employment in the six Baltic Landkreisen (incl. Kiel and Lübeck) is about 490,000 people, while the fishing fleet employs 424 crewmen, e.g. 0.09%.

It should be noted that the composition of the landings into the North Sea ports is quite different than that in the Baltic. In the Baltic cod plays a very important role accounting for more than a half of the total value (excl. landings outside Sch.-H.). Herring, eel and sprat are the other major species. On the other hand in the North Sea the economy of the fishing fleet is based on shrimp and to much lesser extent flatfish. Unfortunately, the composition of the landings by the Schleswig-Holstein fleet outside Schleswig-Holstein cannot be determined. However, it can be safely assumed that they are mostly composed of cod and flatfish.

Table XXXI. Landings of cutters by species, 1990 1)

Species	North Sea			Baltic	
	tonnes	mln DEM		tonnes	mln DEM
	Landings in Schleswig-Holstein				
Cod	945	3219	Cod	3563	10862
Plaice	442	1126	Herring	4248	2246
Sole	461	4576	Eel	82	1454
Shrimp	2287	17572	Sprat	870	1477
Mussels	15623	7579			
Other	202	1069	Other	1338	2270
	Landings outside Schleswig-Holstein				
Total	3612	13117	Total	4966	17031
TOTAL	23572	48258		15067	35340

Source : Das Fischerblatt. 1) Volume in live weight, incl. landings abroad.

8.3 Fish processing

The fish processing industry is concentrated in Lübeck, Schleswig-Flensburg and Dithmarschen. These three regions account for about 70% of the total employment and over 60% of the gross revenues.

The fish processing contributes about 0.4% to the employment and regional income of the coastal regions of Schleswig-Holstein.

Table XXXII. Regional distribution of the processing industry, 1990 1)

Land	Number of units	Total employment	Gross revenues 1) (mln DEM)
Coastal Länder			
- Nordfriesland	9	121	33
- Dithmarschen	6	333	84
- Schles.-Fl. 2)	6	455	120
- Rendsb.-Eckernf.	9	63	9
- Plön	3	15	2
- Ostholstein	7	14	2
- Kiel	5	133	17
- Lübeck	6	666	163
Total coast	51	1800	430
Non-coastal Länder	5	275	71
Unspecified	na	325	49
Total	56	2400	550 2)

Source : SLA Schleswig-Holstein, Statistische Berichte, 30.9.1990 1) Enterprises and employment September 1990, gross revenues estimated on basis of 1989, increased by 18%. 2) Incl. city Flensburg.

Table XXXIII. Fish processing by type of product, 1989, 2)

	Volume	Value
Fresh	3%	1%
Frozen	0%	0%
Smoked	2%	2%
Marinated	13%	11%
Salted, cured, matjes	6%	8%
Canned	56%	54%
Crustacea and molluscs	9%	13%
Salads and other	9%	9%
Unspecified 1)	2%	1%
Total	100%	100%

Source : Sommer
1) Data not published for reasons of confidentiality; 2) All figures are based on estimates.

Table XXXIII shows that the fish processing in Schleswig-Holstein is largely based on canning and marinating, i.e. on herring and sprat. Crustacea and molluscs contribute about 10% of the volume and value. This may seem quite low in view of the importance of these species for the fishing fleet. However, the trade in shrimp and mussels on the German North Sea coast is largely in hands of several Dutch companies and the raw material is further processed in The Netherlands.

8.4 Employment programmes

In the recent years the government of Schleswig-Holstein has undertaken three very large programmes to promote employment :

1. 'Arbeitsplatzoffensive Schleswig-Holstein' running from 1.6.1986 till 31.12.1988, but partly till 1993. The budget of this programme amounted to 270 mln DEM.
2. 'Arbeit für Schleswig-Holstein', running from 1.4.1989 till 1.2.1992 and partly till 1993. The funds available for this programme amounted to 230 mln DEM, of which about 12 mln DEM was subsidized by the European Social Fund.
3. 'Arbeit für Schleswig-Holstein II', running from 1.1.1992 till 31.12.1994.

Similarly to the list presented in chapter 7.4 these programmes are largely oriented towards the employment of long term unemployed, women, qualification and retraining, etc.

9. Bremen and Hamburg

9.1 General

The Länder of Bremen and Hamburg belong evidently to the region D-1 under study, but represent a rather special case as they are basically composed only of large urban conglomerations. Their economic significance for the area lies in their spin-offs and the attraction of labour from the surrounding Länder. Hamburg is one geographic unit. Bremen is composed of Bremen itself and Bremerhaven. Of these three areas only Bremerhaven has any fisheries significance.

Table XXXIV. Bremen and Hamburg - General data, 1989-1990

Land	Area (km2)	Population (1000)	Employment (1000)	Unemployment (1000)	Regional GNP 1) (mln DEM)
Bremen	327	538	234	31	23590
Bremerhaven	77	128	54	8	3949
Hamburg	755	1607	721	70	84691
Total	1159	2273	1008	109	112230

Sources : see table XXVIII.
1) GNP at market prices, 1988

GNP indicates income created within the boundaries of a certain region. It should be noted that the GNP/employed or GNP/inhabitant is in Bremen and Bremerhaven almost twice as high as in Niedersachsen of Schleswig-Holstein. This difference can be attributed partly to the considerable migration of labour into these industrial centres.

Table XXXV. Value added by main sector, 1988, (mln DEM)

	Agric. forest. fisher.	Proces- sing ind.	Other ind. 1)	Trade and commun.	Services banking insur.	Other
Bremen	26	6674	1708	6393	5700	3089
Bremerhaven	33	992	247	1027	915	734
Hamburg	193	16390	4063	22769	31525	9751
Total	252	24056	6018	30189	38140	13574

Source : Wirtschaftliche Gesamtrechnungen der Länder.
1) Energy, mining, construction

The economy of Bremen and Hamburg is largely based on services and trade. It is also these sectors which have achieved the fastest growth between 1980 and 1988 (between 55 and 80%). Processing industry is also fairly important in Hamburg, but this sector has grown only 3% during the mentioned period. The industry in general has achieved fair growth of 30-40% in Bremerhaven, but within the whole economy of the Land Bremen it plays only a modest role.

9.2 Fishing fleet

The fleet based in Hamburg and Bremerhaven is largely composed of larger cutters and distant trawlers. Most of the cutters can be characterized as fishing for fish and a few carry out mixed fishery. There are no shrimp cutters.

The role of these ports in fisheries has diminished very significantly between 1980 and 1990. In 1980 they harboured a fleet of 94 vessels with a total of some 65,000 grt. Ten years later this fleet shrank to 53 vessels with 17,000 grt (of which 2 vessels, 4,200 grt are chartered). The drop in landings was equally dramatic - from 128,000 tonnes valued at 141 mln DEM in 1980 to 48,000 tonnes and 39 mln DEM in 1990. This deterioration can be almost fully attributed to the disappearance of the distant vessels.

Table XXXVI. Fleet and landings in Hamburg and Bremerhaven, 1990

Port	Number of vessels	Grt (1000)	kw (1000)	Crew	Landings 1990	
					mln DEM	1000 t
Bremerhaven						
- trawler	9	12.1	17.2	177	29.0	42.6
- cutters	13	2.0	6.1	67	9.8	5.4
Hamburg						
- cutters	31	2.9	8.5	152	0.3	0.1
Total	53	17	31.8	396	39.1	48.1

Sources : Official fleet register, DFW

The landings into Bremerhaven are largely destined for the processing industry. Some 80% of the landings by cutters is composed of saithe and cod so that there are only small landings of other species. The trawler landings into Bremerhaven consist in the recent years mainly of herring, mackerel and saithe. These species have replaced redfish, saithe and cod which were important in the beginning of the eighties.

It is evident that the role of fisheries for these two Länder is completely insignificant, the employment on board representing less than 0.05% of the total employment.

9.3 Fish processing industry

Bremerhaven and to lesser extent Hamburg are centres of fish processing industry. One third of the total gross revenues of the German fish processing industry is realized in Bremerhaven. In Bremerhaven the employment in this industry contributes 8% to the total employment.

Table XXXVII. Fish processing in Hamburg and Bremerhaven, 1990

Zone	Number of units	Total employment	Gross revenues (mln DEM)
Bremerhaven	24	4300	1300
Hamburg	10	700	340
Total	34	5000	1640

Source : SLA Hamburg - Statistisches Taschenbuch 1991, SLA Bremen - Statistische Berichte, Oktober 1991.

There is an important difference between the fish processing in Hamburg and that of Bremerhaven. In Bremerhaven about 75% of the total value of output (incl. trade) is based on fresh and frozen fish products based on codfish. In Hamburg, however, it is smoked products and fish salads, which are based on herring.

Table XXXVIII. Shares in output value by type of product, average 1985-'89

Type of product	Hamburg	Bremerhaven
Fresh fish	-	5%
Fish, fillets	-	22%
Frozen fish products	-	48%
Smoked fish	55%	7%
Salmon and saithe in oil	0%	9%
Marinated products	6%	4%
Fish salad and other	22%	0%
Unknown	18%	5%
Total	100%	100%

Source : estimate on basis of Sommer

9.4 Employment programmes in Land Bremen

Land Bremen has promoted employment and economic development since 1984 in two programmes : 'Wirtschaftspolitisches Aktionsprogramm' (WAP I) 1984-'87 and WAP II 1988-'93. WAP I consisted of seven specific actions :

1. Pr. to secure jobs in industry
2. Pr. to secure jobs in fisheries
3. Pr. to secure jobs in small and medium enterprises
4. Pr. to secure jobs in services
5. New jobs in industry
6. New jobs through research and development
7. New jobs through fairs and congresses

In the four years between 1984 and 1987, these programmes spent 628 mln DEM, of which 87% was for the programmes 1, 3 and 5. Until 1988 some 22,300 existing jobs could be secured and 12,900 new ones could be created. Furthermore, the indirect effects are estimated at 10,600 jobs.

The WAP II programme disposed between 1988 and 1990 of a total of 650 mln DEM. The budgets for the years 1991-'93 foresees total spending of 982 mln DEM. Within this programme the above mentioned employment actions are incorporated in 8 'funds' : 1. Structure; 2. Technology; 3. Medium enterprises; 4. Regional; 5. Environment; 6. Bremerhaven; 7. Planning and 8. EC-Programme (Renaval and Ziel 2).

APPENDIX 1. COMMENTS ON MAIN INDICATORS

1. Population :	on 30.6.1989
Source :	Statistisches Jahrbuch 1991.
2. Employment :	Average 1990; Calculated from number of unemployed and the unemployment rate.
Sources :	Statistisches Jahrbuch 1991, data from Statistische Landesämter
3. Income :	Estimate for 1990, extrapolation from 1988 with the general growth rate of 17.6%.
Source :	Gemeinschaftsveroffentlichung der Statistischen Landesämter, Volkswirtschaftliche Gesamtrechnungen der Länder, heft 19, Bruttowertschopfung der Kreisfreien Staedte, der Landkreise und der Arbeitsmarktregionen in der Bundesrepulik Deutschland 1980 und 1988.
4. Fleet :	Employment estimated on the basis of the fleet composition and totals by Land. Value added assumed 50% of the gross revenues realized in the region.
Sources :	1. Official register of fishing vessels; 2. Deutsche Fischwirtschaft.
5. Other :	Employment estimated on the basis of data on fish processing and estimate of secondary activities. The division among Landkreisen in Niedersachsen on basis of arbitrary assumptions (effect on conclusions is marginal). Value added for processing industry assumed 25% of the gross turn-over (national average in 1988). Other activities assumed 50.000 DEM per employed.
Sources :	Various publications by Statistisches Landesämter and Sommer (1991) National account statistics, unpublished data from the Statistisches Bundesamt.

Note : In some cases additional assumptions had to be made to arrive at an estimate, especially regarding the regional distribution at the level of Landkreisen. The sensitivity of the aggregate results to these assumptions is considered well within the general uncertainties of the presented material.

APPENDIX 2. REFERENCES

Statistisches Bundesamt
- Statistisches Jahrbuch 1991
- Enthstehung der Brutowertschöpfung zu Faktorkosten und zu Marktpreisen, 1988
- Bevolkerungsstruktur und Wirtschaftskraft der Bundelaender, 1989
- Zahlen Kompass, 1991

Gemeinschaftsveroffentlichung der Statistischen Landesämter, Volkswirtschaftliche Gesamtrechnungen der Länder, heft 19, Bruttowertschopfung der Kreisfreien Staedte, der Landkreise und der Arbeitsmarktregionen in der Bundesrepulik Deutschland 1980 und 1988.

Das Fischerblatt, various issues
- Die Kleine Hochsee- und Kustenfischerei Schleswig-Holsteins
- Die Kleine Hochsee- und Kustenfischerei Niedersachsens und Bremens

Bundesministerium für Ernährung, Landwirtschaft und Forsten
- Jahresbericht uber die Deutsche Fischwirtshcaft, various issues, 1980-1990
- Agrarbericht, 1991

Statistisches Bundesamt
- Hochsee- und Kustfischerei Bodenseefischerei, Fachserie 3, Reihe 4.5, monthly statistics, various issues
- Binnenfischereierhebung 1981/82

FIMA, Fischwirtschaft, Daten und Fakten, 1991, Schriftenreihe, Band 17, Bremerhaven 1989

Institut für Landwirtschaftliche Marktforschung,
- Die Fischwirtschaft in Zahlen, Braunschweig, 1987
- Die Kosten- und Ertragslage von ausgewählten Betrieben der Kleinen Hochseefischerei, various issues

Regierungsbezirk Weser-Ems, Struktur und Verwaltung 1991, Oldenburg

Official register of fishing vessels

EC Official Journal, Legislation regarding quota allocations

Bundesverband der Deutschen Fischindustrie und des Fischgrosshandels e.V., Geschaftsbericht, Juni 1991

AIPCEE, Memorandum zur Versorgungslage der Eurapaischen Gemeinschaft mit Fisch und Fischerzeugnissen

Sommer U., Der Sektor Fischindustrie in der Bundesrepublik Deutschland, Studie im Auftrag der EG Kommission DGXIV uber die Verarbeitung von Erzeugnisse der Seefischerei und Aquakultur, Braunschweig-Volkerode, Institut für Landwirtschaftliche Marktforschung, 1991

Der Bremerhavener Wirtschaft 1991, Ruckblick der Industrie- und Handelskammer Bremerhaven anhand von Firmenberichten Bremerhaven 1992

Sektorplan für Bundesrepublik Deutschland, Zur Forderung von Verarbeitung und Vermarktung von Fischerei- und Aquakulturerzeugnissen in den Jahren 1991-1995, Hannover, Marz 1990

Statistisches Landesamt Niedersachsen, Statistik Niedersachsen,
- Bergbau und Verarbeitende Gewerbe 1988, Hannover
- Statistische Berichte, Sozialvesicherungpflichtig beschaftigte Arbeitnehmer im 4. Quartal 1990
- Kreisfreie Stadte und Landkreisen in Zahlen, 1991

Statistisches Landesamt Schleswig-Holstein, Statistische Bericht - Verarbeitende Gewerbe in Schleswig-Holstein am 30.9.1990, Ausgegeben 23.10.1991
- Betriebe des Verarbeitenden Gewerbes in Schleswig-Holstein im Jahre 1990, ausgegeben 7.8.1991
- Die Produktion des Verarbeitenden Gewerbes in Schleswig-Holstein, 1990, ausgegeben 4.12.1991
- Die Brutowertschopfung in den Kreisfreien Stadten und Kreisen des Landes Schleswig-Holstein, ausgegeben 17.4.1991
- Fischverarbeitung am 30.9.1990
- Arbeitslose und Arbeitslosenquote nach kreisen

Statistisches Landesamt Bremen, Statistische Bericht
- Verarbeitendes Gewerbe im Lande Bremen, Oktober-Dezember 1990

Statistisches Landesamt Hamburg, Statistisches Taschenbuch 1991

Statistisches Jahrbuch Deutscher Gemeinden, 77. Jahrgang 1990

Eurostat, Foreign trade statistics

Bremer Zeitschrift für Wirtschaftspolitik, (1+2/1990)
- Bericht zur Arbeitsmarktpolitik
- WAP Zwischenbalans

Arbeitsprogramm der Niedersachsischen Landesregierung, relevant legislation

Arbeitsprogramm Schleswig-Holsteins, personal communication from the Min. of Social Affaires, legislation, guidelines, etc.

APPENDIX 3. LIST OF PEOPLE MET OR CONSULTED

Mr. L. Fischer	- Secreatary, Deutscher Fischerei-Verband, Hamburg
Mr. G. Rauck	- Bundesforschunganstalt für Fischerei, Hamburg
Mr. I. Fiedler	- idem
Mr. Koops	- idem, Auquaculture biologist
Mr. M. Keller	- Secretary, Bundesverband der Deutschen Fischindustrie und des Fischgrosshandels, Hamburg
Mr. K. Ruoff	- Leiter der Fischereiabteilung, Landesfischereiverband Schleswig-Holstein, Kiel
Mr. E. Wiese	- Secretary, Verband der Deutschen Fischindustrie und des Fischgrosshandels, Landesverband Schleswig-Holstein, Kiel
Mr. Bottger	- Fischereireferent, Min. für Ernährung, Kiel
Mr. H. Hausberg	- Leiter der Abteilung, Min. für Ernährung, Landwirtschaft, Forsten und Fischerei, Kiel
Mr. Hagena	- Fischereiamt, Bremerhaven
Mr. Fricke	- Industrie- und Handelskammer, Bremerhaven
Mr. Klotz	- Deutsche Fischfang Union, Cuxhaven
Mr. Hahn	- Hussman&Hahn, Cuxhaven
Mr. K. Will	- Landeswirtschaftskammer Weser-Ems, Oldenburg
Mr. R. Lasch	- Economist, Institut für Landwirtschaftlich Marktforschung, Braunschweig
Mr. U. Sommer	- idem
Mr. H.-O. Boysen	- Fischereiamt des Landes, Kiel
Mrs. Hoffman	- Niedersachsisches Landesamt für Statistik
Mr. Seidel	- Statistisches Landesamt Schleswig-Holstein
Mr. Wetzel	- Der Minister für Soziales, Gesundheit und Energie des Landes Schleswig-Holstein
Mr. Heinemann	- Bremer Ausschuss für Wirtschaftsforschung
Mr. Dilling	- Niedersachsisches Sozialministerium

APPENDIX 4. ABBREVIATIONS

mln	million
bln	billion
km	kilometre
DEM	German mark
DFW	Jahresbericht über die Deutsche Fischwirtschaft
SLA	Statistisches Landesamt
t	tonnes
na	not available
ESF	European Social Fund

APPENDIX 5. EXCHANGE RATE (1 ECU = ... DEM)

1980	2.52	1984	2.24	1988	2.07
1981	2.51	1985	2.23	1989	2.07
1982	2.38	1986	2.13	1990	2.05
1983	2.27	1987	2.07	1991	2.05