

## AN OVERVIEW OF THE NETHERLANDS OPEN SEA AND COASTAL FISHERIES: STATE OF THE ART

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### ABSTRACT

This paper describes the commercial fisheries fleet of the Netherlands, including the coastal fisheries and the cutter and trawler fleets. A discussion is presented on the theoretical approach to economic analysis, property rights and the ecological analysis of fisheries. Dutch institutional arrangements, both nationally and within the larger framework of the European Union's Common Fishery Policy, are also discussed. The implementation of ITQs in the plaice (*Pleuronectes platessus*) and sole (*Solea solea*) fisheries, along with the role of *Bieshuvel* Groups as a co-management tool are also presented. Finally, three interviews with Dutch fisherman are provided, which present their views on both national and European Union management issues.

### DATA GATHERING BACKGROUND

The transaction costs involved in obtaining information and data on fisheries in the Netherlands are high, and the time and money required to collect the necessary information is considerable. As a consequence, the data are not readily available. It involves building trust with fishers and people operating within the relevant institutions. It also involves time in identifying the right sources of information.

The last section in this report (Analysis) provides data on catch taken by both the large scale and coastal fisheries. Data on sport fisheries are difficult to obtain. I contacted the Director of the Anglers Society (Mr. Oppeneer) who recommended that I contact the Chairman of the Anglers Society (Mr. Doman). I spoke with Mr. Doman. He told me that over the years there have been shifts in the type of fish species caught by members of the Anglers Society. He thinks this is partly due to changes in water temperature. However, he said the Anglers Society only keeps a record of the catches made during fishing contests. The data are kept in large files at his

place. However, resources were not available to collate and process these data.

### Estimate to illustrate importance of fisheries

In order to make an estimate illustrating the importance of fisheries, more data are necessary. It is likely that many of the fisheries activities of the Netherlands are operating under foreign flags. If it is true that all landings are made in the Netherlands, these data also need to be considered.

The fisheries sector has been approached directly. However, due to many fishers spending considerable time out at sea, it was not always possible to reach them. The Board of Commodities (*Productschap Vis*) was also contacted and kindly provided data (see Analysis Section).

### Estimate of ecological and economic costs/benefits of two fisheries

An estimate of the ecological and economic costs/benefits of fisheries, such as the large scale and coastal fisheries, requires data on the ecological impact of each fishery. The Fisheries Year Book 2000 (*Visserij Jaarboek* available at [www.abrh.nl](http://www.abrh.nl)), for example, does provide information on the horsepower deployed by each vessel comprising the Dutch commercial fleet.

### INTRODUCTION

#### The North Sea

The North Sea waters wash the northern and western shores of the Netherlands. It is a shelf sea of the Atlantic Ocean, with a well-mixed southern adjoining basin of depths up to 36 meters and a northern basin with depths up to 90 meters. Only at the Norwegian Trench, does it reach greater depths of 761 meters. The Skagerrak and Kattegat connect the North Sea with the Baltic, whereas the Straits of Dover connect it with the English Channel. The complex depth structure and tidal regime that characterizes the North Sea, has led to the evolution of diverse benthic communities and fish species (Boddeke and Hagel, 1991).

The North Sea is exploited by a number of fishing fleets that operate various types of fishing gear under the Common Fisheries Policy (CFP) of the European Union. The beam trawl fleet, however, contributes more than two-thirds of the international landings. This is in contrast to the otter trawl, Danish seine and gill nets, which account for one third of the international landings.

## The Netherlands commercial fisheries sector

Based on data in the *Visserij Jaarboek*, the Netherlands commercial fishing fleet comprises 494 cutters, 13 freezer trawlers and 148 dredgers. The average size and horsepower (HP) of Dutch vessels are 120 Gross Registered Tonnes (GRT) and 1,100 HP, respectively. Fishing in the Netherlands accounts for 0.3% of total (regionally-oriented) employment. The fisheries sector is comprised of both sea and coastal fisheries. In comparison, the role of the small scale and/or sport fisheries is rather limited. The total value of fishery products including landings, trade, added value and processing is presented in Table 1, and landings by the Dutch fisheries from 1960 to 1969 are

presented in Table 2. Landings, and corresponding revenue, by species, of the large and small scale Dutch fisheries between 1970 and 1976 are documented in Tables 3 and 4, respectively. Landings (1976-1982) and revenue (1976-1998) for large and small scale fisheries (including mussel and oyster culture), by major fleet types, are summarized in Tables 5 and 6, respectively.

**Table 1.** Values of fish landings, trade and processing. Source: Ministry of Agriculture, Nature Conservation & Fisheries (Ministerie van Landbouw, Natuurbeheer en Visserij)

Economic activity	Total value in NLG <sup>a)</sup>
Fish landed by fishing vessels	1.0 billion
Imports	1.2 billion
Exports	2.3 billion
Added value of trade and processing	0.95 billion

<sup>a)</sup> NGL = Netherland Guilders = US\$ 0.41, 26. Sept. 2001.

**Table 2.** Landings (tonnes) by Dutch Fisheries. Source: Productschap Vis.

Landings	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Fresh										
herring landed	51,117	55,329	34,006	53,782	56,161	38,453	28,677	16,517	10,901	12,321
Processed	4,025	5,160	280	8,789	5,618	577	2,229	168	240	880
Withdrawn from market	1,242	1,024	419	1,668	1,559	1,999	1,311	271	141	147
Mackerel landed	25,173	24,480	18,973	11,978	17,531	17,868	12,881	13,293	7,421	7,289
Processed	320	203	259	56	873	3,169	825	1,716	650	815
Withdrawn from market	450	441	541	397	696	774	352	602	246	212
Haddock landed <sup>a)</sup>	1,110	693	1,134	1,644	3,706	24,003	16,671	8,307	6,606	11,059
Processed	30	55	19	91	973	7,445	1,548	605	444	2,427
Withdrawn from market	15	4	16	26	73	669	551	225	117	74
Pollack landed	-	-	-	-	207	7,300	6,834	11,052	13,862	13,511
Processed	-	-	-	-	0	813	625	1,770	3,545	573
Withdrawn from market	-	-	-	-	0	46	40	37	75	68
Cod landed <sup>b)</sup>	-	-	-	-	569	16,550	18,533	21,535	25,330	15,951
Processed	-	-	-	-	87	577	414	926	607	35
Withdrawn from market	-	-	-	-	1	111	107	126	115	44
Whiting landed <sup>c)</sup>	5,110	7,056	6,520	6,843	4,617	8,019	8,516	8,674	11,255	11,944
Processed	492	1,197	298	1,707	196	1,365	383	809	1,561	2,933
Withdrawn from market	3	3	13	21	6	80	104	123	77	57
Plaice landed	6,633	6,505	8,072	9,123	17,737	20,859	24,040	26,627	29,925	35,036
Processed	52	117	190	652	952	115	280	2,778	4,582	1,833
Withdrawn from market	1	0	4	1	5	6	11	16	15	9
Shrimps landed	4,296	5,595	5,290	8,955	9,478	8,232	7,583	7,599	6,710	7,511
Processed	7	108	14	910	592	186	197	193	151	762

<sup>a)</sup> Until 14/12/1964, haddock <30 cm were only landed.

<sup>b)</sup> Cod were registered from 14/12/1964 onwards.

<sup>c)</sup> Until 14/12/1964, whiting < 30 cm were only landed.

**Table 3.** Landings (tonnes) by large scale and coastal Dutch fisheries. Source: CBS, LEI-DLO.

<b>Landings</b>	<b>1970</b>	<b>1971</b>	<b>1972</b>	<b>1973</b>	<b>1974</b>	<b>1975</b>	<b>1976</b>
Herring: salted	22.3	18.6	22.0	26.1	20.4	21.8	17.4
Deep frozen	3.3	4.7	9.1	18.0	16.0	24.8	25.6
Fresh	5.4	5.7	7.2	8.6	4.4	3.0	0.2
<b>Total</b>	<b>31.0</b>	<b>29.0</b>	<b>38.3</b>	<b>52.7</b>	<b>40.8</b>	<b>49.6</b>	<b>43.2</b>
Mackerel salted	0.9	1.2	2.0	0.9	2.0	1.6	0.9
Deep frozen	0.7	1.2	2.0	3.3	4.3	10.5	13.3
Fresh	3.1	3.6	4.0	4.5	1.7	1.9	1.1
<b>Total mackerel</b>	<b>4.7</b>	<b>6.0</b>	<b>8.0</b>	<b>8.7</b>	<b>8.0</b>	<b>14.0</b>	<b>15.3</b>
Other fish: fresh	33.6	32.8	31.9	18.1	19.7	14.4	8.8
Deep frozen	0.7	0.7	1.7	4.1	4.3	5.7	3.8
<b>Total fish</b>	<b>34.6</b>	<b>33.5</b>	<b>33.6</b>	<b>22.2</b>	<b>24.0</b>	<b>20.1</b>	<b>12.6</b>
<b>Grand total</b>	<b>70.3</b>	<b>68.5</b>	<b>79.9</b>	<b>83.6</b>	<b>72.8</b>	<b>83.7</b>	<b>71.1</b>

**Table 4:** Revenue (million NLG)<sup>a)</sup> generated by large scale and coastal Dutch fisheries (Source: CBS, LEI-DLO).

<b>Revenue</b>	<b>1970</b>	<b>1971</b>	<b>1972</b>	<b>1973</b>	<b>1974</b>	<b>1975</b>	<b>1976</b>
Herring: salted	29.5	27.9	28.6	34.9	33.1	32.1	29.6
Deep frozen	4.8	6.6	10.7	22.0	22.3	37.1	43.6
Fresh	3.5	3.5	4.4	6.6	2.9	2.4	0.2
<b>Total herring</b>	<b>37.8</b>	<b>38.0</b>	<b>43.7</b>	<b>63.5</b>	<b>58.3</b>	<b>71.6</b>	<b>73.4</b>
Mackerel salted	0.6	0.9	1.6	0.7	1.8	1.4	0.8
Deep frozen	0.5	0.6	1.2	2.2	2.5	5.0	6.9
Fresh	1.6	1.6	2.0	2.2	0.8	0.6	0.2
<b>Total mackerel</b>	<b>2.7</b>	<b>3.1</b>	<b>5.0</b>	<b>5.1</b>	<b>5.1</b>	<b>7.0</b>	<b>7.9</b>
Other fish: fresh	26.4	28.5	33.5	25.3	28.3	16.8	10.9
Deep frozen	0.3	0.4	0.7	1.7	2.2	3.5	2.5
<b>Total fish</b>	<b>26.7</b>	<b>28.9</b>	<b>34.2</b>	<b>27.0</b>	<b>30.5</b>	<b>20.3</b>	<b>13.4</b>
<b>Grand total</b>	<b>67.2</b>	<b>70.0</b>	<b>82.7</b>	<b>95.6</b>	<b>93.9</b>	<b>98.9</b>	<b>94.7</b>

<sup>a)</sup> NGL = Netherland Guilders = US\$ 0.41, 26. Sept. 2001.

**Table 5.** Landings (tonnes) by large scale and coastal Dutch fisheries (includes landings in foreign ports) Source: Netherlands Ministry of Agriculture, Nature Conservation and Fisheries, Productschap Vis, LEI-DLO.

<b>Landings</b>	<b>1976</b>	<b>1977</b>	<b>1978</b>	<b>1979</b>	<b>1980</b>	<b>1981</b>	<b>1982</b>
Cutter fleet	114	114	126	133	149	162	167
Large scale fisheries	71	69	82	104	126	175	202
<b>Total large scale fisheries</b>	<b>185</b>	<b>183</b>	<b>208</b>	<b>237</b>	<b>275</b>	<b>337</b>	<b>369</b>
Mussel culture	64	95	103	84	67	95	112
Oyster culture	1	1	1	1	1	1	1
Other	1	1	1	1	1	1	1
<b>Grand total</b>	<b>250</b>	<b>279</b>	<b>313</b>	<b>323</b>	<b>344</b>	<b>434</b>	<b>483</b>

**Table 6.** Revenue (million NLG)<sup>a)</sup> generated by large scale and coastal Dutch fisheries (includes landings in foreign ports and since 1996 landings made by WIRON vessels) Source: Netherlands Ministry of Agriculture, Nature Conservation and Fisheries, Productschap Vis, LEI-DLO.

Revenue	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Cutter Fleet	321	327	368	421	438	521	541	635	693	794	762	744	649
Large scale fisheries	97	97	86	86	98	143	168	181	203	215	171	161	139
Total large scale fisheries	418	424	454	507	536	664	709	816	896	1,009	933	905	788
Mussel culture <sup>b)</sup>	29	25	37	50	53	39	37	40	29	49	68	69	77
Oyster culture	16	15	16	15	11	10	12	12	13	13	17	14	17
Other	1	0	0	0	1	1	1	1	1	1	1	1	1
Grand Total	464	464	507	572	601	714	759	869	939	1,072	1,019	989	883

<sup>a)</sup> NGL = Netherland Guilders = US\$ 0.41, 26. Sept. 2001.

<sup>b)</sup> Data on mussel culture do not include the revenue generated by the Mussel Foundation.

**Table 6 (continued)**

Revenue	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Cutter fleet	661	692	744	652	661	625	629	607	571	607
Large scale fisheries	152	149	162	168	185	147	166	189	214	249
Total large scale fisheries	813	841	906	820	801	772	796	796	785	856
Mussel culture <sup>b)</sup>	70	105	85	91	92	105	126	106	118	98
Oyster culture	17	11	6	8	8	7	7	6	4	6
Cockle fisheries	44	31	13	52	43	32	25	17	9	50
Other	1	1	1	1	1	1	1	1	1	1
Grand total	963	983	1,017	973	941	917	955	926	917	1,011

<sup>b)</sup> Data on mussel culture do not include the revenue generated by the Mussel Foundation.

### The cutter fleet

The cutter fleet operates in distant waters, like the North Sea and Atlantic Ocean. It is a modern fleet consisting mainly of large vessels, with 78% being beam trawlers. Since 1972, the number of cutters has fallen by over 80% from 72 to 13 vessels. In contrast, the fleet's engine capacity has doubled. The landing of flatfish such as plaice (*Pleuronectes platessus*) and sole (*Solea solea*), is the most profitable activity of Dutch fishers. This is a fishery which is characterized by large bycatch. In 1991, the flatfish landings accounted for NGL 550 mill. (NGL = Netherland Guilders = Dutch Florint = US\$ 0.41, 26-September, 2001), a 31% increase compared to 1987. The volume landed in 1991 of pelagic fish, like horse mackerel (*Trachurus trachurus*), mackerel (*Scomber scombrus*) and herring (*Clupea harengus*), amounted to NGL 163 mill., an increase of 22% compared to 1987. In 1991 the value of landings of roundfish like cod (*Gadus morhua*) was NGL 91 mill., a 46% decrease compared to 1987.

### The trawler fleet

The North Sea beam trawl fleet started to develop in the mid-1960s and has expanded up to the 1990s (ICES, 1999). It comprises a lucrative and prosperous commercial fisheries sector, targeting mainly flat fish species such as plaice and sole. Plaice and sole are taken by beam trawl fleets in a mixed fisheries in the southern part of the North Sea (ICES, 1999). The fleet plays a dominant commercial role, although it only comprises a small part of the Dutch economy (the beam trawl fisheries sector grosses approximately 70% of the total national landings). Beam trawl vessels vary in size and HP, ranging from less than 300 HP to a maximum of 2,000 HP. These vessels are owned by fishers who pay their crew by share contract. The Dutch beam trawl fleet comprises family businesses, where fishers and crew are mostly family or close friends from the Dutch fishing community known as *Urk*.

The larger beam trawl vessels with an engine capacity greater than 300 HP have fishing trips that usually last at least one week. Following the introduction of the 'Plaice Box' in 1989 (Rijnsdorp, 1999), the distribution pattern of beam trawl vessels >300 HP has changed. Since 1989, the 'Plaice Box' has been closed to beam trawlers >300 HP during the second and third quarter of the fishing year. In 1994, the 'Plaice Box' was also closed during the fourth quarter. Since 1995, it has been closed for the whole year. Today, the 'Plaice Box' is characterized by high concentrations of small plaice fished by beam trawlers <300 HP (see interview with fisher B; ICES, 1999). However, the 'Plaice Box' remains open to Norwegian vessels, who operate in the North Sea waters under bilateral agreements with the EU.

### The coastal fisheries

The coastal fisheries are mainly concerned with cockle fisheries, seed mussel fisheries, oyster cultures and shrimp fisheries in the East and West Schelde, the Grevelingen, the Voordelta and the Wadden Sea. Both the fisheries and the birds depend on the shellfish stocks of the Wadden Sea and the East Schelde. Today, many fishers feel they compete with large numbers of cormorants for fishery resources.

## METHODOLOGY

### Statement of the problem

The North Sea is characterized by a dissipation of economic rent and over-exploitation of the resource because of excess fishing effort, non-selective fishing gear and un-cooperative behavior. Currently, fishing effort and investments into vessel modernization exceed optimum resource levels with the result that fish stocks, like cod, sole and plaice, are overexploited. The fishing industry is characterized by economic activities that are not viable in the long term. As a consequence, the recommendations made by the *International Council for the Exploration of the Seas* (ICES) include the adoption of the precautionary principle in order to ensure a high probability that the spawning stock is above the threshold where recruitment is impaired. Moreover, it integrates the realization that changes in fisheries systems are only slowly reversible, very difficult to control, not well understood, and affected by the environment and by human values (ICES, 1999).

### Components of institutional analysis

*"Institutions are the humanly devised constraints that structure human interaction. They are made up of formal constraints (rules, laws, constitutions), informal constraints (norms of behaviour, conventions, and self-imposed codes of conduct), and their enforcement characteristics. Together they define the incentive structure of societies and specifically economies."* (North, 1990).

*"In institutional economics, the property rights of an actor are embodied both in formal rules and in social norms and customs, and their economic relevance depends on how well the rights are recognized and enforced by other members of society."* (Alston et al., 1996).

The objective of an institutional analysis may include:

- identifying the determinants of institutions;
- explaining the evolution of institutions over time;
- evaluating their economic efficiency;
- assessing their distributional implications.

The economic functions of institutions include:

- reduction in transaction costs;
- allocation of risks;
- supply of information;
- supply of public goods.

Examples of these include:

- property rights, such as individual transferable quotas (ITQs);
- contractual arrangements (public-private; private-private);
- markets;
- codes of conduct;
- behavioral norms.

### Components of economic analysis

In an attempt to illustrate the economic costs and benefits of the North Sea fisheries activities performed by the Dutch, it is important to include principle transaction costs and liability entitlements. The North Sea fisheries are characterized by transaction costs that are positive. Therefore, ownership of property rights is of concern because the size of the transaction costs depends on the way fishing rights have been assigned. Transaction costs include the *"the costs of measuring the valuable attributes of what is being exchanged and the costs of protecting rights and policing and enforcing agreements"*

(North, 1990). Hence, the basic unit of transaction costs analysis is the 'contract' or a single transaction between two parties in an economic relationship, like the state and the fisher (Dixit, 1996). The contract is a reciprocal promise to exchange valued properties between two or several parties. This has the notion of a voluntary exchange, but need not be one. In the extreme case of domination, the ruler (principal) extracts revenue from his subjects (agents) in exchange for the promise to limit or refrain from punishment.

Moreover, *"the enforcement of property rights involves excluding others from the use of scarce resources. Exclusive ownership calls for costly measurement and delineation of assets and enforcement of ownership rights."* (Alston *et al.*, 1996).

Major transaction costs include:

- Information cost on price and quality of commodities, on potential buyers and sellers and on their behavior and circumstances;
- Bargaining costs;
- Contracting costs;
- Monitoring cost of contract abidance;
- Enforcement costs and costs of obtaining redress in the event of damage;
- Protection costs of property rights against third party encroachment (Alston *et al.*, 1996).

Additional information required for an economic analysis include:

- Investment costs, such as ITQs, vessel, sea-days license, fishing gear, on-vessel fish sorting equipment, GPS, computers, telephone;
- Operational costs, such as fuel, lubricating oil to operate/maintain fishing gear, ice, fish boxes;
- Vessel maintenance costs, such as antifouling, motor maintenance and cleaning equipment/products;
- Crew;
- Auction tax and payment of grading;
- Taxes on income and profit;
- PO Membership fee (and possibly a *Biesheuvel* group fee);
- Membership fee of Fishers's Association;
- Possible sanctions incurred (lawyers, fines);
- Insurance (health, vessel, third party);
- Auction fee.

## Property rights

*"The rights of individuals to the use of resources (i.e., property rights) in any society are to be construed as supported by the forces of etiquette, social custom, ostracism, and formal legally enacted laws supported by the states' power of violence of punishment."* (Alchian, 1977).

Property rights include:

- Right to legitimate use and to physically transform an asset;
- Right to earn income from an asset and contract over the terms with other individuals;
- Right to transfer permanently to another party ownership rights over an asset - that is, to alienate or sell an asset (Alston *et al.*, 1996).

Conditions of economically functional property rights:

- Specification and delineation of the asset;
- Measurement of the valued attribute(s) of the asset;
- Protection from expropriation of the valued attribute(s) of the asset.

## Components of ecological analysis

From a human, intergenerational perspective, the ecological costs and benefits of fishing activities performed by the Dutch in the North Sea include market and non-market values. The former involves using market prices as a monetary valuation technique to assess the commercial value the Dutch pay for a given marine resource, such as fresh fish. The latter, however, is more complex and requires a differentiated approach. For example, it can include indirect costs and benefits such as the role of marine organisms in risk reduction and human health. Risk reduction includes the role of the marine environment in climate stability and their role in maintaining human health through the provision of iodine-rich foods, fresh water and oxygen. Moreover, it includes *hedonic* costs and benefits, like the effect of beautiful views and the pleasure of being in natural surroundings.

The ecological analysis requires an ecosystems approach. This is difficult considering the gaps in information available and knowledge surrounding the complexity of the ecosystems dynamics constituting marine environment. An attempt is therefore made towards a pooled analysis using both types of (market and non-market) data.

Ecological considerations include:

- Regulatory functions include: acting as a climate/energy regulator ; acting as a sink for CO<sub>2</sub>, NO<sub>x</sub> (NO<sub>2</sub> and NO<sub>3</sub> or nitrous oxides) and SO<sub>x</sub> (SO<sub>3</sub> and SO<sub>4</sub> or sulfur oxides); roles in hydrological, meteorological and oceanographic cycles and being a source of water;
- Habitat functions, including refuge, nursery (plaice, sole, shrimps); biodiversity; and evolutionary processes
- Productive functions include: oxygen production; sources of energy for life; and medicine
- Recreational activities, such as sport fisheries, sailing and eco-tourism.

## INSTITUTIONAL ARRANGEMENTS

In an attempt to gain insight into the transaction costs of politics, the institutional arrangements within the Dutch commercial fisheries are described. Moreover, interviews with fishers allows the reader to gain insight into the experiences of those operating within the boundaries set by existing institutional arrangements, such as the Common Fisheries Policy (CFP) and Individual Transferable Quotas (ITQs).

### The Common Fisheries Policy

The Common Fisheries Policy (CFP) is the European Union's instrument for the management of fisheries and aquaculture. It was created to manage a common resource and to meet the obligation set in various treaties, particularly the 'Treaty of Rome' (hereafter referred to as 'Treaty'). The founding objectives of the CFP are described in Article 3 of the Treaty, notably "*for the purpose set out in Article 2, the activities of the Community shall include ... (d) the adoption of a common policy in the sphere of agriculture ...*"; and Article 38 of the Treaty, whose first paragraph states "*... the common market shall extend to agriculture and trade in agriculture products. 'Agricultural products' refers to products of the soil, of stock-farming and of fisheries and products of first-stage processing directly related to these products*". The general objective of the establishment of the CFP is to provide a legal framework for the "*... rational and responsible exploitation of the living marine resources on a sustainable basis, in appropriate economic and social conditions for the sector taking account of its implications*

*for the marine ecosystem and of the needs of both producers and consumers.*"

The CFP has 4 main components:

1. The conservation and enforcement policy (1983) – Regulation 170/83 establishing a Community system for the conservation and management of fisheries resources which was replaced in 1992 by Regulation 3760/92 establishing a Community system for fisheries and aquaculture;
2. The structural policy (1970) - Regulation 2141/70 laying down a common structural policy for the fishing industry;
3. The marketing policy (1970) - Regulation 2142/70 on the common organization of the market in fisheries products;
4. The external fisheries policy (post 1977).

### National institutional arrangements

The general objective of the Netherlands Ministry of Agriculture, Nature Conservation and Fisheries (LNV, *Ministerie Landbouw, Natuur en Visserij*, hereafter referred to as the Ministry) within the CFP framework, was published in its 1993 Policy Document on Sea and Coastal Fisheries. This policy states that the Netherlands sets out to promote responsible fishing effort and a balanced durable exploitation of fish stocks until the year 2003 (Davidse, 1996; Salz and DeWilde, 1996). The Fisheries Management Board (*Directie Visserijen van het Ministerie van Landbouw, Natuurbeheer en Visserij* (LNV)) of the Ministry has the delegated task to manage matters concerning the production, marketing, price-setting and processing of fisheries products within the CFP framework. The Fisheries Management Board plays a pivotal role in representing the Netherlands in decision-making processes at the Community level and in bringing into force EU regulations at the national level. Together with the Ministry's Legal Planning Office (*Juridische Bedrijfsorganisatorische Zaken* (JBOZ) *van het Ministerie LNV*), the Ministry's Fisheries Management Board translates European policies into national fisheries policies. In this legislative process, the Government and Parliament together determine the constitutionality of proposed laws under consideration. The Supreme Court ensures a uniform application of Dutch law, although it cannot suspend a law as being contrary to the constitution. National laws, which are contrary to European agreements can be abrogated by Dutch courts.

Specific tasks concerning the management of quotas, fish trade and fish processing in the Netherlands, are tackled by the Commodity Board of Fish and Fish Products (*Productschap Vis*). This is an economic sector of the corporate *Publiekrechtelijke Bedrijfsorganisatie* (PBO). Tasks concerning the enforcement of EU and national control measures are given to the Ministry's *Algemene Inspectiedienst* (AID), the Dutch general inspectorate. The AID identifies and reports un-cooperative behavior observed out at sea and/or on fishing vessels. Fishers caught performing illegal behavior are prosecuted by one of the Netherlands' sixty-two cantonal courts. The administration of justice is entrusted to appointed judges. Cantonal courts, however, only have jurisdiction over minor fisheries suits. If the case and appeal of a cantonal court decision is of greater importance, it is handled by one of nineteen district courts. Appeals to decisions of district courts are handled by one of five courts of appeal.

### Individual Transferable Quotas (ITQ)

In 1977, the Ministry introduced an individual transferable quota (ITQ) system for plaice and sole. This was done in the hope that through the allocation of exclusive fishing rights to the fishers, the prospect of earning resource rent would motivate precautionary and responsible fishing behavior at sea (Davidse, 1996). However, the one-off transfer of fishing rights to the fishers did not achieve the efficiency, social stability or responsible fishing behavior the state had hoped for. External inter-related factors, such as a 200% rise in the price of fuel in 1973, an expanding beam trawl fleet, unlimited vessel HP and weak control enforcement measures did not guarantee success of this ITQ scheme (Davidse, 1996). The State undermined the assumption that it did not matter whether fishers used "*a Citroën deux chevaux* or *a Mercedes*" to catch their individual quotas. Ecological, environmental, technical and equity problems ensued (Hinssen and van der Schans, 1994). Data on plaice indicated that the catch per unit effort (CPUE) and fishing mortality more than doubled from 0.25 to 0.55 in the period ranging from 1960 to 1989 (Boddeke and Hagel, 1991). In fact, the specialization on flat fish meant that Dutch beam trawl fishers got a disproportionately large share of North Sea demersal landings. The landings of plaice, for example, increased from 38% in 1971-1974 to 63.6% in 1981-1983 of the total North Sea landings (Boddeke and Hagel, 1991).

The allocation of individual quotas were based on historical catches and/or vessel engine power, and were awarded in an arbitrary fashion by the Ministry to Dutch fishers, for free (see interview with fisher B; Hinssen and van der Schans, 1994). For example, fishers with vessels active in the North Sea during the period prior to January 1974, received individual quotas based on the largest quantity of plaice and sole landed in the period 1972-1974, whereas, vessels below 1,250 HP commissioned after 1974, received quotas based on the average performance of vessels in the same HP-group (Davidse, 1996). Hence, fishers who had always landed large catches were given large individual quotas. Moreover, banks were only willing to give loans to those fishers who had high quotas.

Government policies and premiums also stimulated overcapitalization of the beam trawl fleet. Economic pressures to avoid quota limitations combined with weak control enforcement measures, led to a growing tension between ITQ restrictions and increased fishing effort (Davidse, 1996). Side-effects of this system were the illegal activities which proliferated within the fisheries sector. These activities led to the establishment of 'gray' and 'black' fish markets. Many more catches were landed than was allowed under the Community quota system. Although Dutch ports such as IJmuiden were controlled, ports in the North East of the Netherlands like Lauwersoog, were not sufficiently monitored. Fisheries biologists believe this may still be the case. Numerous illegal landings of catches outside the official ports resulted in very high incomes. This gave fishers, especially those from the fishing community of *Urk*, a bad reputation. This reputation is still very prevalent amongst the Dutch today, although it is not fully justified.

As a consequence, the fisheries biologists of the RIVO-DLO assumed catches went unreported, which in turn affected the reliability of the logbook data. The trust was gone and the accuracy of the assessments on North Sea flat fish stock dynamics were put into question. Fisheries biologists made estimates of the predicted and potential catch which other interested parties, such as fisheries economists of the Dutch Agriculture Economics Institute (LEI-DLO) and fishers considered to be too high (Smit *et al.*, 1992). Fishing effort continued to increase and the TACs allocated to the Netherlands by the North East Atlantic Commission (NEAFC), were soon exhausted.

The rise in fishing effort, unreliable data, and government threats to impose general stops on fishing, created anxiety at the fishers' level which resulted in a further race for fish (The Skagerrak incident described by fisher C is a genuine example of how a combination of overcapacity, quota overfishing and poor communication led to top-down policy-making, resulting in the loss of the fishing rights of Dutch fishers in the Skagerrak grounds, and increased conflicts and competition between fishers.). The Government, however, soon realized that in order to ensure a balanced and durable exploitation of fish stocks, engine capacity (measured in HP/Kw) reduction was needed. Hence, a licensing system was introduced in 1985 followed by a further reduction of HP in 1987. In 1987 another attempt was made to limit fishing effort by introducing a limit of 12 meters in the beam trawl width of vessels. As well, a limit on the number of days spent at sea and a voluntary decommissioning scheme were implemented (Hinssen and van der Schans, 1994; Davidse, 1996).

Today, the ITQs are distributed as a type of document by the Ministry. A Government revision of the individual quota system in 1977 based quota allocation on the average catch of the past six years according to HP-group and made individual quotas officially transferable by imposing certain restrictions on their transfer. Fishers can only buy an ITQ from another ITQ holder if they are in possession of a fishing license. Transfers of ITQs must be approved by the Ministry and fishers are not allowed to sell parts of ITQs separately. That is, the ITQ must be transferred from fisher to fisher as a whole. Only Producer Organizations (POs) can buy ITQs and sell parts of it to individual fishers (Davidse, 1996). These ITQ transfer regulations imposed by the Ministry on fishers has made fishing a very expensive business activity for the individual fisher acting alone. As a collective (*Biesheuvel* Group) operating within the framework of private *Biesheuvel* groups, fishers can afford to transfer ITQs amongst themselves. The *Biesheuvel* Steering Committee introduced a co-management system in 1992 allowing fishers to rent and/or barter quotas within the *Biesheuvel* groups which operate under private law. Consequently, the ITQ system has made the beam trawl fisheries sector and *Biesheuvel* associations very exclusive. In order to become part of private *Biesheuvel* associations a fisher must already have an ITQ, a fishing license and a vessel. The introduction of regulatory measures by the Ministry to manage ITQs, has reinforced the exclusion of outsiders from this industry. In contrast, fishers who have been in possession of such a document since 31<sup>st</sup>

December of the previous year, are automatically given an ITQ by the Government (Davidse, 1995). These costs of fishing rights have triggered concentration: today fishing is either a family business or a business partnership.

Although today the prices of quotas are very variable, they are strong, and as long as the quotas do retain their present value, the fishers presently holding them will remain content. In 1995, the rental of a quota of sole cost a fisher about five NGL per kilogram. It is not certain what will happen once prices of quotas are increased further, and the quotas themselves are decreased. This will probably make the Dutch beam trawl industry more exclusive. From an intergenerational perspective, if the transfer of ITQs is facilitated from father to son, as is presently the case with Dutch milk quotas, it could cause discontent amongst those sons who left the industry (Hinssen and van der Schans, 1994).

Problems in trying to keep an equilibrium between fishing effort and quota limitations remain. It is only by using a combination of control measures enforced by the AID and fishers groups that the Ministry has succeeded in maintaining order up to now. The decommissioning of Dutch vessels also contributed to a decrease in Dutch fishing effort although the Netherlands failed to satisfy the targets set in the European Multi-Annual Guidance Programs (MAGP V). Recent policy developments at the European level, notably the Structural Funds 1999, indicate that the European Commission and national Governments seek to decommission the European fleet through joint ventures with third countries under bi- and/or multi-lateral agreements.

### **The Subsidiarity Principle**

The increase in mutual consultation and the co-ordination of fisheries activities at the ICES and European level has placed a significant burden on national administrations to effectively ensure surveillance and control resource-user compliance to Community and national management regulations. These administrations have the task to regulate conflicts between different interest groups, whilst simultaneously safeguarding ecological health and continued productivity of the resource and its environment. According to the Subsidiarity Principle of the EU, it remains within the competence of member states to draw attention to the responsibilities of

fishers as resource managers of the ecosystem they exploit (Laurec and Armstrong, 1997). Although TACs are established at the European level and allocated to member states, the task of distributing quotas and associated fishing rights must be dealt with at the national level. The national quotas can either be allocated to individual fishers directly by the state or distributed to private associations like POs. Through enforcing the Subsidiarity Principle, the Commission hopes to ensure that management decisions are made at the lowest possible level. However, this does not entail decentralization. It is strictly top-down: what is decided at the national level cannot be introduced at the European level. Interestingly, the Netherlands argues that although it does not satisfy the MAGP targets, its co-management structure has ensured that fishing activities performed by fishing vessels flying the Dutch flag remain within the established TACs. However, it remains to be seen what will happen once the quota will start to decrease.

### **Co-management: Producer Organizations and *Biesheuvel* Associations**

In 1992, the Netherlands introduced a co-management system through the introduction of *Biesheuvel* groups. These private fishers' associations formed by the Steering Committee *Biesheuvel*, enforce control at the fishers' level by means of mandatory auctioning (Hinssen and van der Schans, 1994; Laurec and Armstrong, 1997). This co-management system seeks to promote resource-user participation in fisheries management through the creation of incentives for individual fishers to voluntarily organize themselves, via producers organizations (PO), into regional groups of corporate personality. The PO is exempt from the EU anti-trust regulation (Article 85/86 of the Treaty of Rome; Hinssen and van der Schans, 1994) and has the delegated responsibility to manage the uptake of national quotas by controlling member vessel activities as they see fit. In this way, the PO gives industry maximum flexibility to manage its quotas while the Government mainly operates at the strategic level.

The interviewed fishers are enthusiastic about the *Biesheuvel* associations. Within these groups, fishers can communicate with each other and rent and/or barter individual quotas and sea-days. The private associations provide the fishers with a legal structure that allows them to avoid being sanctioned (Hinssen and van der Schans, 1994). In failing to comply to the private obligations,

members are faced with a private penalty system. The costs of overfishing and failing to operate within the established quotas, have been internalized through private law at the individual level. At the group level, these fishers associations have public obligations whilst at the individual level, members are subject to private obligations.

The fishing rights of the private *Biesheuvel* associations consist of the sum of the ITQs of the members, supervised by an independent chair working within a management framework approved by the acting secretariat, the Commodity Board of Fish and Fish Products. As a group, fishers remain subject to public law to prevent the overfishing of joint quotas. In 1994, the Dutch Fisher's Union estimated that at least 96% of the total Dutch cutter fleet was actively participating within the structure established through the Steering Committee *Biesheuvel*.

Fishers feel that the private *Biesheuvel* associations provide an efficient means to enforce control on activities within the fisheries sector. For example, Article 2.2a of the national Regulation No J 7391 imposes stringent control measures on catch reporting. The present mandatory auctioning has provided a more time- and cost-effective alternative to the European logbook system established in 1988, that required the completion and submission of logbook entries within half an hour of landing at ports in the Netherlands.

### **INTERVIEWS WITH DUTCH FISHERS**

In this section, the interviews of three Dutch fishers have been translated and transcribed. As stated in the introduction, the term fisher represents a fishing enterprise that is either owned individually or in partnership. The owner may actively use the fishing vessel, or be a person who owns the vessel but does not actively fish, or the owner may represent either a corporate co-operative or company that owns one or more vessels. The aim lying behind these interviews is to illustrate the attitude and response of fishers to legislative measures imposed onto them by the EU and Dutch authorities, in an attempt to limit or direct fish capture activities. The reactions of fishers to these regulations largely determines the success of any regulation in practice. Co-operation within the fisheries industry and with members of outside authorities dealing with fisheries, is essential if fisheries policies are to be effective in managing a fisheries in a sustainable manner. Communication is essential for

successful resource-use management. The *milieu* of these fishers can also be seen as a *fisheries market* so as to distinguish it from the fish market.

### Fisher A

Fisher A is from *Urk*, a Dutch fishers village, but has reflagged his two beam trawl vessels of 900 HP (a family business) and now fishes for flatfish under the British flag. There are many reasons why the Netherlands could find it less costly to 'import' fisheries services rather than attempting to produce them under her own flag. Importing these services can enhance the net benefits from the fisheries enjoyed by the Netherlands by decreasing the catch per unit effort of domestic fishing activity. Reflagging means less Dutch vessels to survey, monitor and control. These burdensome costs are therefore reduced allowing for greater investment and flexibility in domestic fisheries management by Dutch authorities. The flag state, such as the UK, acquires the responsibility for compliance by all vessels flying its flag with the coastal State's access regime, based on the concept of *pacta sunt conservanda* (Moore, 1983). Also, less vessels fishing under the Dutch flag can imply larger quota for those vessels carrying the Dutch flag, although the resource is processed and marketed in the Netherlands by Dutch fish operators. The landings he makes in Lauwersoog are treated by the Dutch authorities as import.

Although fisher A fishes under the British flag, he is still a member of the PO (Oost-Nederland U.A.) responsible for *Urk* fisheries activities. The net profits of his catch are accrued by processing and marketing operators in *Urk*. Hardly any real profits obtained from skipper A's landings go to the UK. Skipper A's contacts remain predominantly in the Netherlands. His only obligation to the UK is to respect British fishing regulations and fulfill the obligatory number of landings (8 per year) established by the Ministry of Agriculture, Fisheries and Food (MAFF) in the UK, although this does not necessarily imply the actual landing of fish!

Via the Netherlands, his landings are exported to Italy, Spain and Austria, where fish prices are higher. It is surprising that the Spanish market demand should be so high; and it raises the question as to where Spanish vessels land their catches. However, like the Italians, Spanish consumers will pay for good quality fish. Fisher A is in the possession of quotas for plaice, cod, sole, flounder and a determined quantity of bycatch,

but he does not specify this any further. He therefore does not throw all his bycatch back into the North Sea. His quota is based on a three-year track record of all his catches, of which he receives a third of the average. Placing an upper limit on his catch in the form of a quota is not very attractive to fisher A. This quota is established by the MAFF and allocated to him via a British PO in the UK. If he has fished his quota for cod, he and his crew (all his crew come from the Dutch town of *Urk*) change fishing grounds and switch to catching plaice, while trying to limit the amount of cod bycatch. However, he is not happy with today's quota system. He does not return most of the flatfish he catches to the sea as their fins, skin, bladders and other body parts are damaged by the nets and pressure changes as they are hauled to the surface. Not only does the non-selective fishing gear detrimentally affect bycatch, but it is also responsible for the poor quality of fish sold to fish markets. Furthermore, many plaice and sole bury themselves into the sand in an attempt to avoid being caught in the nets of the beam trawl. Although tickler chains of beam trawls are effective at herding plaice and sole into nets, damage to benthic communities is considerable.

Fisher A has a 'water and bucket' system on his ship to keep bycatch alive, in order to return them to the North Sea in as 'healthy' a state as possible, if and when necessary. Hence, fish that are undersized and therefore too small to land legally, but not small enough to avoid getting trapped in the fishing nets, are returned to the sea alive (what the actual chance of survival is remains unknown). He emphasized the fact that many fishers from *Urk* use this 'water and bucket' system as they are very environmentally conscious. Fishers are aware of the increasing economic importance of Dutch consumers perceiving fishers as behaving in an environmentally conscious manner. Greenpeace Netherlands is currently providing a Dutch fishing vessel with the necessary funds to operate environmentally-friendly fishing gear (Van den Broek, pers. comm.). Another Dutch vessel is also undertaking similar steps.

When asked why he had chosen to reflag, fisher A said it had been the inflexibility of the Dutch legal and control/inspection system (Algemene Inspectie Dienst (AID), the Netherlands surveillance, monitoring and fisheries control enforcement inspectorate) that had forced him to decommission and to start again in the UK. In the early 1980s, the Netherlands had adopted a system in which the maximum a landing could consist of was approximately 75 boxes of fish, the

same system adopted in Harlingen. However, the 'box' unit system is not standardized. Fisher A found the system flawed and inflexible because it did not take into account the high ecological and environmental variability characteristic of the North Sea ecosystem. There could be weeks in which fishers caught very little, and weeks in which they caught a lot fish. These seasonal periods when the catches are abundant should be more stringently controlled, as it is probably a period in which damage should be limited. Excess fish caught had to be 'done away with' and was therefore often landed illegally and sold on the 'black' or 'gray' fish market.

Control of illegal activities within the fisheries sector is difficult. Unsustainable behavior at sea will only become unattractive if it is economically unprofitable. An article published 20 April 1977 in the Dutch intellectual newspaper *Vrij Nederland* looked at the accountants working for *Urk* fishers. The advice given at the time to the fishers was to ignore reports of the Government's Agricultural Economic Research Institute (LEI-DLO) on economic developments in the flatfish fisheries. The accountants thought that the techniques used by LEI-DLO economists were too theoretical and did not necessarily reflect reality. The LEI-DLO economists realized a need to investigate this further in late 1977 and temporarily their credibility was put to question by the *Urk* fishers. Today, however, the picture is quite different: fishers take the analyses and advice given by the LEI-DLO seriously. At the same time, the institutional structure of the Dutch Government research authorities, like the LEI-DLO and the Netherlands Fisheries Research Institute (RIVO-DLO) has changed. These institutions are output-oriented and operate on the basis of contractual arrangements. As a consequence, the transaction costs have increased and transparency has been reduced significantly, as it has become very difficult for third parties to obtain access to data and information on fisheries. This has severe consequences for public accountability of marine resource use, which is a public resource.

The fishers found themselves in a difficult situation, having to compensate for those weeks in which the catch was less successful by selling fish illegally on the black market. In this way, the *Urkers* build themselves a bad reputation during the 1980s. However, this was also very much the result of the inflexibility of the Dutch fisheries regulations, forcing many *Urkers* to land fish illegally when the fishing seasons were good. The general public, policy makers and enforcers did not see this as the result of bad policy making, but

rather as a characteristic typical of the people from *Urk*. Although the European Economic Community adopted a Common Fisheries Policy in 1983, control systems were inadequate and underdeveloped. It was therefore easy for fishers to fish in excess of their quotas as inspections and control measures were very poorly enforced. Weak control enforcement by AID officers in the early days of the CFP allowed un-cooperative behavior to occur at the fishers level.

Economic pressures, an oil crises, quota limitations and an expanding fleet, were all contributing forces in the development of gray and black fish markets, illegal landings and uncommunicative behavior of fishers. Today, the co-management model has gained wide popularity amongst fishers and politicians. The Dutch co-management system was set into force by the *Biesheuvel* Steering Committee in 1992. Dutch fishers can rent and/or barter quotas within *Biesheuvel* groups operating under private contractual arrangements. The events from 1983 to 1986 stigmatized the people from *Urk*, giving them a reputation of being law breakers from which they have not yet recovered.

Fisher A felt that it was not feasible to enforce established rules as to how a fisheries should be run because the catch is too variable and does not respect national or EU regulations. According to him, a more flexible policy making system is needed that takes into account the chaotic nature and high variability of the North Sea environment. The average fisher from *Urk* does not like to throw fish back into the sea once it has been caught and pulled on deck. Most fish do not survive the experience, especially flatfish, as the trawl damages their fins, internal organs and skin. When the fish are thrown back into the water, they are usually dead or will die soon afterwards. This fish has therefore gone to waste, something the *Urker* does not like to see happen. But due to the inflexibility of the quota system established by the EU and set into force at the national level, the *Urkers* find they have little choice but to throw back bycatch.

Today, the legal system in the Netherlands is very biased regarding matters involving the people from *Urk*. It is immediately assumed by Dutch lawyers and judges that fishers from *Urk* will do anything to overfish their quota and/or try to land fish illegally. This was, for example, what fisher A experienced and what has led him to reflag. He was fined two hundred thousand guilders for having landed too many fish, as he refused to throw dead fish back into the North Sea in order to legally stay within his quota.

According to fisher A, bad policy making, biased opinions, and inadequately trained officers of the AID ("*who cannot distinguish plaice from sole!*") are making life for Dutch fishers fishing under the Dutch flag very difficult. The fine imposed on fisher A, combined with a series of bad catches and repairs to his ship, which caused him to remain in harbor for half a year, forced him to decommission his vessel. However, the decommissioning money which he received from the Dutch Government, was not enough for him to start again in the Netherlands. Hence, he lost his quotas. Furthermore, fisher A considers Dutch quotas to be too expensive; that is, approximately 75 NGL per kilogram of plaice; 65 NGL per kilogram of sole; and 15 NGL per kilogram of cod. British quotas are cheaper, although fisher A did not wish to specify by how much.

Furthermore, inspection measures are more appealing in the U.K than in the Netherlands. It is not clear whether or not this statement implies control enforcement measures in the UK to be more 'relaxed', and therefore possibly dissatisfactory from point of view of resource sustainability. The UK has a limited license system which controls fishing effort. Fishers fishing under the British flag are required to report for inspection to local Fisheries Inspectors. Fishers must also report before departure when intending to land at British ports, or when crossing ICES areas, or landing at non-UK ports. Compared to control enforcement in the Netherlands, it appears inspectors in the UK rely heavily on law-abiding behavior of fishers. Fisher A also did not like the Dutch system of sea-days. Hence, reflagging to fish under a British flag became a very appealing option for fisher A. Today, the only true obligation he has towards Britain is to land at least eight times a year in Lowestoft, U.K. However, this does not necessarily mean he actually lands any fish in the U.K.

The British quotas are established on the basis of a three-year record and are a third of the price paid in the Netherlands. Quotas are allotted on a yearly basis according to the fishing effort of the vessel. The quota system allows the Ministry of Agriculture Food and Fisheries (MAFF) and the POs to establish the fishing effort of each vessel fishing under the British flag. The technical drawback of this system, however, is that it forces fishers to lie still in harbors until the quotas have been established. It is possible that with the introduction of an Individual Transferable Quota (ITQ) system, as the British Government plans to do in the near future, this technical drawback will no longer exist. The introduction of an ITQ

system will mean that prices of the British quotas will rise. In this way, the British Government hopes quotas will be sold at more profitable prices. Today, however, the British quotas are still distributed via POs, which a fisher must have been a member for at least three years before he is given access to British quotas. If a fisher is caught overfishing his quota; if he has been fined several times; or if he has broken British fisheries rules and regulations, MAFF will repossess all the fish caught by the fisher and his fishing license is taken away. Hence, although the British are considering the idea of introducing an ITQ system, the quotas are not yet fully in the possession of the fishers.

However, Fisher A did not think Britain was ready for an ITQ system (Due to lack of international experience, the introduction of an ITQ system will require massive educational effort. Other requirements include greater government control; a new bureaucracy; greater information costs; changes in fishers' lifestyles; and, increased at sea monitoring and control enforcement. A race for fish is likely to result if control is not sufficiently stringent, with the result that under-reporting will prevail). His impression of the British fisheries sector is that it is in total disarray and that it lacks any form of organization or specialization. The British fishers are depressed and their level of education is lower than that of Dutch fishers. Furthermore, fisher A said British fishers did not keep up maintenance levels and vessels were not kept clean. In fact, Dutch fishers consider British vessels to be very dirty and kept in a very bad state. He also said he did not think British fishers had evolved a similar level of organization typical of Dutch fisheries sectors today. In fact, the high level of organization of *Urk* fishers has allowed them to exert a lot of influence within the British flat fish sector too. Because of such different standards between Britain and the Netherlands, he thought the internationalization of resource user participation could itself pose a problem. Not every member state fishing in the North Sea has yet evolved the same social organization at the fishers level.

Fisher A was in favor of an ITQ system, although such a system will result in quotas becoming more expensive. He thought multinational companies, such as 'Findus', would be amongst the few possessing sufficient capital to buy more ITQs than the average fisher. Such organizations will therefore be at a considerable advantage. He also recognized the fact that such a system will force the smaller fishers out of the commercial fisheries sector, just like the smaller farmers were

forced out of the farming industry in the Netherlands. Hence, it will reduce diversity at the fisher's level and make it very difficult for young fishers to start fishing.

Today, only wealthy beam trawl owners can afford lawyers and experts so as to benefit most from EU and national aids. This puts them at a competitive advantage to small trawl owners, as the experts provide information on what advantages (in terms of subsidies) can be had from EU and/or national aid systems. Fisher A found that it is a system that stimulates capitalism and where money makes money. He knows of cases where wealthier beam trawl owners could obtain more sea-days as well as extra quotas to make up for the overcapacity of their vessels. Their vessels are often registered as lying within the 2,000 HP limit, although he believes these vessels to be capable of a much greater HP. They can do so because these fishers can afford to hire the best lawyers and experts on matters regarding EU and national policies.

When fisher A was asked what he thought of the Spanish and Portuguese fishers fishing in the North Sea, he replied by saying that he did not find their behavior very responsible and that on this basis they should not be allowed access to the North Sea. He found that some of the fishing techniques they use are not appropriate for the long-term viability of the fish populations. They catch juveniles by using a mesh size that is illegal and they make other member states fishing in the North Sea, especially the U.K., very angry. He considers their behavior to be disrespectful of the North Sea environment.

When asked whether or not fishers allowed their logbooks to be seen by other fishers, fisher A said this did not happen. Fishers are individualists, who are always suspicious of fellow fishers. Every fisher is out for themselves, which can be quite uncooperative. He did not think that a system of property rights where each fisher was assigned a specific territory could ever work. However, he did find that the introduction of the steering group *Biesheuvel* had calmed the waters considerably, establishing a means for fishers to co-operate. It had lessened the number of fines distributed by the AID to fishers overfishing their quotas as fishers could now barter and/or rent fish.

Fisher A did not find that the stocks in the North Sea were declining and did not believe there was such a problem as overfishing. Due to the establishment of the 'Plaice Box' (Rijnsdorp, 1999), he had been forced to seek new fishing

grounds although he often did fish around the borders of this protected area. He was not a great supporter of the plaice box as he said there was no evidence as to whether or not the setting up of protected areas was of any benefit for the plaice stocks. He found that if certain regulations had not proven to be effective within a given period, that they should then be made redundant. According to him, the plaice box should also be open to beam trawlers greater than 300 HP. He believed fisheries biologists to be incorrect in saying that the plaice box was of benefit to plaice. He did not have much faith in fisheries biologists as they had made many incorrect assessments of the state of the fish stocks in the North Sea. So far, fisheries biologists had been proven to be wrong in many of the conclusions and assumptions they had made regarding the dynamics of North Sea stocks. He therefore believed that the plaice box was another mistake based on incorrect assumptions, miscalculations and lack of knowledge on matters concerning the North Sea ecosystem.

Fisheries biologists cannot expect to reach a complete understanding of the North Sea ecosystem. Recruitment patterns and dynamics are still a complete mystery to the fisheries biologists. Hence, fisher A believed that overfishing was also the result of miscalculations by fisheries biologists and therefore does not exist. He found that nearer to the Dutch coast it was good for fishing on sole, whereas nearer to the Danish coast, plaice was more abundant. He therefore moved from one fishing ground to another according to fish stock abundance. Furthermore, fisher A was also very much in favor of eutrophication as it increases the abundance of flat fish, especially plaice. When asked whether he believed a system based on eutrophication could be sustainable in the long term, he said his experience was to always find the most abundant fishing grounds to be rich in sewage, phosphates and nitrates. According to fisher A, agricultural waste provided food for the benthic communities, which form the basis of the food chain of flat fish, such as plaice and sole. He praised eutrophication and would like to see more of it in the North Sea.

When asked if he thought he could influence the fish market by holding fish back, he said that was impossible as the quality of fish is short-lived. Fresh fish is approximately five days old when it is landed. If it is kept one day longer, it will not fetch a decent price on the fish market. Furthermore, *Urkers* do not believe in wasting fish. However, he did emphasize the fact that the East European countries are influencing the European market. These fish are sold on the black

market and therefore bring down the prices of the fish caught by Dutch fishers that are sold in Dutch fish auction halls. There is no policy to control illegal importing of fish from Eastern European countries, as the Dutch Government and AID only concentrate on vessels fishing and landing under the Dutch flag. He was not aware of any EU control system that kept such illegal imports in check (This is a very important observation and indicates the need for adequate control enforcement at the international level). However, as a consequence of such competition, which is out of the control of Dutch fishers, fisher A said Dutch fishers were furious and frustrated, and they would like to see Dutch control measures to be enforced at the international scale. Fisher A feels he has no power to do anything about the present situation, which is affecting the quality of fish entering the EU market. For example, he said that the quality of the fish provided by the Eastern European countries is poor; at least 20% of it is rotten.

However, the multinational companies that do buy this fish for a very low price mix it with fresh fish as well as preservatives, which lowers both the quality and the price of the product (clearly an issue for consumer awareness programs). The fish bought and processed by multinationals is not really fresh. However, the customer is not informed of these facts and no control is put into force to prevent these events from happening. It is detrimentally affecting the Dutch commercial fisheries sector. Fisher A felt that after seventeen years of experience in this sector, he found that the economic situation of the Dutch commercial North Sea fisheries sector had become less attractive to him. It is unlikely, he believed, that the fish prices would increase as the consumers of fish want the prices to remain low, regardless of quality. Unless consumers are informed of what is actually happening, the present situation will not change. Only in Italy, where he exports his fish, do consumers buy fish at a very high price. Hence, the fish he lands in the Netherlands as import, is immediately exported to the South of Europe, where consumers will pay more for quality. He said he did not find the Northern European fish market profitable and did not find demand for North Sea fish in the Netherlands was stimulating.

He would like to see some form of property rights in the market system, which would give fishers a voice in matters concerning the processing and trade of fish. He thought that in this way fishers could protect their industry from illegal imports of fish from countries without environmental legislation. He said that either environmental

legislation on matters regarding the commercial fisheries sector would have to be enforced and standardized at the international level, or a system protective of those countries that do abide to environmental legislation should be given a competitive advantage to those countries that do not enforce such legislation. Today he said that Dutch fishers fishing under the Dutch flag were at a disadvantage as the AID is very strict; fines are very high; Dutch rules and regulations are inflexible; and other member states and non-member states do not have such authorities working against them, giving them a competitive advantage at the fish market level. According to fisher A, Dutch inspectors should be employed at the international level.

### **Fisher B**

Fisher B started in 1969, when gas and oil was discovered in the North Sea. He saw Member States being assigned their three nautical mile (nm) territorial zones and their 12 nm zones, which were heavily praised by both the Danes and Germans. In fact, the Federal Republic of Germany was the first country to enforce stronger control measures on matters concerning fishing activities in their coastal zones. Denmark, the Netherlands and the Federal Republic of Germany were all very happy about the establishment of a 12 nm territorial sea as it gave these countries the power to protect their coastal areas, and hence power over the nursery areas of commercially exploited stocks, such as plaice and sole. In 1989, entry was allowed to beam trawlers, such as today's Euro-cutters, of 300 HP.

Fisher B has fished for plaice for about 45 years of his life, although at times when plaice stocks were low, he also targeted species such as sole. Hence, he experienced the establishment of the 'Plaice Box', which lies at latitude 57 degrees north off the Dutch coast. Fisher B insisted that he respects the 'Plaice Box' and never fishes inside the protected area. The second year this protected area was set up, he noticed that the plaice he was catching around the borders of 'Plaice Box' had flesh the color of salmon! He would fish plenty of small red plaice which were incredibly tasty and he concluded that these plaice specimens were feeding solely on shrimp (no communication on this between fisher B and scientists ever took place). Because the fishing effort within the 'Plaice Box' had suddenly declined in a radical fashion, the plaice stock had grown to its saturation level; that is, the size of the plaice stock had out-competed all other populations within the 'Plaice Box', leaving the plaice with little else

to feed on than shrimp present within the box. The benthic communities in the 'Plaice Box' were no longer being churned up by the beam trawlers and therefore the population dynamics within the protected area had changed (Fisher B is aware of how fishing activities have altered the population dynamics of demersal communities, making them dependent on the nutrient turnover that arises through the trawlers. On average one square metre of the southern North Sea is overturned by beam trawlers at least once every year. Some areas can be touched more than seven times (Niels Daan, RIVO-DLO, *pers. comm.*). Every year, as he returned to fish at the borders of the 'Plaice Box', he noticed the plaice were becoming smaller and smaller. It was obvious that the plaice were not migrating out of the box, as the juveniles that did try to leave the box were immediately fished by the beam trawlers at the borders of the protected area. The juveniles were not strong enough to avoid being caught by the beam trawlers, and hence, recruitment was declining within the box. Those plaice specimens that did leave the box never returned to spawn, whilst the weak plaice specimens did not leave the 'Plaice Box'. Never again has fisher B seen large, healthy looking plaice specimens return to the 'Plaice Box' to spawn. In his opinion, the 'Plaice Box' is a failure. He blames it on the fisheries biologists. Danish fishers, for example, used to catch at least 300 boxes of plaice in 7 to 8 fishing days. Today they have to fish 8 days in order to obtain 100 boxes (35 kg) of plaice. Plaice stocks have declined along the Danish, Norwegian and Dutch coasts.

The 'Plaice Box' has both its advantages and disadvantages. The advantages are for those fishers who own beam trawlers of 300 HP (Euro-cutters) which are allowed to fish there. But there is no control over the number of Euro-cutters that are allowed into the 'Plaice Box', so that today the number of Euro-cutters entering the area is increasing. Hence, the effect is the same as if large beam trawlers had been allowed to fish in the protected area. High numbers of Euro-cutters are just as destructive to the environment of the North Sea as beam trawlers greater than 300 HP. Fisher B said that there was a trend amongst Dutch fishers to sell their larger vessels with a HP greater than 300 HP and to invest in a Euro-cutter, which will give them access to both the 12 nm territorial zone and the 'Plaice Box'. Fisher B has indicated a major flaw in policy making at the European level. The number of Euro-cutters entering the 'Plaice Box' needs stringent surveillance. Euro-cutters should not be exempted from logbook obligations.

Fisher B does not believe the North Sea is being overfished because fishing is a seasonal activity, something which he reckons the fisheries biologists refuse to understand. In the 1950s, for example, he used to fish herring in the summer months and plaice in the winter. There has always been plenty of fish in the North Sea. Unfortunately, fisheries rules and regulations do not see fish dynamics as being seasonally determined.

Decommissioning began in 1973, when herring stocks had declined radically. In 1977, he was given a quota by the Dutch Government, but because he had always fished for quality unlike his fellow fishers who fished for quantity, the quota allocated to him was very small. Those who had fished heavily, but who had fished irrespective of the size and quality of the fish, received a large quota. Hence, as control and safety measures were slowly put into force by the Dutch authorities during the 1970s, fisher B needed money for repairs on his beam trawler in order to keep within the Dutch safety measures. He therefore needed to borrow money from the bank. However, banks were only willing to give loans to vessel owners who had large quotas, which they saw as a guaranteed investment. As a result of his small quota, fisher B had trouble obtaining a loan and was forced to invest fifty thousand NGL, borrowed from family and friends, in order to cover his costs. This, however, was still not enough to meet the required safety standards established by the Dutch authorities and hence, his vessel came to lie still in the harbor of Lauwersoog. As a consequence of this, he had to sell his vessel for a price amounting to five million NGL. This was not a problem because fishers buy vessels for the quota, regardless of the state of the vessel. In 1977, the Dutch Government had individualized quotas, thereby making them transferable. In order to remain in the fishing industry, fisher B and his brother decided to invest in a second beam trawler of 600 HP. The quota allocated to this second vessel was the average of the past six years of fishing activities performed by other beam trawlers in the same 600 HP group. The quota he therefore received was much greater than the one allocated to his first vessel.

Today, fisher B sees fishing as being very different to what it used to be when he first started. That is, in order to survive, he now finds himself having to think on a European scale. He only chose to respect those national regulations which were advantageous to him, and does not really take much notice of the European regulations until they come of practical use to him (Fisher B does

not respect fisheries regulations because they do not reflect the problems of his profession). Hence, after he suffered several fines in the Netherlands during the 1980s, which amounted to at least 150,000 NGL, he decided to reflag and fish under the Belgian flag. This decision gave him an unlimited quota for plaice and an unlimited number of sea-days. He now also has less to do with inspection officers as efforts to control fishing regulations are more relaxed in Belgium than in the Netherlands. Furthermore, the Dutch authorities do not inspect vessels that do not fish under the Dutch flag. His present quota and beam trawler of 2,000 HP, which he fishes for plaice of 12 cm in length, are worth at least seven million NGL. He knows he would have no problem selling his vessel and quotas if he ever decides to bring his fishing activities to an end. But he has invested in this new vessel primarily for his sons, in the hope that one day they will take over his business. Today the process of handing his quota and vessel over to his sons is still quite difficult because the quota is very expensive. Fisher B, however, hopes that the process will eventually be facilitated when the government decides to put into force the same system as is presently in use in the Dutch agricultural sector. This would then allow the sons of fishers to inherit the vessels and quotas of their fathers, if the sons are still in the fisheries industry.

Fisher B is a member of the PO of *Urk*, which provides him with information on national fisheries regulations, as well as news on EU regulations. Within the POs and the steering committee *Biesheuvel*, he can rent and/or barter other fish species and obtain advice on legal and/or financial matters concerning his fishing activities.

When asked how he felt about the Spanish and Portuguese fisheries operating in the North Sea, he said that they should never have been allowed access to these Community waters, as their fishing activities do not respect EU regulations. The mesh sizes they use are too small and therefore they catch many juvenile fish, which will ultimately affect the state of the stock. According to him, fishers should be allowed access on a basis of historical rights in the North Sea. As far as he was concerned, the Spanish and Portuguese fishers do not have such rights. Furthermore, the expansion of the commercial fisheries sector should be brought to a halt at the European level and thus, decommissioning should be enforced at the European level. The Netherlands has no more fishing licenses to hand out. Mesh sizes should be standardized and enforced at the European/international level, as

should control measures concerning other fisheries activities be enforced at an international level. It is pointless to have strict control in one member state if other member states do not have similar control standards. Also, it should be made obligatory for fishers to land in specific ports, as this would facilitate the enforcement of control. Furthermore, the regulations adopted at the national and international level should reflect the nature of the ecosystem in question; that is, the North Sea is a highly variable ecosystem and fishers, over the years, have learnt to adapt themselves to it accordingly. However, the regulations put into force today are not flexible enough to take this variability and seasonal nature of the resources, such as fish, into account. As a means of making up for the inflexibility of current EU and national regulations, Dutch fishers formed groups such as POs and private *Biesheuvel* associations.

Fisher B did not feel many attempts were being made by the Dutch authorities to improve the socio-economic situation of Dutch fishers. He emphasized that there is a lack of communication between the various authorities involved with fisheries activities, fisheries biologists and the fishers. He felt that none of the authorities determining the activities of fishers in the Netherlands, or in the EU, had made any real effort to communicate with fishers. In his opinion, the only fisheries biologists who had ever made a true attempt to understand the problems of fishers was R. Boddeke. He regretted that there are not more of such fisheries biologists today. According to him, statistics and data analyses are not sufficient to form an idea of what is happening in the North Sea. It is important that fisheries biologists become more involved with the fishers and that they make a greater effort to communicate with the fishers. Fisher B also criticized the complicated language fisheries biologists used, which he did not understand and therefore did not find interesting. He believed that if fishing effort was to be reduced and brought under control, communication between fishers and others experts and authorities involved in the commercial fisheries sector had to be improved. Effort had to be made to help fishers understand why certain regulations were being put into force as opposed to others, which fishers felt to be more stringent.

Fisher B does not think the ITQ system is a good idea, although he would like to see an alternative system to the present quota system put into force. He does not object to a system where the national quotas are allocated to the individual fishers via the POs. Quotas should be assigned per country

and not according to vessel. The quotas should not be allowed to be transferable amongst individuals as it would empower the rich and make the weak weaker (Fisher B prefers ITQs to be state controlled). He felt that the Steering Committee *Biesheuvel* had brought some peace amongst Dutch fishers by providing a means of communication. Fishers can now rent and/or barter quotas and fish, providing an alternative to sanctions distributed by the AID. Today fewer fishers are fined for overfishing their quotas. However, he felt very strongly that historic fishing rights should be enforced.

### Fisher C

Fisher C fishes with his trawler using otterboards, employing a Danish system which consists of two nets rigged especially for catching Norwegian lobster (*Nephrops norvegicus*). He used to fish in the Skagerrak, but in recent years the Dutch do not get a quota in this area. This was the result of fishers who were fishing in other parts of the North Sea, who discovered that Dutch quotas for Skagerrak were not being used completely. Hence, they started to charge part of their catch to the Skagerrak with the consequence that this quota was suddenly being used up very rapidly. As a result of this, the fishers who did fish in the Skagerrak were suddenly forced to stop fishing, as they were told by the *Algemene Inspectiedienst* (AID) that they had used up their quota. Although this was unjust, the whole event led the Dutch Minister to trade in the Dutch fishing quotas for the Skagerrak for something else. The Dutch fishers who had always fished in this area subsequently lost their traditional fishing grounds. This happened to fisher C, who was subsequently forced to look for new fishing grounds. They found these grounds in the 'Silver Pit', a deep water area south of the Dogger Bank, which is rich in Norwegian lobster. However, all this could have been avoided. In the court cases which characterized this whole happening, fisheries biologists were called in as witnesses who, on the basis of occurrence of a specific parasite in the flat fish, could establish whether or not they had been fished in the Skagerrak. However, these findings did not prevent the Dutch fishers from losing their traditional fishing grounds. He felt the Dutch Government had acted unjustly towards Dutch fishers.

There is no quota for *Nephrops norvegicus*. Fisher C also had a small quota for cod, whiting, sole and plaice; that is, approximately 1,100 kg for sole and 1,600 kg for plaice. The market for langustines is mainly in Italy, although there is

some demand for it in Denmark. The Dutch are not familiar with this species and therefore do not buy it on the market in the Netherlands. One of the problems concerning the fishing of langustines is that mesh sizes of 70 mm are required. For cod and similar species, the minimum mesh size allowed is 100 mm. Although it is allowed to fish with a mesh size of 70 mm, this is only possible if a certain percentage of the catch consists of fish. This is subject to inspection procedures at sea and it is almost impossible to adhere to the langustines to fish ratio for each individual haul, as a fisher can only see what he has caught once the catch has been pulled on board.

Fisher C receives a document annually, issued by the Ministry of Agriculture, Nature Management and Fisheries (LNV), indicating his assigned quota. The document is in Dutch, but even British inspection vessels have the details of Dutch fishing vessels' licenses in their computers. The quota varies from year to year, depending on the Total Allowable Catch (TAC) assigned to the Netherlands by the EU. For 1995, fisher C had a quota of 1,060 kg sole; 9,620 kg whiting; 32,390 kg cod; and 1,610 kg plaice.

Before the introduction of the steering committee *Biesheuvel*, the commercial fisheries sector had problems dealing with bycatch. Despite quota limitations, many fishers agree with fisher C in that they refuse to throw bycatch back into the sea. As a consequence, fisher C has also suffered numerous fines given to him by prosecutors in the Frisian capital Leeuwarden, fisher C has experienced several court cases and was given fines amounting to two hundred thousand NGL. He had gone through the entire Dutch judicial system, and even made a request to the Dutch Queen to be granted a reprieve, but this did not help.

According to fisher C, it is vital that the commercial fisheries sector is made more labor-intensive. It is important that more is invested in keeping smaller vessels at sea, thereby keeping diversity within fleets. Presently, more is invested in larger vessels, forcing small vessel owners to sell their quotas and vessels, and to either leave the fisheries sector or work on someone else's vessel. Hence, the rich get richer and more powerful, whilst the poor are forced out of the industry and the fish gets cheaper. He also knew of large trawl owners from *Urk*, who hired crew from Harlingen. The crew had to pay board and lodging when on a fishing trip. The amount the crew owed the trawl owner, was deducted from what the crew earned as a salary from one

week's catch. Hence, if the crew experienced a bad catch, they lost money. He knew of a lot of fishers from Harlingen, who were not very fond of these *Urk* trawl owners.

The installation of freezing and sorting systems on board of vessels would also be of benefit. Currently, once fish is landed, it needs to be sorted and weighed and afterwards it is sold at an auction and immediately frozen. These activities of sorting fish according to species and size, and the weighing of the fish, are organized by the POs. Fishers have to pay for these services. Hence, if this could be done on board ship, the fisher would not have to worry about the freshness of the fish or have to pay staff on land to sort the fish according to size. It would be both cost- and time effective. Another problem he had experienced and had been fined for concerned the average content of a fish box. He thought that this most probably only applied to Harlingen, and maybe not to other places such as Ijmuiden. That is, all fish boxes are weighed and the contents are expressed in kilograms. However, it is very easy to be slightly over the permitted weight of contents per box. Hence, if this system was standardized, maybe unnecessary fines could possibly be avoided.

Fisher C was very much in favor of multi-purpose boats, such as the research vessel used by the Dutch Fisheries Research Institute (RIVO-DLO) in Ijmuiden. It would reflect the multi-species and multi-gear nature of the North Sea commercial fisheries sector, and thereby provide fishers with the necessary flexibility to complete their job. He also said that the new engines of 2,000 HP employed today, have relatively more power than the old ones. This means that a new engine of 2,000 HP can have a much greater power than an old engine of 2,500 HP. Fisher C therefore suggested that the consumption of fuel would possibly be a better measure of effort than the HP of the engine. He also thought that the decommissioning of vessels had not reduced the amount of effort in the North Sea, because those vessels which were decommissioned had not been participating in fishing activities, whilst the new ships entering the sector had a much greater fishing capacity than could be expressed in the HP of the engine. Even if the HP of the engine had been reduced, the total fishing capacity of the fleet did not necessarily decrease. On the contrary, fisher C believed it had increased considerably. In the 1980s, a subsidy was introduced in the Netherlands to stimulate investment in the fishing industry. This amounted to 18% of the total amount invested in the fishing industry. Although not intended, it

also applied to the construction of new fishing vessels. Added to this subsidy was a second of 25-35%, which was given to further stimulate construction. All this led to an overcapacity of the Dutch vessels, which proved to be disastrous to the North Sea ecosystem.

Larger beam trawlers have more capital and can therefore take more advantage of the national and EU aid system, as they can afford subsidies experts and lawyers, who can ensure that the vessel owner gets the best deal. Fisher C knew of large vessel owners who, in this way, had obtained more quotas and more sea-days. The amount of sea-days are allocated to a fisher in relation to the size of his previous quota and the HP potential of his vessel. This is usually done on a monthly basis. Some vessels with large quotas may have excess sea-days. These can be transferred to other vessels, along with a part of the quota, if the vessel in question is unable to complete its assigned sea-days. As a consequence, small vessels are often negatively affected by this system, as they cannot go out fishing during adverse climatic conditions, such as storms.

Mesh size and shape was another point of concern. Fisher C believed that diamond shaped meshes were far better than square meshes because they remain open all the time and therefore do not close under strain like square meshes do, allowing more smaller fish to escape.

When asked whether or not he believed overfishing was a problem of the North Sea, he said it was a serious one indeed. He firmly agreed with the establishment of the 'Plaice Box', as it had saved plaice stocks from collapse. The *Urkers* would have liked to scrape the whole of the North Sea empty, but thanks to the good intentions of the fisheries biologists, this had not happened. Control was needed. He had fished in the waters of New Zealand and said that they had a good ITQ system, and that the EU should learn from the experiences of the New Zealanders. He did not fully support the system of ITQs, as he felt that it would make the rich richer and empower multinational companies. A better solution had to be found that avoided sole ownership of what is primarily a commons. He had also fished for many years with the Danes, and had seen how badly the Danish fishers owning small vessels had been affected by decommissioning schemes. The beaches in Denmark had been a graveyard for decommissioned vessels, and it had been a very depressing sight.

## DISCUSSION

### State ownership versus group and private ownership

The advantages of state ownership include no need to specify, measure and enforce individual property rights over the valued attributes of fishery resources. However, the disadvantages are that the State (principal) needs to monitor fishers to whom the ITQs have been delegated. As a consequence, the State is required to specify, measure and enforce such rights through effective monitoring, surveillance and control enforcement (MSC). The State is also required to obtain all relevant information to specify these rights in line with the objectives/preferences of the fishers and society at large. That is, the Netherlands has to ensure that it does not exceed its national quotas. The AID has the delegated responsibility to inspect vessels at sea and in ports. Moreover, AID inspection also takes place at the auctions as it is mandatory for fishers to sell their landings via the auction system.

Information is also valuable. As the State authorities are increasingly operating on an output basis, it is difficult for third parties to access and obtain information on fisheries. Often the fee to obtain access to information is considerable. For example, the LEI-DLO is willing to supply information on landings and market prices at a total cost of NLG 8,000 to 10,000, with the added condition that the LEI-DLO agrees to the use to which it is put.

Information on the modernization of vessels is not accessible to third party. This information is stored in the VIRIS database of the Ministry to which only the RIVO-DLO has access.

From the point of view of the state, the advantages of group ownership include no need to specify, measure and enforce individual property rights over the valued attributes of fishery resources; no need to obtain information on the objectives/preferences of fishers; and limited or no need to monitor fishers. The disadvantages, however, include the need to specify, assign and enforce exclusive rights of the group; objectives may not meet societal values; and there is a need to resolve the collective action problem in the use of common property resources. Similarly, private ownership has its advantages in that it allows an efficient use of privately-held information and there is not a collective action problem. However, the disadvantages are that there is a need to specify, measure and enforce individual property rights

over the varied valued attributes of fishery resources.

There are eight *Biesheuvel* Groups (group ownership) in the Netherlands, viz: Delta/Zuid; Nederlandse Vissersbond I; Nederlandse Vissersbond II; Nederlandse Vissersbond III; Nieuwe Diep; van de PO-Oost; Texel; van de PO-Wieringen. I phoned the various groups to ask for information about operational, organizational and administrative costs involved. I was not able to obtain information. The people contacted said they did not have the time to speak with me. In general, the following picture emerged:

The *Biesheuvel* group provide the conditions for fishers to rent and/or barter (transfer) individual quotas under private law. From the state perspective the costs of transfer and overfishing are internalized at the lowest possible level. It falls in line with the subsidiarity principle. Dutch fishers feel that the political value of the *Biesheuvel* groups is considerable. They feel that the improved co-ordination of micro-decisions in the collective interest has created opportunities for co-operation and interactive co-governance among chain partners to seek alternatives to command-and-control systems, like incurring a sanction. It remains difficult to assess whether the 'sharing' of rent amongst the fishers operating within the *Biesheuvel* groups may have provided incentives for the sharing of information surrounding the natural resource.

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## REFERENCES

- Alchian, A.A. 1977. Economic forces at work. Liberty Press, Indianapolis, 523 pp
- Alston, L.J., Eggertsson, T. and North, D.C. 1996. Empirical studies in institutional change. Cambridge University Press, New York, 360 pp
- Boddeke, R. and Hagel, P 1991. Eutrophication of the North Sea continental zone, a blessing in disguise. ICES CM 1991/E:7
- Davidse, W.P 1996. Fishery regulations and the creation of property rights: The Dutch case. CEMARE miscellaneous publication no. 33. Available as: Proceedings of the VII<sup>th</sup> Annual Conference of the European Association of Fisheries Economists, Portsmouth, 10-12 April 1995. Portsmouth (UK): University of Portsmouth, no. 33, pp. 223-228.
- Dixit, A.K. 1996. The making of economic policy: a transaction-cost politics perspective. MIT Press, Cambridge, Mass, 192 pp

- Hinssen, J. and van der Schans, J.W. 1994. Co-governance: A new approach to North Sea policy making. *Marine Pollution Bulletin* 28(2): 69-72.
- ICES 1999. Report of the working group on the assessment of demersal stocks in the North Sea and Skagerrak. ICES CM 1999/ACFM:8
- Laurec, A. and Armstrong, D. 1997. The European common fisheries policy and its evolution. In: Pikitch, E.L., Huppert D.D. and Sissenwine, M.P. (eds.) *Global trends: fisheries management*. American Fisheries Society Symposium, 20: 61-72.
- North, D.C. 1990. *Institutions, institutional change, and economic performance*. Cambridge University Press, New York, 152 pp
- Rijnsdorp, A. 1999. The North Sea's 'Plaice box' as a marine protected area. pp 50-51. In: D. Pauly, V. Christensen and L. Coelho (Eds.). *Proceedings of the EXPO'98 conference on ocean food webs and economic productivity*. ACP-EU Fisheries Research Report 5.
- Salz, P. and DeWilde, J.W. 1996. Multidisciplinary evaluation of fishery management measures. CEMARE miscellaneous publication no. 33. Available as: *Proceedings of the VII<sup>th</sup> Annual Conference of the European Association of Fisheries Economists*, Portsmouth, 10-12 April 1995. Portsmouth (UK): University of Portsmouth, no. 33, pp. 245-262.
- Smit, W., Harmsma, H., Salz, P., Smit, M.H., Taal, C. and Davidse, W.P. 1992. *Fisheries in figures 1991*. [Dutch: *Visserij in cijfers 1991*].-Periodieke rapportage 31-91. The Hague, 54 pp.