

## **PART II**

# **SURVEY OF THE USE OF MARKET MECHANISMS IN OECD COUNTRIES<sup>1</sup>**

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1 When referring to this chapter from now on in the text, the author uses the term "the survey".



## Introduction

This chapter provides a review of the use of market-like instruments in OECD countries. The objectives pursued are threefold. First, the chapter aims at understanding the extent to which market-like instruments are used in OECD countries. Second, the chapter clarifies the way market-like instruments are designed in selected Member countries, in order to identify both common features across countries' experiences and highlight recent innovations that may contribute to the regulator's tool box. Third, the chapter seeks at helping policy makers to understand how different fisheries management systems can in principle contribute to the transition towards sustainable and responsible fisheries. By doing so, it also allows policy makers to identify areas where further progress may still be achieved.

Sixteen selected countries are dealt with in this chapter: Iceland, Norway, eight EU Countries (Germany, the Netherlands, Sweden, United Kingdom, Italy, France, Denmark and Spain), Japan and Canada. A review of the Greenland fisheries management system is also included. The survey will subsequently be enlarged to take into account both outstanding countries and complementary information<sup>2</sup>.

### II.1. Iceland<sup>3</sup>

#### *Technical measures to maintain fish stocks productivity*

To maintain stocks' productive and reproductive capacity, Total Allowable Catch (TAC) represents the cornerstone of the management system. Currently, 24 species (and well over 30 sub-stocks) that are found primarily within the Icelandic EEZ are subject to TAC. These species account for over 97% of the value of harvest taken within the EEZ. The Minister of Fisheries determines the Total Allowable Catch (TAC) for each species for which the Marine Research Institute feels a TAC is necessary. The TAC decision is made on the basis of recommendations from the Marine Research Institute. In recent years the Ministry of Fisheries has followed the recommendations of the Marine Research Institute quite closely. Stocks not currently subject to TAC can be fished without any restriction (open access).

Several commercially important species are straddling stocks evolving both inside and outside the EEZ. Other stocks can be found outside the EEZ and in few cases in distant waters. When an international agreement exists for the utilization of these species, a TAC for Iceland is determined. Even in cases where no international agreement concerning the utilization of the shared stock exists, Iceland frequently decides to impose a TAC on Icelandic vessels.

In addition to the TAC system, there are a number of other measures designed to improve the sustainable yield of the stocks. This includes the type of fishing gear permitted (e.g. the minimum and maximum mesh size; the prohibition of bottom trawl in spawning and nursery areas), the mandatory use of sorting grids in certain fisheries to

2 Several countries that have submitted information related to their management systems are not yet included in this chapter because available information does not allow application of the organisational framework.

3 See country submission for further details on the OECD Fisheries public web site: [www.oecd.org/agr/fish](http://www.oecd.org/agr/fish)

prevent catches of juvenile fish and temporary closure of fishing areas to protect spawning fish from all fishing.

### *Market-like instruments to regulate access: ITQ system*

The current fisheries management system is extensively based on ITQs systems as stipulated in the *Fisheries Management Act* of 1990. Previous exemptions from the ITQ system concerning small vessels have recently been removed. The Icelandic Parliament decided in the spring of 2004 to include small vessels into the ITQ system as from the 1<sup>st</sup> of November 2004. As from this date, the standard ITQ system applies to 98% of the fishing fleet and covers 98% of the stocks<sup>4</sup>.

*Exclusivity:* Fishing vessels are allocated a fixed quota share of the species subject to TAC. The combined quota share for all vessels amounts to 100% of each species. The quota share is multiplied by the TAC to give the quantity which each vessel is authorised to catch of the species concerned during a fishing year. This is referred to as the vessels catch quota. By attributing a direct right to catch a given quantity of fish (the so-called “vessel catch quota”), ITQs provide holders of the right with a relatively strong exclusivity. Exclusivity is even stronger as the Icelandic fishing sector is relatively small and homogeneous (with around 850 vessels accounting for more than 80% of the catches). As in addition the ITQ system applies to most of the resource, the level of this characteristic can be considered as high (ranked 5 on the scale<sup>5</sup>).

*Duration:* Quota shares, denominated as fractions, are attributed on a permanent basis. The level of this characteristic is high (ranked 5 on the scale).

*Quality of the title:* All catches must be weighted and recorded at the port of landing by the local port authorities. Daily transmission of the information to the Directorate of Fisheries allows for prompt and effective enforcement. As in addition most of the stocks are found primarily within the Icelandic EEZ, the level of this characteristic can be considered as high (ranked 5 on the scale).

*Transferability:* The purpose of implementing an ITQ system was to facilitate fleet adjustment. Access rights are thus to a large extent transferable. Yet, both permanent quota-shares and annual vessel catch quotas are subject to certain restrictions. Permanent quota-shares held by any company or individual are subject to an upper bound that ranges from 12% of the TAC for cod up to 35% of the TAC for ocean redfish. Moreover, the individual Fishing Enterprises may not control more than 12% of the value of all TACs. Transfers of annual vessel catch quotas may be restricted in three ways. First, no more than 50% of the annual vessel catch quota received at the beginning of the fishing year can be transferred from a vessel. This clearly imposes a significant constraint on quota trades and speculative quota holdings. Any quantity of purchased quotas can be re-traded, however. Second, no vessel may purchase quotas that are clearly in excess of what it can reasonably harvest. Third, any vessel that does not harvest 50% of its annual vessel catch quota every second year will forfeit its permanent quota-share. As a result, transferability is high, but up to a point limited (ranked 4 on the scale).

4 Before this change occurred, the share of the cod TAC allocated to small vessels was estimated to around 13.75% (OECD, 2003, p.283), and the “standard” Icelandic ITQ system was estimated to apply to around 85-90% of the stocks. Vessels under 6 GRT were operating under three different types of fisheries management regimes.

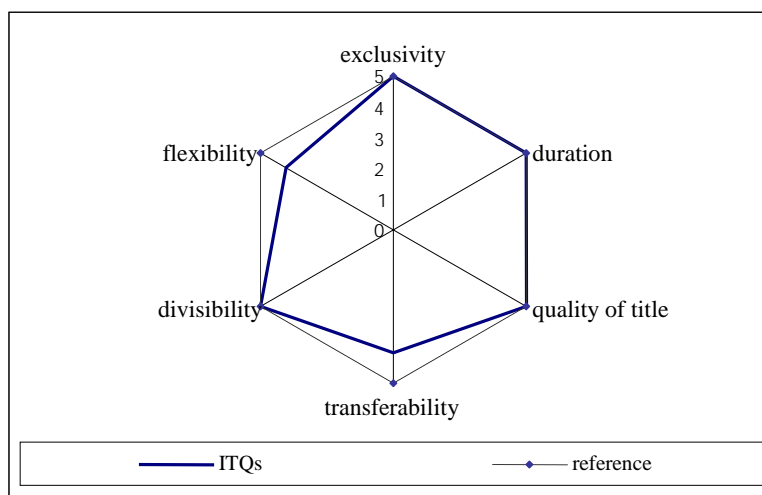
5 Please refer to the scale as defined in Chapter 1 with a range of 0 to 5.

*Divisibility:* Both the permanent quota-shares and the annual vessel catch quotas are perfectly divisible. Perfect divisibility means that any fraction of a given quota may be transferred. The level of this characteristic is high (ranked 5 on the scale).

*Flexibility:* Except when technical measures are in place, ITQ holders have large scope to determine the least-cost way of using their access right to the resource. As the Icelandic report suggests that some technical measures are used extensively (e.g. temporary closure of fishing areas), the level of this characteristic can be considered as high but limited (ranked 4 on the scale).

*Synthesis:* The fisheries sector in Iceland is characterised by some particular features, such as the relative concentration and homogeneity of the fishing industry and the prevalence of large stocks within the national EEZ. The ITQ system is designed in such a way that it is relatively comprehensive and allows for the level of all characteristics to be high. High level of the quality of the title, associated with high levels of duration and exclusivity, allows fishers to take into account long term effects in their business decisions and may act as an incentive to invest in the fishery. Relatively high level of transferability and full divisibility has the potential to facilitate the fleet adjustment process. Last, the relatively high level of flexibility, associated with the possibility to rent annual vessel catch quota and high divisibility, is expected to facilitate adaptation to unpredictable economic and environmental events. While this may allow for the efficient use of existing fishing capacities, this may also maintain some incentives to engage in illicit practices (e.g. misreporting, discarding) at relatively low levels. The Icelandic situation is illustrated in Figure II.1.

**Figure II.1. Characteristics of the Icelandic ITQ System (98% of the stocks)**



## II.2. European Community<sup>6</sup>

Within the European Community, several technical measures to maintain stocks' productive and reproductive capacity are taken at a supranational level.

<sup>6</sup> See country submission on the European Union on the OECD Fisheries public web site [www.oecd.org/agr/fish](http://www.oecd.org/agr/fish) for further details.

Annually, the European Council, acting by qualified majority on a proposal from the European Commission, decides on catch limits (TAC) for around 60 major EC species (divided in sub-stocks). It also decides on the allocation of fishing opportunities among Member States (quotas) as well as the conditions associated with those limits. Fishing opportunities are distributed among Member States in such a way as to assure relative stability of fishing activities for each stock or fishery for each Member State.

Some additional technical measures can be taken to achieve a sustainable exploitation of living aquatic resources, whether or not as part of recovery and management plans. This includes catches limitations, type and number of fishing gear permitted, limitation of fishing effort, temporary closure or restriction of fishing areas to protect spawning and nursery areas and minimum size of fish that may be retained on board and/or landed.

Each Member State decides, for vessels flying its flag, on the method of allocating the fishing opportunities assigned to that Member State in accordance with Community law.

### II.2.1. Germany<sup>7</sup>

#### *Technical measures to maintain fish stocks productivity*

In Germany, most of the species commercially caught are subject to EC regulations. The main instrument to maintain fish stocks productivity is thus the German quota decided each year by the EC Council. In addition, a number of other measures designed to improve the sustainable yield of the stocks are used, including closure of fishing areas.

#### *Market-like instruments to regulate access*

The most important market-like instrument used in Germany to regulate access to the resource (i.e. the national quota) is a system of individual quotas (IQs) that are partly transferable. Besides these other secondary instruments are used to address specific situations, e.g. vessels catch limits (VCs). Before describing these instruments, a general feature of the German situation may be useful to point out.

Once the national quota has been decided, fishing quotas are distributed by the Federal Office for Agriculture and Food on the basis of the Sea Fisheries Act. In the first step, the quotas are divided among the cutter fleets (2 226 vessels) and the deep-sea fleets (12 vessels). The criteria according to which the fishing quotas are to be divided among the fleet categories are laid down in consultation with the professional association and the *Länder* involved. As a rule, enterprises active in deep-sea trawler fisheries obtained individual catch licences to fish individual stocks in different sea areas and/or joint catch licences for several enterprises. Enterprises engaged in cutter deep-sea and coastal fisheries are allowed to fish those species whose full quota utilisation was not expected, without any quantity restrictions. In order to manage the small quotas of plaice, saithe, sole, hake, haddock, anglerfish and cod both individual catch licences and catch licences for certain groups of vessels were granted or maximum catch levels over certain periods established. Due to the high quota utilisation in previous years, the herring quota in the Baltic Sea was distributed among the fishing associations of the *Länder* for the first time in 2003.

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<sup>7</sup> See country submission on Germany now available on the OECD public web site [www.oecd.org/agr/fish](http://www.oecd.org/agr/fish) for further details.

*The individual quotas (IQs) system:*

Individual quotas are mainly used under fishing agreements to access third-country waters, for quotas under the regime of regional fisheries organisations, and for national quotas that are likely to be fully used. This included the Baltic cod and saithe fisheries. Information regarding the relative importance of these fisheries is not yet available.

*Exclusivity:* IQs give individual enterprises or associations of enterprises permission to fish and land a set amount of a specific stock or group of stocks within a fishing area. The level of the characteristic is high (ranked 5 on the scale).

*Duration:* IQs are allocated each year applying the principle of relative stability, *i.e.* that the German quota is in practice distributed to previous recipients in more or less the same proportion. This increases informally fishers' planning horizon, so the level of the characteristic can be considered high but limited to a certain extent (ranked 4 on the scale).

*Quality of the title:* IQs depend both on EC and German fisheries management systems. Available information suggests that the level of security of the title can be considered as relatively high. With respect to enforceability, the German country report suggests that illicit fishing may arise from the use of this market-like instrument, because unbalances between fishing possibilities and fishing capacity may exist. Indeed, half of the behaviour seriously infringing the rules of the CFP in Germany in 2000 consisted in misreporting data (COM, 2001). Yet, due to the relatively small number of such behaviour observed (98 occurrences in 2000) compared to the number of fishing operations, the overall level of the characteristic can be considered as relatively high (ranked 4 on the scale).

*Transferability:* To allow flexibility, annual IQs can be transferred or exchanged freely among fishers during a fishing year<sup>8</sup>. As a result, the German IQs system appears to be close to traditional ITQs system. However, the permanent sale of an IQ is not possible as it is not considered a property right. The overall level of the characteristic can thus be considered moderate (ranked 3 on the scale).

*Divisibility:* Any fraction of the IQ can be exchanged, divided or aggregated, so the level of the characteristic is high (ranked 5 on the scale).

*Flexibility:* In general, IQs' holders can decide rather freely on the way they can use their quota, subject to technical constraints that apply to most stocks. Yet, the German report underlines that IQs system is considered as a stringent method, which dictates to the individual fisher precisely what quantity he may fish in which area and does not allow for considering differences in efficiency between them. While this may affect the level of the characteristic, it should be noted that the extent of this "unbalance" problem mainly depends on the allocation process and the difficulty for the regulator to be entirely familiar with how firms operate. To soften the rigour of the allocation process, fishers can in practice exchange their annual IQs<sup>9</sup>. As a result, the level of this characteristic can be considered as high but limited (ranked 4 on the scale).

*Synthesis:* Available information suggests that the German IQs system, by providing high level of exclusivity, can allow fishers to plan their fishing activities during the year.

8 Information regarding the market value for IQs is not currently available.

9 In this context, a move towards multi-annual quota management is nevertheless welcomed in the German country report.

This reduces the incentives to race for fish. By permitting annual quota exchange, the German IQ system also allows fishers to adapt to short term economic and environmental changes. This is likely to reduce non-compliance behaviours, presented in the German report as inherent to IQs system. On the other hand, the allocation system based on “relative stability” gives every fisher a foreseeable quota share depending on the development of the national quota in a fishery. Together with rather high level of quality of the title, this provides fishers with a secure basis on which to plan future investments and undertake appropriate adjustments. The German IQs situation is illustrated in Figure II.2.

### *Vessels catch limits (VCs)*

In a limited number of fisheries where quotas are likely to be fully used, maximum weekly, monthly or quarterly catch amounts are used in order to prevent an early exhaustion of the quota, especially in the sole fishery. Information regarding the relative importance of these fisheries is not yet available.

*Exclusivity:* By stretching out these national quotas over a relatively long period, VCs provide fishers with some form of exclusivity. This reduces the race for fish, and allows for a better use of the fishing capacities. For instance, the German submission emphasises that VCs can help plan catches to the market need. As available information does not indicate whether or not competition remains between operators to fill their limit, the level of the characteristic can be considered as relatively high (ranked 4 on the scale).

*Duration:* Depending on the likelihood of a quota to be fully exhausted vessels catch limits are set on a weekly, monthly or quarterly basis. The level of the characteristic may thus vary from case to case, but it may in general be considered as low (ranked 1 on the scale).

*Quality of the title:* Available information suggests that the level of security of the title can be considered relatively high. As some non-compliance behaviours are also likely to arise under this market-like instrument (see above IQs), it seems reasonable to consider the overall level of the characteristic as relatively high (ranked 4 on the scale).

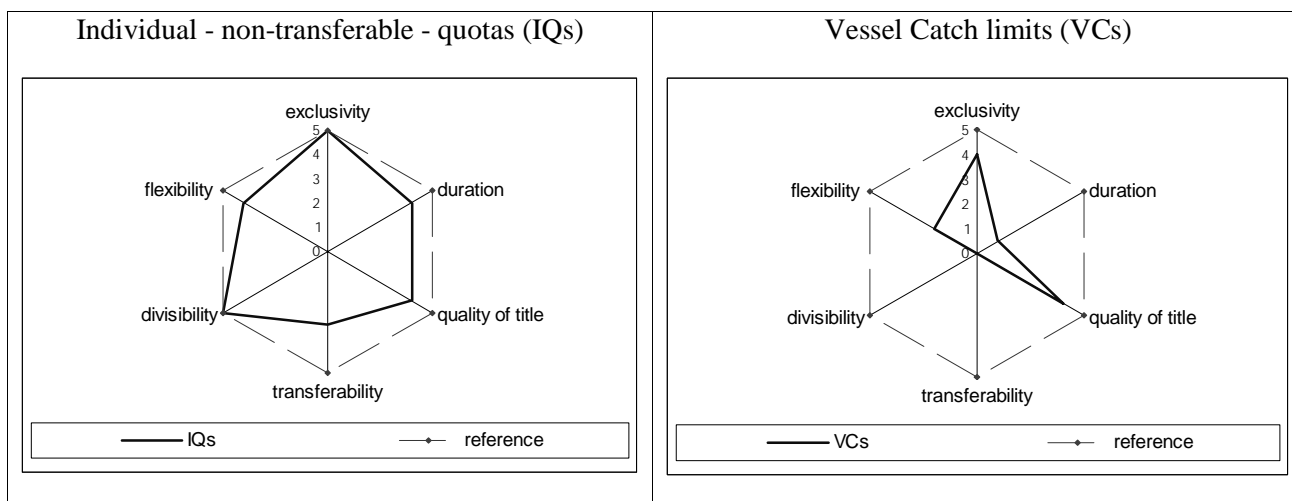
*Transferability and divisibility:* Available information suggests that the level of both characteristics is low (ranked 0 on the scale).

*Flexibility:* VCs provide fishers with some flexibility in the way of harvesting their quota. Yet, this instrument is also considered as an impediment in the German report, especially when considering a fisher who has the possibility to catch more than the quantity allowed within a certain time period. The level of this characteristic is thus considered relatively low (ranked 2 on the scale).

*Synthesis:* Available information suggests that the German VCs system, by restricting the quantity that can be landed by each operator during a given period of time, provides high level of exclusivity and limits to a certain extent the race for fish. While this is likely to reduce the tendency to overcapitalise, low levels of duration and transferability may however limit the ability of the fleet to adjust appropriately to resource conditions. In addition, the instrument is designed on such a way so short term adjustment may also be difficult. The German VCs situation is illustrated in Figure II.2.



Figure II.2. Characteristics of the German IQs and VCs Systems



### General fishing licences

Stocks that are not managed under either IQs or VCs systems can be accessed freely. The *General fishing licences* system allows any enterprise to engage in a fishery without significant quota limitation until the revocation of the licence. Such an archetype of competitive TAC situation is in general expected to lead to overcapitalisation and early quota exhaustion. In this context, a salient point of the German situation is worth noting. This system is only used for those stocks for which the quota is not likely to be exhausted in a short time (in Germany, various factors lead to the inability to completely exploit available fishing possibilities). As a result, as long as fishers believe that the race for fish is not needed, the overcapitalisation tendency may be limited. Stop fishing notice issued by the European Commission in September 2003 for some German vessels however suggests that elements of competition prevail.

### II.2.2. The Netherlands<sup>10</sup>

The Dutch fishing fleet consists of small vessels (around 675 vessels), cutters (around 400 vessels) and freezer trawlers (16 vessels, partly operating on West African fishing grounds under EC agreements).

For the main part of the cutter fleet (*i.e.* vessels over 191 kW), the most important target species are sole, plaice, cod and whiting. Pelagic species like herring, mackerel, horse mackerel, blue whiting and sardinellas are the most important target species of the 16 freezer trawlers.

#### *Technical measures to maintain fish stocks productivity*

In the Netherlands, most of the species caught commercially are both subject to EC limitations and EC agreements on the access third countries' waters. The main instrument to maintain fish stocks productivity is thus the Dutch quota decided each year by the EC

10 See country submission on the Netherlands on the public OECD Fisheries web site [www.oecd.org/agr/fish](http://www.oecd.org/agr/fish) and Buisman et al. (2002) *The Management of Fisheries through systems of Transferable Rights*, report to the European Parliament, Brussels (2002).

Council. In addition, a number of other measures designed to improve the sustainable yield of the stocks are used, including fishing gear measures and temporary bans of fishing area.

### ***Market-like instruments to regulate access: the ITQ system***

In the Netherlands, the main instrument used to regulate access is an ITQ system which covers major stocks (sole and plaice; cod and whiting; herring). Basically, ITQ rules apply for beam trawlers (over 811 kW) and for the fleet of Eurocutters (191-221 kW), that represents around 75% of the fishing power (kW) of Dutch sea fisheries. Available information does not yet allow for discussing the situation of freezer trawlers (representing around 25% of the fishing power), which have a private system to allocate quotas. In addition, it should be noted that limits on days at sea (IE) and transferable licences (LTLs; in terms of kW and GTs) are also used to regulate access to the Dutch fisheries. Based on information currently available, the following addresses the ITQ system only.

*Exclusivity:* The ITQ system allocates each year to vessel owners an exclusive quantity of fish based on the share of national quota they hold. The level of the characteristic is high (ranked 5 on the scale).

*Duration:* Available information suggests that ITQs are attributed on a permanent basis, so the level of the characteristic can be considered as high (ranked 5 on the scale).

*Quality of the title:* ITQs are dependent on CFP's TAC and national quota systems. Some commentators (e.g. Buisman et al., 2002) suggest that revisions of both systems create uncertainty on the security of the title. With respect to compliance, the division of the responsibilities in quota management since 1993 between fishers and government was expected to reduce IUU fishing incentives. In particular, as part of this co-management process, fishers agreed on a penalty system. While major improvements of monitoring and enforcement have been observed, some illicit behaviour remains (mainly misreporting data; COM, 2001). As a result, the level of the characteristic can be considered as relatively high but limited (ranked 4 on the scale).

*Transferability:* ITQ can be transferred separate from vessels. Fishers groups established under the co-management process facilitate easy rent and hire of quota. Since 1993, the transfer of quotas is subject to rules restricting them to limited periods during the year. For instance, when 90% of the national quotas are exhausted, transfers are no longer allowed. Another limitation is the interdiction to sell ITQ-part to non-holders, although rent/lease is allowed. As a result, the level of this characteristic is high but limited (ranked 4 on the scale).

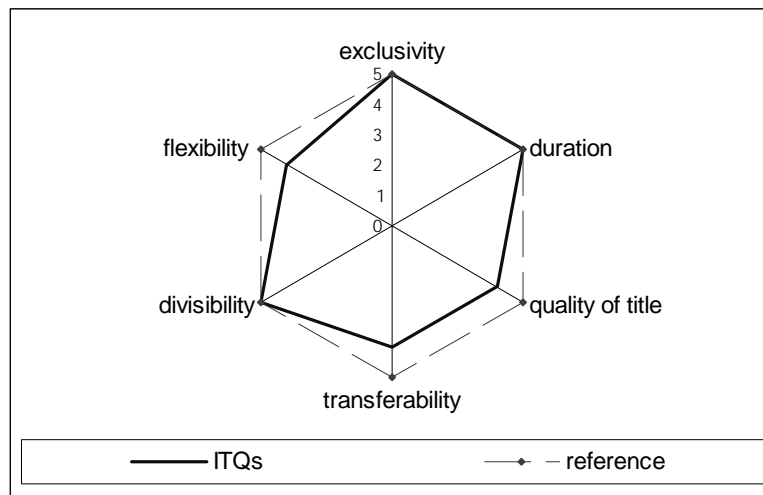
*Divisibility:* Any fraction of the ITQ can be divided or aggregated, so the level of the characteristic is high (ranked 5 on the scale).

*Flexibility:* Available information suggests that only few restrictions are set on the way of using ITQs. Notable exceptions concern fishing gear measures and some days at sea limitations set at EC and national level. As a result, the level of the characteristic can be considered as high but limited (ranked 4 on the scale).

*Synthesis:* High or relatively high levels of exclusivity, enforceability, transferability, divisibility and flexibility are expected to allow fishers planning their activities in the least-cost way. While a stop fishing notice issued in September 2003 for Dutch vessels targeting cod, haddock, whiting and herring may suggest that the Dutch ITQ system has

not fully eliminated competition, available information also witnesses a reduction of both fishing effort and capacities. In addition, permanent and exclusive rights to access the resource allow fishers for planning their investment, as well as for discussing these plans with their financiers. Tradability of quotas can facilitate appropriate investment to be realised and allow for fleet adjustment. One limit may concern the sovereign risk faced by investors in light of the revision of the CFP and Dutch management systems. The Dutch experience is illustrated in Figure II.3.

**Figure II.3. Characteristics of the Netherlands ITQ System**



### II.2.3. Sweden<sup>11</sup>

#### *Technical measures to maintain fish stocks productivity*

In Sweden, more than 90% of the harvest is under EC quota. The main instrument to maintain fish stocks productivity is thus the Swedish quota decided each year by the EC Council. Additional measures are taken to supplement the CFP and to cover remaining fisheries, including restrictions on specific equipment used in specific waters.

#### *Market-like instruments to regulate access*

One type of market-like instruments is used in Sweden to regulate access to the resource, namely a specific form of territorial use rights in fisheries (TURFs)<sup>12</sup>. In addition, it should be noted that trade in tonnage (i.e. in fishing effort) has developed in recent years. As this development occurred in a temporal and non intentional way, it is,

11 See country submission on Sweden on the Fisheries public web site [www.oecd.org/agr/fish](http://www.oecd.org/agr/fish) for further details

12 Available information suggests that some forms of individual quotas (IQ) systems are also in place in Sweden. For example, further to a number of amendments to the national legislation for fisheries introduced in 2002, the quotas for herring and sprat in the North Sea as well as the quota for mackerel were allocated on individual vessels through special fishing permits. The same system applies for herring in the NEAFC regulatory area (ICES area I, II) as from 2003. The special fishing permit allocates, on a yearly basis, a specified quantity to the vessel in question, in principal based on the vessel's track record in the respective fishery/area. Another example concerns the co-management system in place in the North Sea and the Skagerrak deep-water prawn fisheries, where decisions were taken on a voluntary basis. Fishers set up a "committee" that share quotas between members by way of a weekly rationing system (OECD *Review of Fisheries*, 2003).

however, not considered as a “genuine” individual transferable effort (ITEs) system, although it has numerous similarities with traditional ITE regimes<sup>13</sup>.

#### *Territorial use rights in fisheries (TURFs)*

In Sweden a law defines which waters are private and which are public. Private waters are generally coastal waters (up to 300 m from the coast) and lakes. Only a small share of the total national marine catches comes from privately owned waters. The general rule is that in private waters, the property owner also is in possession of the fishing rights.

*Exclusivity:* In this situation, private waters can be assimilated as TURFs. The owner of the waters has similar exclusive access rights to the resource than a TURF holder, so as the level of the characteristic is high (ranked 5 on the scale).

*Duration:* Available information suggests that the right is attributed on a permanent basis, so the level of the characteristic is high (ranked 5 on the scale).

*Quality of the title:* As waters are privately owned and relatively limited in size, both security and enforceability are expected to be important. In addition, it is also quite common that owners come together and start a fishery conservation association, so the level of the characteristic is high (ranked 5 on the scale).

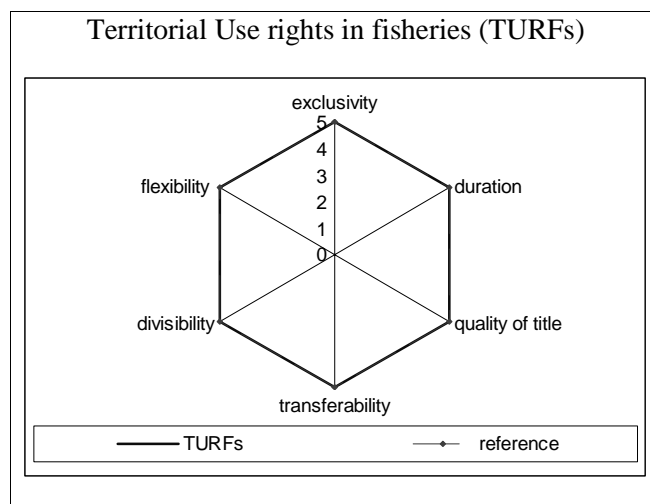
*Transferability:* The owner has the possibility to sell the fishing rights to another. This can be done on a permanent or temporal basis. In the latter case, fishing permits are sold. The level of the characteristic can be considered as high (ranked 5 on the scale).

*Divisibility:* As the access right can in principle be divided and aggregated, the level of the characteristic is considered as high (ranked 5 on the scale).

*Flexibility:* The holder has in principle a relatively large scope in the way he can manage the TURF, so the level of the characteristic is high (ranked 5 on the scale).

*Synthesis:* Due to the high level of all characteristics, all conditions seem to be gathered for the efficient use of the resource evolving within TURFs. In particular, fishing effort applying within a TURF is expected to adjust to fish stock productivity. However, it should be noted that the fishery in many cases, and certainly in the coastal areas, is based on the exploitation of a share resource. This implies that the owner of the waters is not solely responsible for the evolution of fish stocks productivity. This feature can nevertheless be reconsidered in cases where two or more water owners cooperate in the management of the fish resource, providing a good basis for the efficient use of the resource. The Swedish TURF experience is illustrated in Figure II.4.

13 Based on the EU regulation, Sweden operates a license system (fishing vessel permission) within the earlier applied MAGP (Multi Annual Guidance Programme). As this programme fixed ceilings for the total size (GT) and engine power (kW) of the Swedish fleet, problems arose when larger and more powerful ships were to be licensed. The fishermen solved this problem by buying other vessels in addition to the already existing ones and offered to scrap these in compensation for new fishing vessel permissions. The Swedish Board of Fisheries (SBF) accepted this practical solution as a way to keep the fleet inside the framework of the MAGP. In this way the trade in GT and kW was borne but no codification occurred and the fishing vessel permission is valid for a maximum of five years. There is no guarantee that the SBF will accept a transfer of GT or kW from one fishing vessel owner to another. For certain groups of vessels, the SBF only accepted the trade within the same segment. Apart from these constraints, the Swedish segments are open which means that a vessel can in principle move from one segment to another without any permission. There are plans to close the segments, which would imply that an official permission will change from one segment to another.

**Figure II.4. Characteristics of the Swedish TURFs System**

## II.2.4. United Kingdom<sup>14</sup>

### *Technical measures to maintain fish stocks productivity*

As part of the CFP, a national quota regulating the quantities of fish caught is set every year for main stocks. This is complemented by a series of technical conservation measures intended to achieve more selective fishing, for example by setting rules on minimum landing sizes, minimum mesh sizes and gear design, as well as defining areas of seasonal closures, methods of fishing and target species.

### *Market-like instruments to regulate access*

Three types of market-like instruments are used in the United Kingdom, often in combination, to regulate access to the resource. These are, namely, limited transferable licences (LTLs), vessels catch limits (VCs) and a particular form of individual quotas (IQs) that to a certain extent draws near ITQs. Before engaging in the description of these instruments, it may be worth clarifying some particular features of the UK management system.

First, the quota management system and the restrictive licences system not only coexist; they are linked. The “Fixed Quota Allocations” (FQAs) are indeed attached to vessels’ licences. Second, within the CFP’s framework, producers’ organisations (POs) play a predominant quota management role in the UK. Twenty POs were in place in the UK in 2000, managing over 90% (by weight) of UK quotas. The allocation mechanism can be summarised as follows<sup>15</sup>.

Given national quota allocation decided every year at EC level, quota allocations are made to POs in respect of the vessels over 10 metres in length in their membership and in

14 This part is based on the country submission on the United Kingdom available on the OECD Fisheries public web site [www.oecd.org/agr/fish](http://www.oecd.org/agr/fish) and various other documents submitted by the UK Delegation (including some background material for the British case study which is now Chapter 9 of this publication).

15 Some specific requirements and exceptions are in place.

proportion to the total number of units associated with those vessels' licences. Each PO is relatively free to decide on the means by which they manage their quota allocation. Some choose to operate a common quota pool and set monthly limits (VCs). Some choose to allocate individual quotas (IQs) to member vessels or companies, normally based on each vessel Fixed Quota Allocations<sup>16</sup>.

For each stock a "non-sector" allocation is reserved for those over 10 meters vessels not in membership of a PO, in proportion to the total number of units associated with those vessels' licences.

Allocations are set aside for the 10 meters and under fleet on the basis of the total number of units assigned to this group.

*Limited transferable licences (LTLs): the VCU system.*

Although transferable licences had existed since 1984 for so-called "pressure stocks", a new licence system was introduced in 1990: the "vessel capacity units" (VCUs) system. Each licence is assigned a certain number of VCUs, calculated for the vessel to which the licence was attached according to a formula taking into account size and power. It is important to note that from 1995, track records have been formally associated with licences (i.e. with VCUs), rather than being associated with the vessel as before.

*Exclusivity:* These units of effort are needed to engage in commercial fishing activities. When licences concern relatively small and/or sedentary stocks (e.g. scallops entitlement<sup>17</sup>), they provide a relatively exclusive access to the resource. Yet, for large and mobile stocks, the exclusivity is attenuated, so it is proposed to consider the characteristic as moderate (ranked 3 on the scale).

*Duration:* As VCUs are attributed on a permanent basis, the level of the characteristic is high (ranked 5 on the scale).

*Quality of the title:* Available information suggests that both security and enforceability are important, so the level of the characteristic is considered as high (ranked 5 on the scale).

*Transferability:* VCUs can be traded relatively freely<sup>18</sup>. Major restrictions concern structural adjustments. For example, transfers were allowed at the origin provided that there was no increase in either tonnage or engine power, or that there was a 10% decrease in VCUs for the recipient vessel. In addition, under the "capacity aggregation" scheme, two or more licences (which had to be of similar type) could be transferred onto a single larger or more powerful vessel provided that the capacity of that vessel measured in VCUs was no more than 90% of the combined capacity of the "donor" vessels. Restrictions on tradability were also established for social reasons (e.g. in 1992 restrictions on beam trawlers were set on beam trawlers licenced to fish in the North Sea to prevent foreign acquisitions; in 2001 aggregations of licences from under 8 meters vessels onto 8-10 meters vessels were forbidden, etc.). The level of the characteristic is thus considered as high but limited (ranked 4 on the scale).

16 Twelve POs also run a mixed system, operating a "pure" pool with monthly limits (VCs) for some stocks and allocating IQs for the remaining stocks

17 E.g. see the website [www.findafishingboat.co.uk](http://www.findafishingboat.co.uk) for description of licences supply and demand.

18 Tradability gives an explicit value to the licence, and VCUs are treated as an asset.

*Divisibility:* While expressed in terms of effort units, available information suggests that licences are not divisible per se. Thus, the level of the characteristic may be considered low (ranked 0 on the scale).

*Flexibility:* While units of effort are needed to engage in commercial fishing activities, they are often supplemented by technical measures that restrict the scope of decision, so the characteristic can be considered as moderate (ranked 3 on the scale).

*Synthesis:* This instrument is expected to facilitate the efficient use of existing access right, as less efficient fishers may have interest to sell VCUs to more efficient ones. By providing relatively durable and secure exclusivity, it is also expected to allow for appropriate fleet adjustment. The British LTLs experience is illustrated in Figure 5.

*Vessels catch limits (VCs): the “pool-plus” system*

A standard VCs system is in use for the non-sector (15% of the total VCUs, all limits being the same for all the vessels) and for some POs<sup>19</sup>, where landings for most stocks are restricted to monthly limits (or per trip limits in case of some pelagic stocks). However, the current analysis focuses on an innovative variant of VCs, the so-called “pool-plus” system (DEFRA, 2002).

Three POs, operating this so-called “pool-plus” system, decide on individual monthly limits from the pool, but allow their members to lease quota and fish against their own allocations once they have exhausted their monthly limits. By permitting members to “top up” their allowances under a “pool-plus” system with quotas bought or leased from other vessels, the UK VCs system improves some of the expected characteristics of vessel catch limits (see Chapter 2 on typology).

*Exclusivity:* By allowing each participant to adapt fishing possibilities to the fishing capacities, this instrument reduces the incentives to compete. As this is expected to increase the level of exclusivity, the level of characteristic is high (ranked 5 on the scale).

*Duration:* As VCs are decided for relatively short periods, the level of the characteristic is considered relatively weak (ranked 2 on the scale).

*Quality of the title:* Available information suggests that the security of the title is high. In addition, by reducing incentives to misreport catches, this instrument is expected to improve enforceability. The level of the characteristic is considered as relatively high (ranked 4 on the scale).

*Transferability:* While this instrument allows fishers to lease quotas, it is at this stage unclear whether these portions of quota are coming from individual monthly limits. For the time being, it is thus reasonable to consider this characteristic as relatively weak (ranked 2 on the scale).

*Divisibility:* Similarly, available information does not indicate the extent to which VCs can be divisible. Yet, this instrument allows for some access rights aggregation, so as the level of the characteristic may be considered as moderate (ranked 3 on the scale).

*Flexibility:* By permitting members to “top up” their allowances, this instrument is expected to improve flexibility. Yet, fishers remain subject to mandatory short term limits, so the level of the characteristic may be considered as high but limited (ranked 4 on the scale).

19 See contributions from the United Kingdom.

**Synthesis:** The “pool-plus” system, as with standard VCs systems, is expected to prevent early exhaustion of quotas and to restrict the incentives to race for fish. Additional flexibility procured by this instrument increase flexibility, which may allow for an efficient use of fishing capacities. The British VCs experience is illustrated in figure II.5.

*Individual quotas (IQs): the “IQ-plus” system.*

In addition to those 12 POs that run a mixed management system, 5 POs allocate all quotas to member vessels or companies as IQs based on FQAs plus any quota leased. Another salient aspect of the British IQs system is that it allows some trade in quotas. While some POs membership has decided that IQs should be non-tradable (e.g. in the case of beam trawler for sole), most of the POs allow for internal and external trade. In particular, trade can take place directly between POs (e.g. in the form of quota swap). By analogy to the “pool-plus” system, it is proposed to refer to this market-like instrument as the “IQ-plus” system. In short, the “IQ-plus” system also constitutes an institutional innovation that is likely to enlarge the regulator’s tool-box, somewhere between “pure IQs” and “pure ITQs” systems.

**Exclusivity:** IQs give fishers an exclusive (direct) right to access a given quantity of the resource. As most of the quota is managed by POs, the level of the characteristic is expected to be high (ranked 5 on the scale).

**Duration:** Depending on both national quotas and POs membership, IQs are allocated on an annual basis. While further investigation is needed on this issue, the level of the characteristic may be considered as relatively weak (ranked 2 on the scale).

**Quality of the title:** Available information suggests that the security of the title is important. In addition, by reducing incentives to misreport catches, this instrument is expected to improve enforceability. The level of the characteristic is considered as relatively high (ranked 4 on the scale).

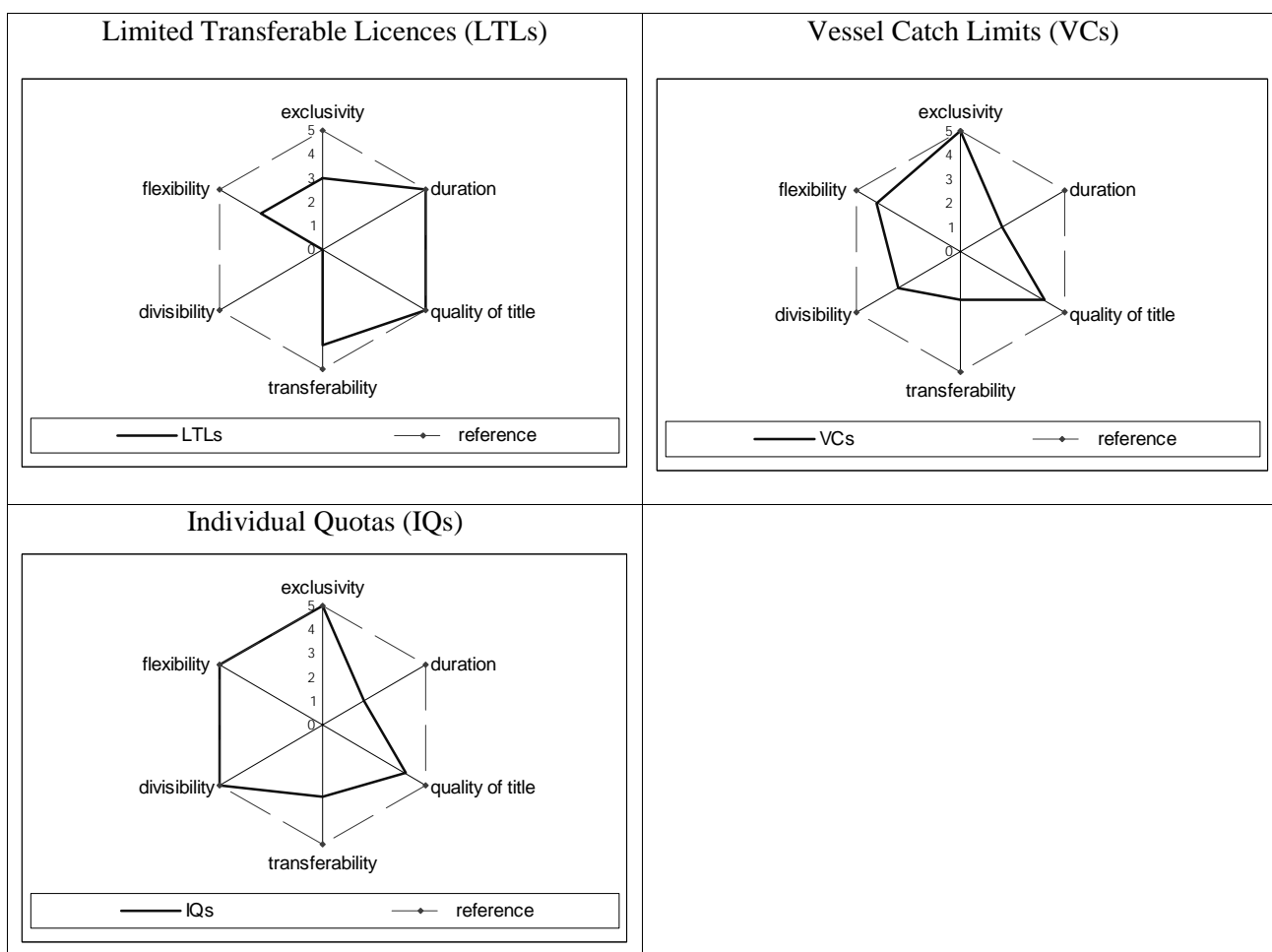
**Transferability:** Under the “IQs-plus” system, both POs and individual fishers can trade allocated quotas. Available information indeed suggests that tradability is relatively important in the short term. In the long term however, permanent transfers of quotas are more complex to realise and would indeed require a trade in licence; the level of the characteristic is considered as moderate (ranked 3 on the scale).

**Divisibility:** Available information suggests that portions of IQs can be divided or aggregated, so as the level of the characteristic may be considered as high (ranked 5 on the scale).

**Flexibility:** By permitting members to “top up” their allowances and permitting trade, this instrument is expected to improve “standard” flexibility of IQs, so the level of the characteristic may be considered as high (ranked 5 on the scale).

**Synthesis:** By providing relatively high level of exclusivity and flexibility, the British “IQs-plus” system may allow for the efficient use of fishing capacities. In particular, this instrument allows fishers to plan their fishing activities across the year and facilitates short term adaptations to the unpredictable course of fishing. Compared to “pure” ITQs system, the contribution of this instrument alone to the fleet adjustment may be limited, because of the low level of duration. Yet, it should be reminded that IQs are used in combination with transferable licences (VCUs) that are expected to facilitate such an appropriate dynamic. The British IQs experience is illustrated in Figure II.5.



**Figure II.5. Characteristics of the United Kingdom LTLs, VCs and IQs Systems**

### II.2.5. Italy<sup>20</sup>

#### *Technical measures to maintain fish stocks productivity*

In Italy, national fisheries policies are implemented within the context of the EU Common Fishery Policy. Yet, due the characteristics of Italian fisheries, EU TACs hardly apply to species targeted by the Italian fishing fleet. Quotas or TACs have been so far established only for sedentary species like clams or highly migratory species such as bluefin tuna. As a result, the EU Rule 1626/94 also establishes technical limits and minimum fish sizes to maintain fish stock productivity in the Mediterranean. In addition to these EU-based measures, time and space restrictions are used to improve the sustainability of some fish stocks. A temporary closure is for instance established for bottom and pelagic trawlers each year, and the use of trawls, seines or similar nets is prohibited within three nautical miles of the coast except where derogation is provided for in national legislation. Other vessel and gear restrictions also apply to several fisheries. For example, a set of limits on vessel dimension is introduced in the clam fishery and in

20 See country submission on Italy on the OECD Fisheries public web site [www.oecd.org/agr/fish](http://www.oecd.org/agr/fish) for further details.

the case of *Sardina pilchardus fry* fishery. MPAs are in place which covers quite a few fishing areas as well as fishing protected areas have been introduced in reproduction areas together with the temporary closures.

### ***Market-like instruments to regulate access***

Two types of market-like instruments are used in Italy to regulate the access to the resource, namely individual quotas (IQs) in the bluefin tuna fishery and a form of Territorial Use Rights (TURFs) in the clams' fisheries.

#### ***Individual quotas (IQs)***

In 1997 the EU joined the International Commission for the Conservation of Atlantic Tunas, which provided for the Total Allowable Catch (TAC) of bluefin tuna (*Thunnus thynnus*) within the Community waters. Pursuant to the measures established by this inter-governmental body, the European Community has assigned the available quotas among the Member States<sup>21</sup> and established specific provisions governing fishing activities, such as temporary withdrawals and minimum catch size. In addition, the Italian legislation provided for criteria directed to:

- establish which vessels to include in the list of those allowed to fish bluefin tuna; and
- allocate individual quotas (IQ).

Italian quota of bluefin tuna is shared among longline, seine and recreational fishery, as well as *trap* (*tonnare*, *i.e.* tuna fixed trap used in the Mediterranean Sea) and UNCL (unclassified, *i.e.* quotas earmarked for possible compensations).

Vessels performing longline and seine tuna fishery shall be registered in the list of the Directorate-General of Fisheries and Aquaculture. This list records all the vessels allowed to perform longline or seine tuna fishery by the pertinent licence or temporary authorizations which ship owners are entitled to request by submitting the relevant application. In 2003, 212 vessels were included in the ministerial list. This segment accounts for 1% of national number of vessels and for 6% of total GRT.

A sharing of the Italian quota first takes place between the different fishing "systems", based on the unit productivity of each "system". This is followed by a break-down among vessels pertaining to each "system". To date, the overall quota allocated to the longline segment is shared among the registered vessels according to the average value of catches recorded in the statistic statements of each vessel. The quotas are then determined on the basis of the best two years out of the four recorded by each boat. The allocation of quota among the registered seine vessels follows a different methodology. The total annual quota for the seine system is broken down among vessels according to the application of some specific coefficients.

The sports fishermen of bluefin tuna are also required to register on the relevant list of the Directorate-General of Fisheries and Aquaculture. From the 1st May to the 30th September, their activity is restricted to a weekly total catch of one single tunny per

21 Art. 2 of Reg. CE n. 49/1999 establishes the percentages of the annual quota of East Atlantic and Mediterranean bluefin tuna stocks assigned to the Community to be broken down among Member States: France: 33.89%, Greece: 1.77%, Italy: 26.75%, Portugal: 3.23% and Spain: 34.35%.

vessel. Following the above-mentioned criteria, the overall TAC of 2004 is equal to 4 920 tons and has been allocated as follows:

**Table II.1. Distribution of the Italian quota of bluefin tuna between fishing systems (2004)**

Fishery	Longline	Seine	Recreational fishery	Tonnare	UNCL	Total
Quota (ton.)	492	3 788	172	221	246	4 920

Source: Italian submission

Following the bluefin tuna fishing campaign of 2003, the producers' associations whose boats had been licensed to perform bluefin tuna longline and seine fishing were entitled to allocate the total allowed quota among vessels. A single producers' association is assigned a quota that is equal to the sum of the quotas owned by each unit belonging to the association. Within a single association, it is possible to compensate the unexploited shares of the quota by the surpluses harvested by members until reaching the fixed threshold.

*Exclusivity:* IQs give individual enterprises or associations of enterprises permission to fish and land a set amount of tuna within a fishing area. The level of the characteristic is high (ranked 5 on the scale).

*Duration:* Under the generalised licensing scheme, licenses are valid for eight years and are renewed on the request of the shipowner. As the renewal is rather automatic, the level of the characteristic can be considered high although limited (ranked 4 on the scale).

*Quality of the title:* IQs depend both on ICCAT, EC and Italian fisheries management system. Available information suggests that the level of security of the title can be considered as relatively high. In particular, the prevalence of an "unallocated" share of the quota reduces risks. With respect to enforceability, there are little indications of quotas overrunning (see for instance EU scoreboard 2004), although the Italian report suggests that control is an important issue in Italy due to the characteristics of the fishery. The overall level of the characteristic can be considered as relatively high (ranked 4 on the scale).

*Transferability:* Given that producers' associations are responsible for the total quota, transferability is substituted with an internal compensation scheme until the quota has been reached. In a way this allows for a non pecuniary complete transferability. On the other hand, trade in IQs are not allowed between two or more producer's associations. The level of the characteristic can be considered as moderate (ranked 3 on the scale).

*Divisibility:* Given the internal compensation approach, available information suggests that portions of IQs can be divided or aggregated (notwithstanding constraints on transferability), so the level of the characteristic may be considered as high (ranked 5 on the scale).

*Flexibility:* IQs' holders can decide rather freely on the way they can use their quota, subject to technical constraints. Due to constraints on transferability, alternative decisions based on trade in IQs are limited, so the level of the characteristic can be considered as high but limited (ranked 4 on the scale).

*Synthesis:* By providing right holders with high and rather high levels of exclusivity and flexibility, the IQ system allows them to determine how to use their quota of resource

in the least-cost way. In addition, the “collective” form of transferability and divisibility within producer’s association ensures that the resource allocated to a group is exploited in the most appropriate way. Yet, despite rather high levels of duration and quality of the title, limited transferability between groups hardly allows for further adjustment of the fleet. The Italian IQs experience is illustrated in Figure II.6.

#### *Territorial Use Rights in fisheries (TURFs)*

In Italy, the fishing of bivalve molluscs performed by means of hydraulic dredges is a relatively recent activity. Introduced in the first years of the 1970s, this type of fishing activity is mainly concentrated along the Adriatic coast of the country. Its target resource is the autochthonous *Chamelea gallina* (i.e., the clam) and consists of around 700 vessels, representing 4% of national total number of vessels and 4% of total GRT. This fishery is highly specialised.

The actual clam management system is the outcome of a long process that went from the early ‘90s (“trials and failures” development). It was initiated in order to shift responsibility from the central administration to ship owners. The cornerstones of this “self-management” approach are the Local Management Co-ordination Committees, or “local clam consortiums”. The powers granted to these committees were provided for by a central Regulation, which entitled them to determine daily catch quota (evenly among vessels), number of fishing days in a week, season closure, maximum landings, area rotation, allowed gears, periods, landing sites, restocking areas, and the like on the basis of the state of the resource and market.

While the right to access the clam fishery is linked to the licence, i.e. of an individual nature, each holder has to join the consortium to use its right. In this context, the progressive decentralisation of the decision level ends up with a self management regime where territorial use rights (TURFs) were introduced.

*Exclusivity:* Under the management system in force, territorial exclusive rights are assigned to local consortium. As there is a possibility to prevent outsiders from accessing assigned resource, the level of the characteristic can be considered as high (ranked 5 on the scale).

*Duration:* Under the generalised licensing scheme, licenses are valid for eight years and are renewed on the request of the shipowner. As the renewal is rather automatic, the level of the characteristic can be considered high although limited (ranked 4 on the scale).

*Quality of the title:* Powers granted to clam consortium are provided for by a central Regulation. As in addition no other clam licences shall be issued prior to January 1<sup>st</sup> 2009, a date on which reconsideration on the whole experience is foreseen, the risk is limited. As for the enforceability of the right, the level of compliance is considered as high. One reason for this relies on the sedentary nature of the resource, which makes the enforcement easier. One other (expected) reason is the prevalence of a co-management approach. In this regard, the Italian chapter reports that a command-and-control approach would never have been appropriate. Homogeneity of the fishery segment also plays an important role, as it allows the introduction of rules largely accepted by all fishermen. Lastly, to fix potential problems that can arise with neighbouring Local Management Committees when dredges pass their territorial limit (in the past, for example, in Venice lagoon between the Local Management Committees of Chioggia and Venice), an “inter-consortia” Committee was established at national level. The overall level of the characteristic can be considered as high (ranked 5 on the scale).

*Transferability:* Formally, the transfer of right between owners is forbidden. In practice however, indications suggested that transferability can be to a certain extent allowed, so the level of the characteristic can be considered as rather low in the long run. In addition, it should be noted that in the short run, there is no distribution (or individual allocation) of the community quota among members. There is thus no need for “formal” transferability within the group, as transferability *de facto* takes place when deciding how to harvest the community quota<sup>22</sup>. As a result, the overall level of the characteristic can be considered as moderate (ranked 3 on the scale).

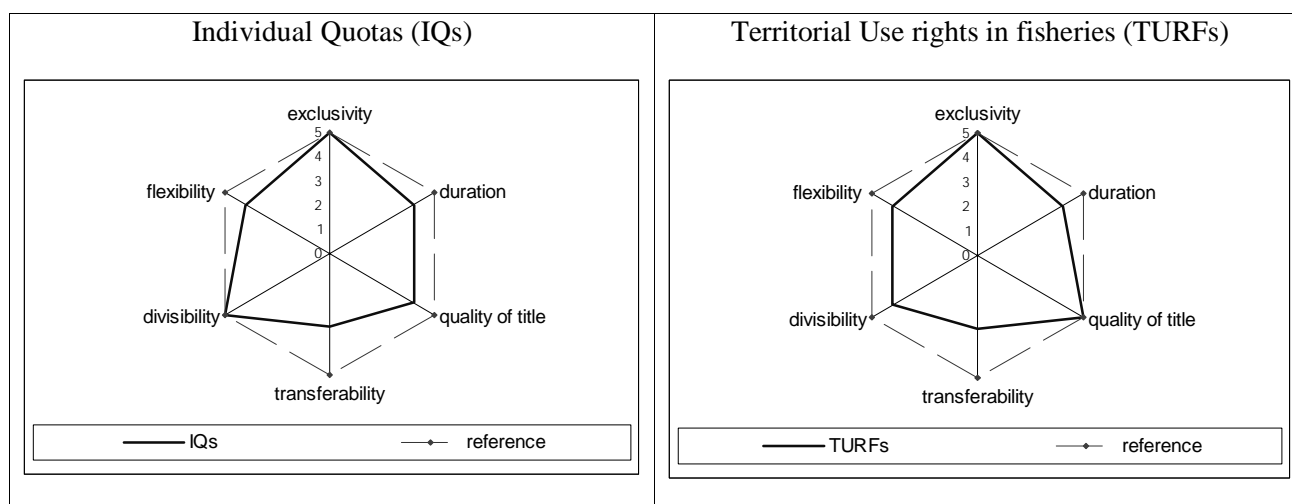
*Divisibility:* At a community level, the right to access the resource concerns a quantity of fish that can be divided and aggregated. The level of the characteristic can thus be considered as high in the short term. Yet, at the individual fisher level, available information suggests that the right to access the community quota concerns the licence, which is not divisible per se. This restricts the “long term” divisibility of the right, and subsequently the individual ability to adjust. As a result, the level of the characteristic can be considered as high but limited (ranked 4 on the scale).

*Flexibility:* Local consortiums decide on numerous regulations that limit the freedom of operation of individual fishermen (see above). On the one hand, individual flexibility appears to be limited. However, it should be noted that those stringent measures are “self-restrictive”, *i.e.* decided collectively by members of the consortium. In this case, it can be considered that the “collective flexibility” is rather high, as fishers are free (with respect to some general limitations) to decide how they want harvesting their ground (ranked 4 on the scale).

*Synthesis:* The TURF system provides participants with high and rather high levels of exclusivity, duration and quality of the title, allowing for long term investment to be realised. This is partly reflected by the increase in licence price reported in the Italian chapter, although the level of transferability is in principle limited. In the short term, rather high levels of (*de facto*) transferability, divisibility and “collective flexibility” allow for the appropriate use of the resource. The Italian TURFs experience is illustrated in Figure II.6.

22 In practice, everything takes place just as if the members of the pool were allocated an individual share of the quota and subsequently decided to trade it freely in order to maximise their annual privilege. In this context, maximisation of individual profit derives from the maximisation of collective profit.

Figure II.6. Characteristics of the Italian IQs and TURFs Systems



## II.2.6. France<sup>23</sup>

### *Technical measures to maintain fish stock productivity*

In France, some 46% of all commercial catches in the North-East Atlantic Ocean and Mediterranean Sea (over 213 000 tonnes in 2002) consist of stocks subject to Community TACs (Total Allowable Catches). The TAC regime is the main pillar of the “conservation” section of the European Union’s Common Fisheries Policy (CFP). This “conservation” section also includes technical measures relating to gear or catches, together with measures to manage fishing effort (in particular under the stock rebuilding plans instituted in 2002).

For the stocks not subject to TACs under the CFP, measures are taken at the national or regional level to ensure that stock productivity is maintained at sustainable levels; these include TACS for the leading species, opening/closing dates and special technical measures (authorised mesh, types of vessel and gear, area controls).

### *Market-type instruments to regulate access*

With regard to the stocks subject to TACs under the CFP, each year the French authorities, after consulting the National Committee for Sea Fisheries and Aquaculture (CNPME), allocate the EU fishing quotas awarded to France to producer organisations (POs); the sub-quotas are drawn up on the basis of producers’ catch histories, market trends and socio-economic equilibria. In practice, therefore, the sub-quotas are allocated to the members of each PO largely according to their share of output, although to date none have been allocated to individual fishing firms. Nevertheless, Community and domestic regulations provide for the POs to draw up management plans specifying how their sub-quotas are to be managed and used. Here, some POs have opted for an approach whereby quotas are allocated to individual members.

<sup>23</sup> See country submission and case study on France on the OECD Fisheries public web site [www.oecd.org/agr/fish](http://www.oecd.org/agr/fish) for further details.

A number of stocks not covered by TACs under the CFP are subject to relatively strict access controls aimed at preventing overfishing and the development of excess capacity. The main market-type instruments among them are limited non-transferable licences (LNTL), individual non-transferable effort quotas (IEs, which limit hours spent fishing, for instance, or the number of traps per vessel) and catch limits per vessel/person (VCs). These measures mainly target stocks of shellfish (e.g. scallops, clams and whelks) and large crustaceans (e.g. spider and other crabs). To grasp their full scope, it is important to note that access to the vast majority of “non-Community” fisheries is closed, in particular by means of limited licences and special fishing permits (*permis de pêche spéciaux*, or PPS).

These instruments to regulate access are usually used in tandem in order to adjust to the specific conditions prevailing in each fishery. To illustrate this use of market-type instruments in France, this paper describes two scallop fisheries (the species ranked fourth in terms of value in 2002), one in the *Baie de Saint-Brieuc* (limited licences + quota of hours) and the other in the *Baie de Seine* (limited licences + daily and weekly catch quotas).

Scallop is mainly a seasonal, inshore fishery. It is also a targeted fishery based exclusively on dredging. The main scallop beds lie in two bays in the English Channel, namely the *Baie de Seine* in the Eastern Channel (worked by some 210 of the 380 vessels in that sea area) and the *Baie de Saint-Brieuc* in the Western Channel (worked by some 260 vessels registered mainly in Northern Brittany). In both cases, the following are decided at the national level:

- Number of licences allocated to each region,
- General requirements for the allocation of licences (one being that the vessel must already hold a permit known as the *permis de mise en exploitation*, or PME),
- General rules governing priority with regard to licence allocation,
- Harvesting constraints, including the national fishery closure from 15 May to 30 September,
- Technical measures (e.g. authorised types of gear; size of dredge rings).
- At the regional level, there are additional rules:
  - Licence allocation rules, in particular a quota of licences per bed,
  - Restrictions on access to beds, placing ceilings on vessel size and engine power,
  - Rules governing priority with regard to allocation
  - Access restrictions such as weekly closures, daily and weekly quotas and gear constraints (number and length of dredges).

As a prerogative conferred on the industry by the Act of 2 May 1991, these measures are agreed by a majority of commercial fishermen and their representatives, under the legal supervision of the authorities. Their aim is to maintain a balance between resource management and economic activity in terms of not only profitability, but also social, economic and local development (e.g. jobs, land/sea structures). These industry-generated measures supplement, of course, Community standards.

In both cases, licences are issued on a “paired” (owner-vessel) basis by the Regional Committee for Sea Fisheries and Aquaculture, acting on the advice of a board of

commercial fishermen supervised by the government, and are valid for a period not exceeding one season/year.

Any differences between the two fisheries lie in the nature of the fishing rights tied to the licence. In the case of the *Baie de Saint-Brieuc*, access to the fishery is limited to a specific number of hours per week, based on the annual TAC (an average of 1.5 hours per week in 2003, for instance). This makes it an individual non-transferable effort quota (IE). In the *Baie de Seine*, access is restricted by limits on daily and weekly catches per vessel/person. This is a variation on the system of regulation based on vessel catch limits (VCs).

*Exclusivity*: a system of fishing licences entitles a limited number of holders to fish for a limited volume of scallops and prohibits access to the fishing grounds by those without licences.

- *Baie de Saint-Brieuc*: access is regulated in terms of the number of hours fished per vessel. Each vessel is allocated the same number of hours. Given the nature of the fishery, the level of this characteristic can be considered very high (ranked 5 on the scale).
- *Baie de Seine*: access is regulated by ceilings on daily and weekly catches per vessel/person. The system gives licence-holders some exclusivity, in that each operator knows the others are subject to the same restrictions. However, as this is a relatively heterogeneous fishery in terms of vessel size and harvesting strategies, there may be some competition, as shown by the large catches landed early in the season. Moreover, a section of the regulated fishery lies outside French waters (beyond the 12-mile limit) where French management rules do not apply to foreign vessels. Finally, by virtue of the historic fishing rights enjoyed by some Member States, some foreign vessels are allowed to fish here (between the 6 and 12 mile limits) and, since the CFP reform, specific common rules now apply to them. The level of this characteristic can therefore be considered moderate (ranked 3 on the scale).

*Duration*: in both cases, licences are issued for one year/season, but the likelihood of renewal is strong in that those applicants with licences in any given year have priority the following year. The duration of these licences is theoretically short but in practice fairly long (ranked 4 on the scale).

*Quality of title*: fishing rights are granted for one year with a strong likelihood of renewal (see “Duration” above), except when a risk emerges of non-renewal of the resource (i.e. there is no TAC or one that is set too high). Any risks stemming from fishing are curbed by technical measures; only accidental factors (e.g. pollution) cannot be mitigated. The title can be considered relatively safe. As for the verifiability of these fishing rights, the situation varies according to the beds and fisheries concerned, although in principle catches must be declared at specified landing points. In the event of a dispute, commercial fishermen are entitled to bring their case before the French administrative courts.

- *Baie de Saint-Brieuc*: access to this fishery is regulated by specifying the days on which scallops may be harvested. This is an effective means of verifying landings, particularly since they are heavily concentrated geographically. Furthermore, monitoring and enforcement also feature an airborne surveillance system financed largely by the industry. Title quality can therefore be viewed as high (ranked 5 on the scale).



- Baie de Seine: given the size of the fishery and length of the season, the relatively large number of landing points and the presence of foreign vessels, monitoring and enforcement are harder in the Baie de Seine. As there may still be some fraudulent behaviour or under-reporting, quality is somewhat limited (ranked 3 on the scale).

*Transferability/divisibility:* licence holders are not allowed to transfer their licences, nor any of their catch/hour quotas, to a person of their choice. In theory, there is therefore zero transferability/divisibility (ranked 0 on the scale). In practice, however, quota-based licences add value to used vessels when they are sold on. This is because when a vessel that has operated in a specific type of fishery is sold by a vendor who is leaving the fishery, the new owner does have some priority with regard to a new license. With the application of that priority, the fishing right becomes informally transferable, via the sale of the vessel. By and large, it is therefore reasonable to view these characteristics as relatively low (ranked 2 on the scale).

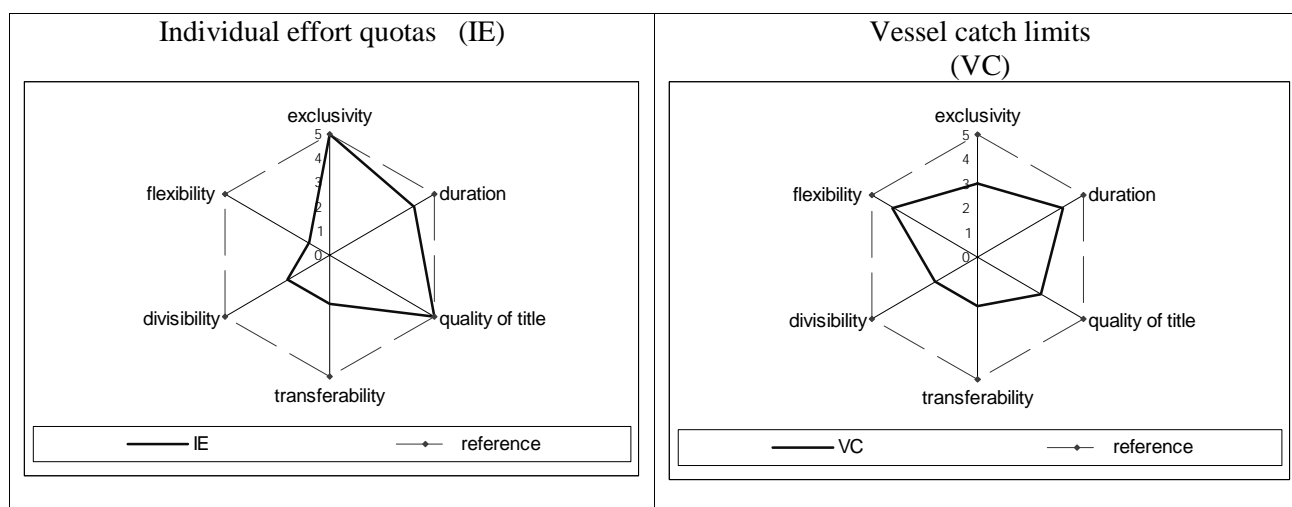
*Flexibility:*

- Baie de Saint-Brieuc: owing to the technical constraints imposed on vessels and gear, and the closure dates, there is very little flexibility here, even though operators may “adjust” the number of crew members to make optimal use of their quota of hours. This characteristic should therefore be viewed as low (ranked 1 on the scale).
- Baie de Seine: there are also technical constraints in terms of fishing gear and vessel size. However, they are less stringent than in the Baie de Saint-Brieuc. And as catch quotas are partly linked to the size of the crew, operators do have room for manoeuvre in their harvesting strategies. Finally, the length of the season allows trade-offs between fisheries and alternative activities. This characteristic can accordingly be viewed as high but limited (ranked 4 on the scale).

*Synthesis:*

- Baie de Saint-Brieuc: By offering several levels of exclusivity, duration and quality in terms of property rights, the management system based on individual non-transferable effort quotas is designed to incite licence-holders to invest in the fishery. The type of system in place should in theory curb tendencies to overfish and overcapitalise. It is worth noting, however, that the scope for gearing the fishing fleet to resource productivity is somewhat restricted by the low (if any) transferability of fishing rights. In the short term, the lack of transferability of these rights, together with the constraints on their use, may make it hard to adapt to technical, economic or environmental change.
- Baie de Seine: By offering relatively high or moderate levels of exclusivity, duration and quality, the management system based on daily and weekly catch limits per vessel/person is designed to reduce tendencies to “race for fish” and overcapitalise, without eliminating them altogether. In the short term, relatively high flexibility allows licence-holders to exploit their catch limits effectively, although their freedom of action is still partly restricted by the fact that licences are not transferable. France’s experience of individual non-transferable effort quotas (IEs) and vessel catch limits (VCs) are illustrated in Figure II.7.

Figure II.7. Characteristics of the French IEs and VCs Systems



### II.2.7. Denmark<sup>24</sup>

#### *Technical measures to maintain fish stocks productivity*

The general framework for Danish resource management is the Common Fisheries Policy (CFP) of the European Economic Community. As most of the commercial stocks are subject to EU TAC, a central instrument used to maintain fish stocks productivity is the Danish quota decided each year by the EC Council. Once the TAC/quota agreement is adopted in December, the national management scheme is decided by Ministerial Order. The principles used in the management scheme are discussed with the fishermen's organisations and the fishing industry before the conditions are finally decided. In addition, a large range of measures designed at improving the sustainable yield of the stocks is used, such as time closures (*e.g.* in weekends, summer, etc.), minimum landing sizes (in some cases higher than those of the CFP), exclusion of specific gear types in specific areas, limits on engine power in certain areas, etc.

#### *Market-like instruments to regulate access: ITQ in the herring fishery*

As noted in the Danish chapter, access has been up to now limited only in some fisheries, mainly because of the flexible fishing patterns of the Danish fleet. Yet, at least three types of market-like instruments are currently in force in Denmark, namely individual transferable quotas (ITQs) in the herring fishery (the fourth most important species in value in 2003), vessel catch limits (VCs)<sup>25</sup> for cod, haddock and saithe and limited transferable licences (LTLs) for some shellfish stocks<sup>26</sup> (including Blue mussel,

24 See country submission on Denmark on the OECD Fisheries public web site [www.oecd.org/agr/fish](http://www.oecd.org/agr/fish) for further details.

25 In 1989, the regulatory system was expanded to include catch quotas per vessel per month, per week or per trip for cod, haddock and saithe. For pelagic fisheries, this principle was used for herring and mackerel. The system has later been extended to include more species.

26 An ad hoc advisory shellfish board was established in 2003 in order to optimise the total exploitation of the Danish shellfish resources (primarily Blue mussel and European oyster). Based on interim recommendations from the board, certain areas of the Lime Fjord (in the northern part of Jutland) were assigned to shellfish

the fifth most important species in value in 2003). In addition, it should be noted that the introduction of IQ schemes for mackerel and the industrial fishery is currently under consideration. In the demersal fishery a committee has also been looking into alternative management models – for example by pooling quotas and capacity. Based on information currently available, the following addresses the ITQ system in the herring fishery only.

#### *Individual transferable quotas (ITQs)*

In 2003, a system of Individual Transferable Quotas was introduced for herring in the North Sea, Skagerrak and Kattegat. ITQs constitute a share of the total quota and are distributed to vessels according to their historical catches.

*Exclusivity:* ITQs give individual enterprises or associations of enterprises permission to fish and land a set amount of herring within a fishing area. The level of the characteristic is high (ranked 5 on the scale).

*Duration:* For the moment, ITQs for herring is expected to run for 5 years until the end of 2007. As some uncertainty exists about the perpetuation of the system after this date, the level of the characteristic can be considered as moderate (ranked 3 on the scale).

*Quality of the title:* ITQ system depends on rules contained in both EC and Danish fisheries management system. As long as both schemes are unchanged, available information suggests that the level of security of the title can be considered as relatively high. Yet, possible revision of both systems creates some uncertainty. With respect to enforceability, there are little indications of quotas overrunning, and Denmark is reported to be the only EU Member State which complied fully with reporting rules (see for instance EU scoreboard 2004). The overall level of the characteristic can be considered as relatively high (ranked 4 on the scale).

*Transferability:* Available information suggests that the only restriction to transferability concerns the foreign participation to the system, so the level of the characteristic is high but limited to a point (ranked 4 on the scale).

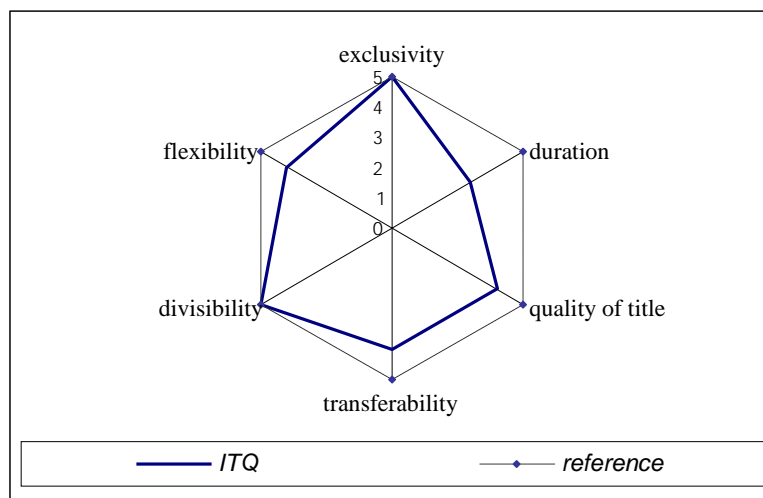
*Divisibility:* Any fraction of the ITQ can be divided or aggregated, so the level of the characteristic is high (ranked 5 on the scale).

*Flexibility:* Available information suggests that few restrictions are set on the way of using ITQs. Notable exceptions concern fishing gear measures and days at sea limitations. As a result, the level of the characteristic can be considered as high but limited (ranked 4 on the scale).

*Synthesis:* Rather high levels for exclusivity and quality of the title are expected to incite rights owners to invest appropriately in the fishery, although this may be partly limited due to uncertainty on the perpetuation of the system. In the shorter term, by providing high and rather high levels for transferability, divisibility and flexibility, the Danish ITQ program provides an opportunity for the industry to make appropriate use of the Danish quota, although several restriction are in place. The Danish Individual Transferable Quota system (ITQ) is illustrated in Figure II.8.

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production, and licensing began in early 2004. The recommendations of the board (2004) include transferable 5-year licenses.

**Figure II.8. Characteristics of the Danish ITQ System**

### II.2.8. Spain<sup>27</sup>

#### *Technical measures to maintain fish stocks productivity*

As Spain is a member of the European Union, the management and conservation of sea fishery resources is in line with EU regulations. Domestic policy in these fields therefore complies with the requirements of the Common Fisheries Policy (CFP). These include the establishment of TAC and national quotas systems for a number of stocks within EU Atlantic waters (e.g. hake, megrim, anglerfish, horse mackerel, etc.), as well as for a number of highly migratory stocks within the framework of international agreements (e.g. tuna, swordfish, etc.). Technical measures relating to mesh size and minimum size are in force in most fisheries, including in the Mediterranean where the EU Rule 1626/94 applies. In addition to these EU-based measures, national time and space restrictions are used to improve the sustainability of some fish stocks (e.g. a compulsory temporary stop of one month per year for each vessel pertaining to the so-called 300's fleet).

#### *Market-like instruments to regulate access*

Several instruments are used in Spain to regulate access to the resource, mainly depending on the biological, social and geographical characteristics of the fisheries. For instance, limited - non transferable - licences (LLs) systems apply to mollusc fisheries, a specific case of TURF (run by the Spanish guilds called "*Cofradias*")<sup>28</sup> is in force in coastal fisheries and different forms of individual quota systems (IQ) are used for fisheries under international agreements<sup>29</sup>. The following concentrates on an Individual

27 See country submission on Spain on the OECD Fisheries public web site [www.oecd.org/agr/fish](http://www.oecd.org/agr/fish) and the Case Study of Spain, Chapter 8 of this publication for further details.

28 Franquesa, R. 2004. Fishermen guilds in Spain (*Cofradias*): Economic role and structural changes. Proceedings of the XIIth biennial Conference of IIFET, July 2004, Tokyo, Japan.

29 In the context of the NAFO fishery for instance, IQs are allocated to vessels in a permanent, although relatively "informal" way. Quota exchanges between vessels are allowed.

Transferable Effort quota (ITE) system, which is presented as a workable substitute for ITQ systems in the Spanish case study (AGR/FI/(2004)5/PART6).

*Individual Transferable Effort (ITE) quota system: the 300s fleet transferable fishing days system*

This management system applies to the Spanish fleet operating in the Atlantic Community waters. When Spain joined the EEC in 1986, the article 158 of the Treaty established a nominal base list of 300 Spanish vessels (the “300s fleet”) that were allowed to fish in Community waters, with only 150 standard vessels allowed to fish simultaneously<sup>30</sup>. At this time, the Spanish administration established the fishing rights expressed in terms of activity (fishing) days that each vessel had in each zone. In addition, the European Commission has established TACs for the different species and the maximum level of effort since 1996. The Spanish Administration had the responsibility to distribute the fishing possibilities among the vessels. The initial distribution was done under historical criteria. To facilitate the control and transparency, the Administration determined the number of days that made possible to fish the quota, and those days were what the Administration issued in the form of licenses<sup>31</sup> per day to each vessel. In short, under the ITE system, fishing possibilities are converted into fishing days.

*Exclusivity:* The ITE system provides the owners with an exclusive right to use a given number of fishing days to access Community stocks. The level of the characteristic is high (ranked 5 on the scale).

*Duration:* Fishing rights, expressed as a relative share of the total fishing days available each year, are allocated in perpetuity. The level of the characteristic is high (ranked 5 on the scale).

*Quality of the title:* One of the principle reasons for implementing such an ITE system - rather than a standard ITQ system - was to ease the control. As a result, the enforceability can be considered as high. As for the security of the title, the system is dependent on other Spanish (e.g. small-scale fleet) and EU fishing activities in the areas<sup>32</sup>. As long as the relationship between the number of days at sea and the Spanish fishing possibility prevails, the overall level of this characteristic can be considered as high. Yet, it should be noted that this relationship can be affected by several factors, such as improvement in fishing efficiency. If the Spanish quota is exhausted before all allowable fishing days are used, stop fishing notice are issued by the Commission (as it happened for example in December 2004), without any compensation. So it is reasonable to consider that a form of “sovereign risk” exists, and that the level of the characteristic should in accordance be considered as high but to a certain extent limited (ranked 4 on the scale).

*Transferability:* During 1997, Law 23/1997 and Royal Decree 1915/1997 were approved by the Spanish Government in order to allow the transfer of access rights among the vessels. The objective was to ensure that the vessels pertaining to the so-called

30 Based on 2000 figures, this fleet accounts to around 10% of the total Spanish production in value.

31 OECD, *Towards Sustainable Fisheries: Country Reports*. OCED/GD(97)119

32 In this regard, it should be noted that the limitations relating to the maximum number of vessels have been extended to other participating countries since 1996. This contributes to the comprehensiveness of the system, and is likely to enhance the incentives to comply.

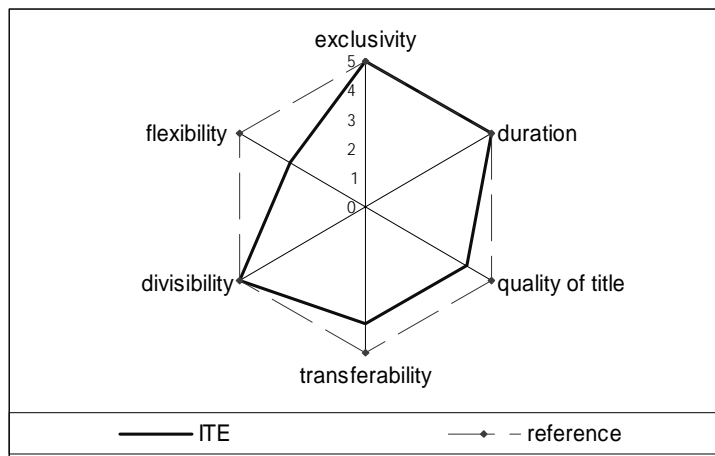
300s fleet could have enough days to fish in reasonable conditions. The owners of the vessels could transfer these days under private agreement (no data on cost of the transfer was required). When two vessels (old and new owner) communicate the change of their fishing rights, the administration accepted this license transfer. Then it was allowed to “acquire” (or “accumulate” within an association or firm) a vessels’ fishing rights. Transferability is yet restricted by the fact that Royal Decree 1596/2004, modifying RD 1915, has established a minimum of fishing possibilities that any vessel must own in order to be allowed to fish. The level of the characteristic can thus be considered as high, but limited (ranked 4 on the scale).

*Divisibility:* The fishing right is expressed in terms of fishing days. Fishing days can be aggregated without any restriction. It could be noted that it is not allowed to divide a day at sea into hours, which limits the intrinsic divisibility. Yet, in this fishery’s context, the day can be seen as the lowest workable unit of time. The level of the characteristic can be considered as high (ranked 5 on the scale).

*Flexibility:* Under this ITE system, fishing operators are in principle free to decide when and how they want to use their fishing days. Yet, due to the limitation regarding the number of standard vessels allowed to fish simultaneously in the same zone, operators can not decide to fish wherever they wanted. As the 300s fleet targets Community stocks, its activity is also subject to the technical measures set at EU levels (including in the framework of recovery plans). In addition, the Spanish Administration introduced a supplementary restriction at national level, consisting of a compulsory temporary stop of one month per year for each vessel, which can be divided into two periods of 15 days. While the need of establishing this measure is considered each year, depending on the TAC approved at the Community level, operators’ freedom of decision is further affected. The level of the characteristic can be considered as moderate (ranked 3 on the scale).

*Synthesis:* By providing relatively high level of long-term transferability, the system allowed the concentration of the fishing rights in the most efficient vessels. Doing so, technological innovation and intensive use of capital are encouraged, which may ease the structural adjustment of the fleet. By allowing for short term transferability (leasing) and providing high level of divisibility and some degrees of flexibility, the system is expected to ease the optimal use of limited fishing days. The Spanish transferable fishing days system (ITE) is illustrated in Figure II.9.

**Figure II.9. Characteristics of the Spanish ITE System**



### II.2.9. Portugal<sup>33</sup>

#### *Technical measures to maintain fish stock productivity*

In Portugal, restrictions on catch have been imposed in the form of TACs since 1986. Every year, TACs are set for individual species and fishing zones and published in EU Council Regulations which also specify how they are to be allocated among Member States. In Portuguese waters, the stocks subject to TACs include anchovy, megrim, anglerfish, whiting, hake, blue whiting, Norway lobster, plaice, Pollack, mackerel, sole and horse mackerel. At present some Portuguese quotas remain partially unused and are therefore traded with other Member States to ensure optimal use without affecting relative stability.

Supplementing catch limits and special conservation measures, the technical measures traditionally used to maintain stock productivity at sustainable levels include minimum landing sizes, minimum mesh sizes, allowable percentages for by-catch species and target species, area closures and bans on the use of specific gear.

#### *Market-type instruments to regulate access*

In addition to the general fishing licences regulating access to the industry, at least two market-type instruments are used in Portugal to regulate access: (1) a community quota system (CQ) for sardine fisheries (the leading species in terms of volume, accounting for some 36% of domestic landings), and (2) systems of individual quotas (IQ) that are partially transferable in the case of industrial deep-sea fisheries (NAFO, NEAFC, ICCAT).

#### *Community quotas (CQ)*

This means of regulating access is used to manage sardine fisheries. Sardine is the main Portuguese catch and the leading resource in Portuguese waters. It is managed under the “Action Plan for Sardine Fishing”, which is the first experiment in shared resource management in the Portuguese fishing industry. For the first time, fishery quotas have been allocated directly to the relevant Producer Organisations (POs). Although no TACs or community quotas have been set by the Council for this species, the Portuguese authorities have imposed a ceiling on catches for all POs and for individual POs, based on scientific advice. The authorities do not intervene in the allocation of quotas within each PO. The vessels (seine netters) authorised to fish for sardine must not exceed their daily catch limits set by each PO.

*Exclusivity:* The management system is based on the allocation of fishing rights to a clearly defined group of users. The quotas allocated to POs were initially based on the sardine catch history of their member vessels. In order to curb competition within the fishery, a system was introduced to limit the number of fishing days to 180. In theory, therefore, exclusivity can be viewed as high (ranked 5 on the scale).

*Duration:* Community quotas are allocated to POs on a permanent basis. The level of this characteristic is therefore high (ranked 5 on the scale).

33 See country submission on Portugal on the OECD Fisheries public web site [www.oecd.org/agr/fish](http://www.oecd.org/agr/fish) for further details.

*Quality of title:* Inasmuch as quota management decisions are made at the national level and some responsibility is delegated to local players, there is in theory little risk of a unilateral withdrawal of fishing rights. However, while these community quotas are allocated to POs on the basis of criteria such as catch history, they do not constitute acquired rights for POs and may be subject to adjustment. This scope for change does limit security of title. Conversely, the fact that POs have been asked in recent years to monitor fishing effort and enforce quotas, fishery closures and measures affecting commercial information (product grading, consumer information) means that monitoring is more efficient, which in turn improves enforceability. The overall level of this characteristic can accordingly be viewed as moderate (ranked 3 on the scale).

*Transferability:* As management takes the form of collectively regulated access, there is no need for “formal” transferability within the group, since it exists *de facto* as soon as the group decides how it will harvest its community quota<sup>34</sup>. While this is not conducive to structural adjustment within the fleet, it should be noted that vessels may be transferred between POs. Consequently the overall level of this characteristic is relatively low (ranked 3 on the scale).

*Divisibility:* In individual POs, rights of access to the resource cover specific amounts of fish which can be subdivided and aggregated. The level of this characteristic can thus be viewed as high in the short term, as it enables the community concerned to adapt to possible environmental or economic developments. However, at the individual level, the information available tends to show that access to community quota is granted in the form of a licence which, by definition, is not divisible. This restricts the “long-term” divisibility of the right and hence the scope for adjustment on the part of individual members. This characteristic may accordingly be viewed as high but limited (ranked 4 on the scale).

*Flexibility:* By and large, flexibility at the individual level is restricted by decisions on authorised fishing periods (180 fishing days excluding weekends) or the setting of daily fishing quotas. However, it is worth noting that these strict measures are based on “self-discipline”, since decisions are taken collectively. The degree of “collective flexibility” can therefore be viewed as relatively high, as fishers are free (subject to some general limitations), to define how they will harvest the fishing grounds to which they have access (ranked 4 on the scale).

*Synthesis:* It has been estimated that the relatively high levels of exclusivity, duration and enforceability curb the incentives to “race for fish” and encourage the industry to restrict its fishing effort depending on the status of the resource in order to conserve stocks and stabilise catches. One advantage of the joint management of community quotas is that it regulates the market by limiting daily catch sizes, thereby avoiding discards and withdrawals. Portugal’s community quota system (CQ) is illustrated in Figure II.10.

### *Individual quotas*

An individual quota system is used in Portugal for the deep-sea fisheries covered by regional fisheries organisations (RFOs). In 1992, individual quotas per vessel were set for the first time as a means of regulating the distant-water fleet in the North Atlantic (NAFO

34 See note 22. In practice, it is as if each member of the group were given an individual share of the quota and then decided to exchange it freely in order to derive the greatest possible benefit from their annual fishing right. Seen in this perspective, optimising individual benefits depends on first optimising collective benefits.



and Spitzberg). Portuguese quotas are allocated to individual vessels for various species in the NAFO, NEAFC, Norway and Spitzberg fisheries, but are confined to swordfish in the North Atlantic under the ICCAT regime.

As Portugal is a Member of the EU, individual quotas are generally defined as follows:

- a. TACs are defined within each RPO,
- b. EU quotas are set,
- c. EU quotas are allocated to the relevant Member States,
- d. The Portuguese quota is allocated using various methods.

Under the NAFO regime, annual quotas are allocated using a formula (percentage of the overall Portuguese quota) based on economic criteria initially agreed upon by the authorities and ship-owners associations. The formula is permanent but subject to adjustment. However, the annual quotas do not belong to vessels or owners and may be cut or withdrawn by the authorities at any time.

Under the ICCAT regime (i.e. for swordfish), the quotas are permanent and were initially allocated on the basis of catch history<sup>35</sup>.

In spite of differences across the RPOs and species concerned, the leading characteristics of Portugal's individual quota system (IQ) can be described as follows:

*Exclusivity:* participants in the IQ regime are allocated a specific share of the quota awarded to the zone/fleet. By directly granting the right to catch a specific amount of fish, IQs generally give holders relatively high exclusivity. Provided that quotas are not used competitively, the level of this characteristic can be viewed as high (ranked 5 on the scale).

*Duration:* The quotas are allocated using a formula that is usually permanent (see above). The level of this characteristic can therefore be viewed as high (ranked 5 on the scale).

*Quality of title:* This varies across RPOs. In all except ICCAT, however, the quotas can in theory be cut or withdrawn by the authorities at any time. This generates great uncertainty as to the permanency of fishing rights (risk of pre-emption by the State). And, as is often the case with RPOs, the quotas allocated to a country may be heavily contingent upon external factors (such as the arrival of a new member). Finally, the problems encountered by a large number of RPOs in combating IUU fishing (OECD, 2005) tend to limit enforceability in the relevant fisheries. Consequently, the overall level for this characteristic can be viewed as relatively low (ranked 2 on the scale).

*Transferability:* The individual quotas allocated by the authorities are transferable between vessels solely in the course of the campaign, and with the prior authorisation of the authorities subject to a formal declaration by the owners concerned. By and large, these exchanges do not give rise to financial transactions between private ship-owners and should accordingly be viewed more as reciprocal exchanges for the duration of the fishing campaign. Overall, the level for this characteristic can therefore be viewed as relatively low (ranked 3 on the scale).

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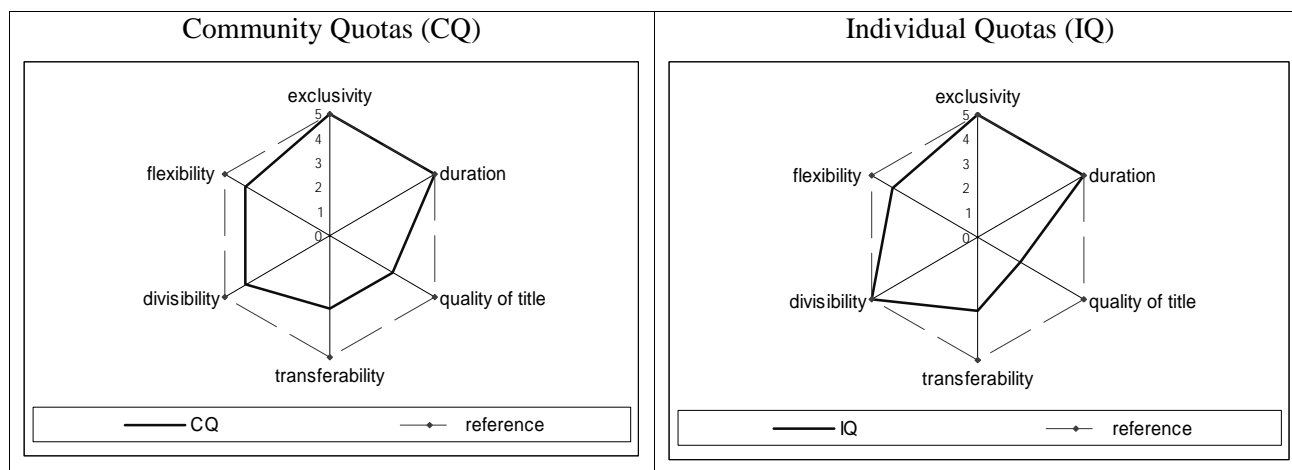
35 Quotas for this species were also allocated to vessels affected by the end of the fisheries agreement with Morocco.

*Divisibility:* as the information available appears to indicate that IQs can, in the short-term, be subdivided and aggregated, the level of this characteristic can be said to be high (ranked 5 on the scale).

*Flexibility:* Portuguese vessels operating in fisheries run by RPOs are subject to the prevailing technical regulations. While this can limit their flexibility, it is important to note that, by authorising exchanges, this instrument should in principle exceed “normal” IQ flexibility. The level of this characteristic can therefore be viewed as relatively high (ranked 4 on the scale).

*Synthesis:* by affording a relatively high level of exclusivity, divisibility and flexibility, the IQ system can promote the efficient use of fishing capacity. In particular, this instrument enables fishers to plan their activities over the year and facilitates short-term adjustment to unforeseeable fluctuations. However, the limited quality of title and the absence of long-term transferability are not conducive to structural adjustment in the fleet. The situation in Portugal with regard to IQs is illustrated in Figure II.10.

**Figure II.10. Characteristics of Community and Individual Quota Systems in Portugal**



### II.3. Norway<sup>36</sup>

#### *Technical measures to maintain fish stocks productivity*

To maintain stocks' productive and reproductive capacity, Total Allowable Catch (TAC) represents the cornerstone of the management system. In addition to the regulation of minimum fish size, minimum mesh size and bycatch rules, the most important instruments to secure a sound management of marine resources are as follows: the discard ban, the closure of fishing grounds with too high intermixture of undersized fish and the requirement that a vessel has to change fishing grounds if the intermixture of undersized fish exceed permitted levels. Another important measure is the use of catch sorting devices, *i.e.* grids.

36 See country submission that is available on the public OECD Fisheries web site [www.oecd.org/agr/fish](http://www.oecd.org/agr/fish) and the Norwegian Case Study in Chapter 7 of this publication for further details.

### *Market-like instruments to regulate access*

Three types of market-like instruments are used, in combination, to regulate access to the resource. They are, namely, limited transferable licences (LTLs), individual quotas (IQs) and vessel catch limits (VCs). It is important to note that the latter instrument is only applicable to a marginal part of the economically important share of the Norwegian fishing industry. It is primarily described in this document for sharing information on how a given market-like instrument (here VC) can be designed to adjust better to fishing constraints.

Norwegian fisheries are regulated through annual sharing of the Norwegian TACs amongst the different groups and amongst the participating vessels. For some fisheries the group quotas are divided equally amongst the vessels, while for other fisheries the vessel quotas are differentiated by vessel-length, tonnage or other technical criteria. All major stocks are encompassed in the system, and access rights are defined for most of the fleet segments (e.g., only 6% of the TAC for cod was regulated in 2004 with a competitive open access quota). As an illustration, the allocation mechanism for the cod fishery can be summarised as follows.

First, the TAC is divided between the offshore fleet and the coastal fleet along a medium/long-term allocation key (the current allocation key is defined for six years). Within the offshore fleet, the share is then distributed among participants on the basis of fishing effort units. This leads to the so-called individual vessel quotas (IVQ). Within the inshore fleet, the share is first divided between 3 groups (also based on the allocation key). The main coastal fleet, which received 55% of the total cod quota, is divided in four length-groups (or fleet segments), each group being allocated a quota according to historical share. For two groups (15-21m and 21-28m), individual (vessel) quotas (IVQs) are attributed among participants on the basis of vessel length. For the two other groups (below 10m and 10-15m), vessel catch limits (VCs) are attributed among participants on the basis of vessel length.

In addition to these standard market-like instruments, innovative transferability mechanisms are also available for specific fleet segments. These three systems, designed to reduce overcapacity, are<sup>37</sup>:

- The Unit Quota System (UQS) for offshore vessels: The system allows the owner of two vessels to transfer the quota of one vessel to another. The owner of a vessel will then control more than one quota for a period of 13 years if the vessel withdrawn from the fishing fleet is sold, and for 18 years if the vessel is scrapped— the latter to contribute to the reduction of worldwide over-capacity<sup>38</sup>. In practice, the logic underlying the transfer is the following. When the owner of vessel A buy vessel B, he indeed buy the fishing effort unit of the vessel B, which gives him access to a greater share of the group quota (during 13 or 18 years).
- The Structural Quota System (SQS) for 15-28m coastal vessels: This new scheme, introduced in 2004, enables the owner of two vessels to transfer quota from one vessel to another if one vessel is scrapped. Twenty per cent of the quota

37 See the Norwegian Case Study in Chapter 7 for further details.

38 So far the unit quota system has been implemented for the offshore fishing fleet longer than 28 meters. One group, the longliners, has been reduced from 98 to 47 vessels since the scheme was introduced in July 2000. The number of cod trawlers and purse seiners has also been significantly reduced in recent years.

attached to the scrapped vessel remains in the group the vessel was withdrawn from, while 80% of the quota is held for an unlimited period by the buyer.

- The Quota Exchange System (QES) for vessels less than 28 meters: This system allows two vessel owners within either group to team-up, fishing both quotas on one vessel for three out of five years<sup>39</sup>.

When used, these mechanisms make IQs and VCs schemes relatively similar to some ITQ systems. Table II.2. shows how the various market-like instruments apply to each fleet segment.

**Table II.2. Market-like Instruments by Main Groups of Vessels, 2004**

Reference market-like instruments	LTLs	LTLs	IQs	IQs	IQs	VCs
Denomination and variants	Licences	Annual permits	IVQ+ UQS	IVQ+ SQS	IVQ+QES	VCs + QES
Trawlers (182)	X		X			
Industrial trawler (112)	X		X			
Purse seiners (88)	X		X			
Large longliners (47)		X	X			
Coastal vessels - 15-28m (532)		X		X	X	
Coastal vessels - 0-15m (1909)		X				X

Source: See Chapter 7, Case Study of Norway.

### *Limited transferable licences (LTLs)*

*Exclusivity:* Licences and annual permits are implemented for regulating the number of vessels that can join the various fisheries. As both are stock and gear specific, these instruments are expected to provide a relatively exclusive access to the resource. For large fisheries (e.g. more than 2 500 annual permits for cod/saithe/haddock were issued in 2002), exclusivity can in principle be attenuated. Yet, high market values for some licences and permits (e.g. for cod) suggest that the feeling of exclusivity may remain important. While further investigation may be needed on this issue, it is proposed to consider the characteristic as relatively high (ranked 4 on the scale).

*Duration:* The theoretical difference between licences and permits is that licences are granted for an unlimited time-span, while fishing permits are in principle limited to one year. In practice however, annual permits are renewed indefinitely, so as the level of the characteristic is high in both cases (ranked 5 on the scale).

*Quality of the title:* Available information suggests that both security and enforceability are important, so as the level of the characteristic is considered as high (ranked 5 on the scale).

39 Due to political issues, the QES was at first only tested in selected coastal counties. Fishers in other counties soon saw the benefits of the QES, and asked for access to the system as well. Consequently it was introduced nation wide in April 2004, after a three-month trial period. The purpose of these arrangements was to improve vessel profitability and, in the long run, enhance incentives to reduce fleet capacity.

*Transferability:* Both licences and annual permits are implicitly transferable together with the vessel. Available information yet suggests that some restriction are in place to avoid geographical concentration of licences and annual permits, so as the overall level of the characteristic may be considered as high but limited (ranked 3 on the scale)<sup>40</sup>.

*Divisibility:* licences and annual permits are not divisible, so the level of the characteristic is low (ranked 0 on the scale).

*Flexibility:* licences and annual permits are often supplemented by technical measures that restrict the scope of decision, so the characteristic can be considered as relatively weak (ranked 3 on the scale).

*Synthesis:* This instrument is expected to facilitate the efficient use of existing access right, as less efficient fishers may have interest to sell licences and permits to more efficient ones. By providing relatively durable and secure exclusivity, it is also expected to allow for appropriate fleet adjustment. The Norwegian LTLs experience is illustrated in Figure II.11.

#### *Individual quotas (IQs): “IQ-plus systems”*

As noted above, individual quotas (IQs) are allocated to vessels belonging to the offshore fleet and to coastal vessels above 15 meters. As standard IQs are supplemented by UQS, SQS and QES systems, the implications on IQs characteristics are addressed below.

*Exclusivity:* IQs provide holders with a fixed portion of the group quota. As the sum of the allocated IQs equals the group quota, the level of the characteristic is high (ranked 5 on the scale).

*Duration:* In principle, I(V)Qs are allocated each year. The explicit duration may be considered as limited, which suggests giving the characteristic a relatively low value (ranked 2 on the scale). In practice however, available information suggests that the time-span of the access right is perceived as important. The reason of this apparent paradox may be the following. IQs are based on fishing effort units, and effort units are attached to the licence whose duration is high; implicitly, the level of the characteristic may be considered high (ranked 5 on the scale).

UQS, SQS and QES systems have different implications regarding the duration of IQs obtained after trade:

- When an IQ holder used the UQS system, he holds the extra quota either for 13 or 18 years (ranked 4 on the scale).
- When an IQ holder used the SQS system, he holds 80% of the extra IQs for an unlimited period (ranked 5 on the scale).
- When an IQ holder used the QES system, he holds the extra quota for one year, but for a maximum of three years out of five years (ranked 2 on the scale).

*Quality of the title:* As noted in the Norwegian case study, the portion of the group quota allocated to each vessel is “more or less guaranteed. As in addition the Norwegian control system secures that every catch of an individual species is registered and settled

40 Available information suggests that tradability gives an explicit value to the licence.

against the quota for a particular stock, this suggests that the level of the characteristic can be considered as high (ranked 5 on the scale).

*Transferability:* In principle, IQs alone are not transferable. What is transferable is the vessel with the licence that serves as the basis of IQs allocation, so the level of the characteristic can be considered as low (ranked 0 on the scale). To overcome this situation, UQS, SQS and QES systems have been introduced. In addition, the system reduces active fishing capacity.

- UQS: For transfers of quotas to be possible under this scheme, a fisher (or fisher company) needs to own two vessels. In addition, limitations on the use of UQS have been made to avoid geographical concentration of licences. Vessels can only be merged with vessels that hold a license in the same fishery. The level of this characteristic can be considered to be rather weak (ranked 2 on the scale).
- SQS: for transfers of quotas to be possible under this scheme, a fisher (or fishing company) needs to own two vessels. In addition, limitations on the use of SQS have been made to avoid geographical concentration of annual permits. To avoid increased capacity caused by larger vessels length group limitations also apply to the SQS, which means that quotas from vessels in one vessel group can only be merged to quotas of vessels within the same vessel group<sup>41</sup>. The level of this characteristic can be considered to be rather weak (ranked 2 on the scale).
- QES: Under the QES system, trade of quotas is allowed between owners. Yet, in addition to the temporal constraints of this system, restrictions are also set on geographical and length groups' criteria; the level of the characteristic can be considered as moderate (ranked 3 on the scale).

*Divisibility:* In principle, IQs are not divisible, so the level of the characteristic can be considered as low (ranked 0 on the scale). UQS, SQS and QES systems modify this general feature:

- UQS: In principle, the extra quota obtained by the owner/buyer through this system is not divisible (as the remaining vessel is allocated the entire quota of the scrapped vessel). In practice however, if a fisher (or a fishing company) owns several vessels, the quota of the withdrawn vessel can be shared among all remaining vessels. This implies that divisibility is possible to a certain extent. When UQS is used (i.e. in a long term perspective), the level of the characteristic can be considered per se as relatively high, but limited (ranked 4 on the scale).
- SQS: This system implies some divisibility, as the owner/buyer receives 80% of the decommissioned vessel's quota. As with UQS, when a fisher owns several vessels, these 80% can also be shared among all remaining vessels; the level of the characteristic is considered as relatively high, but limited (ranked 4 on the scale).
- QES: Under this system, two a more owners can cooperate to pool and share different quotas. As aggregation and divisibility seems to be fully possible, the level of the characteristic is considered as high (ranked 5 on the scale)<sup>42</sup>.

41 There are two vessel groups, 15 – 21 meter and 21 – 28 meters.

42 In principle, if one vessel has started fishing on one quota, this vessel cannot transfer the remaining quota to another vessel. This suggests that divisibility may be attenuated. However, as a vessel owner can still sell his or hers quota to multiple buyers, it seems relevant to consider the level of the characteristic as high.

*Flexibility:* In principle, IQ holders have a relatively important scope in the way they can harvest their quotas. This can be attenuated in practice by the imposition of technical measures (in the cod fishery for example, in 2003, 25% of the group quota for 15-28m vessels must be caught after 1 September), so the level of the characteristic can be considered as relatively high but limited (ranked 4 on the scale).

*Synthesis:* Available information suggests that the Norwegian “standard” IQs system, by providing relatively high level of exclusivity and quality of the title can allow fishers to plan their fishing activities during the year. This is expected to prevent the race for fish. In association with relatively high level of implicit duration, this instrument might contribute to appropriate investment. Yet, the low level of transferability reduces both short term adaptation and long term fleet adjustment. To overcome this situation, UQS, SQS and QES systems have been implemented to explicitly allow for trade in quotas. The Norwegian IQ-plus systems experience is illustrated in Figure II.11.

- IQ+UQS: The purpose of this coupled system is to allow for relatively long term trade in quotas, in order to facilitate fleet adjustment. Compared to a “standard” buying of vessels/licences, the main interest of this system is to use the quotas calculated for two or three vessels with one vessel.
- IQ+SQS: The SQS system is relatively similar to the UQS system, so the expected outcomes are likely to be identical. The main difference concerns the duration, as 80% of the extra quota obtained under the SQS system is allocated for an unlimited period to the owner/buyer. As a result, this may further facilitate both investment decision and fleet adjustment.
- IQ+QES: As this scheme is time-limited, it can hardly contribute to the fleet adjustment. Yet, the coupled market-like instrument allows for short term adaptations to annual economic and environmental changes.

#### *Vessel catch limits (VCs): “VC-plus systems”*

Vessel catch limits (VCs) are used for coastal vessels below 15 meters, alone or in combination with Quota Exchange System (QES). Within this system, a maximum quota (VC) is allocated to each vessel annually. As mentioned above, this management regime is only applicable to a marginal part of the Norwegian fleet. It is primarily described here to share information.

*Exclusivity:* Each VC is “over-regulated”, and the sum of the allocated VCs is higher than the group quota. The Directorate of Fisheries gets consecutive information about landings, and closes the fishery when the total group quota is estimated to be caught. In such a situation, participants have no guarantee that they may catch their quota share. This attenuates exclusivity and is likely to encourage the race for fish; the level of the characteristic is considered to be relatively low (ranked 2 on the scale).

When VCs are coupled with QES, the situation may slightly change. QES system allows two or more fishers to cooperate by pooling and sharing quotas. Such a system can improve exclusivity by pooling the risks. The greater the cooperation, the higher is individual exclusivity. Yet, due to the size of the Norwegian coastal fleet, the level of the characteristic can still be considered as relatively limited (ranked 3 on the scale).

*Duration:* VCs are allocated annually. The explicit duration is subsequently relatively low (ranked 2 on the scale). Yet, due to the renewal process, available information suggests that that the time-span of the access right is perceived as important (see above

IQs); implicitly, the level of the characteristic may be considered high (ranked 5 on the scale).

The QES system can increase the explicit time-span of the access right, as this scheme can be used for three out of five years; the explicit level of the characteristic can be considered as relatively weak (ranked 3 on the scale).

*Quality of the title:* As noted in the Norwegian case study, the portion of the group quota allocated to each vessel is “more or less guaranteed”. As in addition the Norwegian control system secures that every catch of an individual species is registered and settled against the quota for a particular stock, this suggests that the level of the characteristic can be considered as high (ranked 5 on the scale).

*Transferability:* In principle, VCs alone are not transferable. What is transferable is the licence that serves as the basis of VCs allocation, so the level of the characteristic can be considered as low (ranked 0 on the scale).

To overcome this situation, QES have been implemented to explicitly allow for trade in quotas (*c.f.* above IQs), so the level of the characteristic can be considered as relatively weak (ranked 3 on the scale).

*Divisibility:* In principle, VCs are not divisible, so the level of the characteristic can be considered as low (ranked 0 on the scale). QES however are likely to modify this general feature. Under this system, two or more owners can cooperate to pool and share different quotas. As aggregation and divisibility seems to be fully possible, the level of the characteristic is considered as high (ranked 5 on the scale).

*Flexibility:* In principle, VCs holders have a relatively important scope in the way they can harvest their maximum quotas. This can be attenuated in practice by the imposition of technical measures, so the level of the characteristic can be considered as relatively high but limited (ranked 4 on the scale).

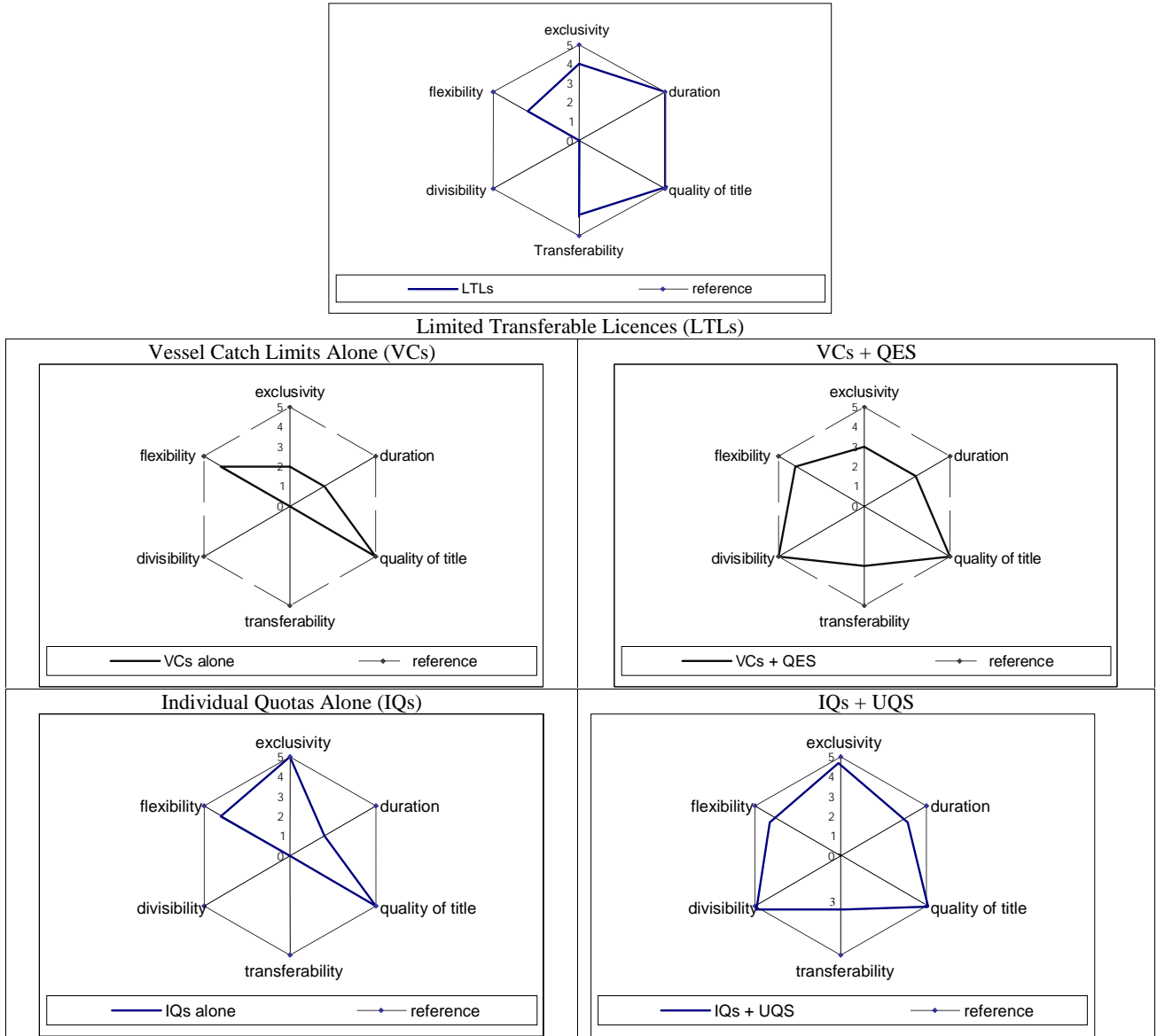
*Synthesis:* By providing some exclusivity, the standard Norwegian VCs system is expected to contain the race for fish to a certain extent. Yet, “over-regulation” may limit this expectation. By inciting participants to cooperate, QES can improve exclusivity and reduce competition. Due to time-limitations, the contribution of this scheme to fleet adjustment may be limited<sup>43</sup>. Yet, this scheme can facilitate the efficient use of fishing by permitting temporal capacity reduction. The Norwegian VCs system is illustrated in Figure II.11.

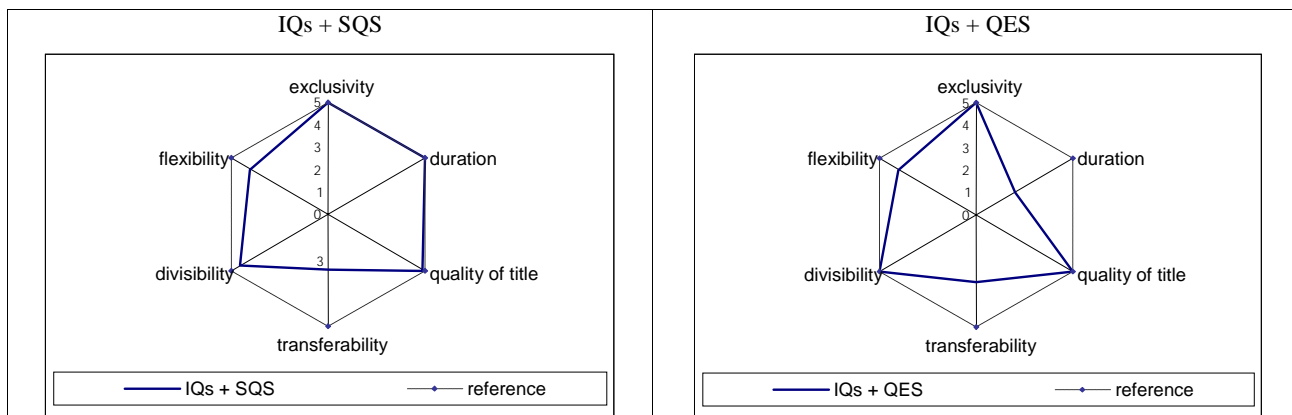
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43 It is important to note that a specific decommissioning scheme has been implemented to facilitate the adjustment of these fleet segments. The scheme is partly founded by the industry.



Figure II.11. Characteristics of the Norwegian LTLs, VCs and IQs Variants Systems





## II.4. Japan<sup>44</sup>

### *Technical measures to maintain fish stocks productivity*

In Japan, one of the main instruments used to maintain fish stocks productivity is a total allowable catch (TAC) system. The TAC system was implemented by the government in 1997. It currently covers seven major species (sardine, mackerel, jack mackerel, saury, walleye pollock, common squid, and snow crab), covering a production of around 1.3 million tonnes (i.e. 22% of the total production) in 2002. Priorities for the selection of species to be included in the TAC system are (i) species that have high commercial value with tangible harvest levels nationwide, (ii) species that needs urgent resource conservation measures, or (iii) species that are potentially targeted by foreign fishing operations. Concerning fish stocks whose abundance estimation is difficult to calculate due to inherent fluctuations of the resource level, a Total Allowable Effort (TAE) system is used to ensure the sustainable yield of stocks. In addition, several technical measures are associated with fishing licences to maintain fish stocks productivity, such as limitations on the size of the vessels, fishing areas, fishing seasons, base port, gear use, and fishing methods.

### *Market-like instruments to regulate access*

At least two types of market-like instruments are used in Japan to regulate access to fish stocks, namely limited, non-transferable licences (LLs) for offshore and distant waters fisheries and coastal right-based management with various forms of community quota system (CQ). In 2000, the latter represented 44% of the fisheries production in quantity but 62% in value, as well as 85% of all Japanese fishers.

The following describes one form of fishery management regime in coastal area so-called “community right-based pooling system”, combining a community quota system and a specific organisation which consists in pooling the outcomes of collective management system (i.e. the sales). It should be noted that pooling systems can also apply to (prefectural) governor-licenced offshore fisheries. Key features of both schemes are presented below.

44 See country submission available on the OECD Fisheries public website [www.oecd.org/agr/fish](http://www.oecd.org/agr/fish) and the Japanese case study in chapter 5 of this publication for further details.

### *Overview of coastal right-based fishery*

Community-based fishery management has been used in Japanese coastal areas for a long time. Fishery management in coastal areas is based on traditional local fishery rights: a group of fishermen (fishery cooperative associations) traditionally assumes exclusive rights for operating certain fisheries and, thus, all the responsibility for long-term sustainability of the resources. Although it does not provide an exclusive right per se over sea areas, a right to engage in fisheries is provided under limited conditions with regard to the fishing season, species and fishing methods. There are three types of fishing rights (*Gyogyoken*):

- **Joint Fishery Right:** The first is the Joint Fisheries Right (*Kyodo-Gyogyoken*). The fishery management system is originally based on common ownership of local fishing grounds. The license is issued only to fishery cooperatives, in which at least two-thirds of the members are engaged in coastal fisheries for at least 90 days in the areas. Members of the cooperative use the license on an individual basis.
- **Demarcated Fishery Right:** The second type of fishery rights is the Demarcated Fishery Right (*Kukaku-Gyogyoken*). This is the right to engage in aquaculture. Fishery cooperatives have the first priority of access to the special demarcated fishing rights (however, the operating entity of the fishery should not be the fishery cooperatives, but their members).
- **Set-net Fishery Right:** The last of the three fishery rights is the Set-Net Fishery Right (*Teichi-Gyogyoken*) used for set-net fisheries targeting for salmon, yellow tail, or other species.

Detailed regulations for coastal fisheries are implemented through local fishery cooperatives. The total number of fishery cooperative associations is approximately 1 500 along the coast of Japan. The fishery regulations introduced by the fishery cooperatives are based on the management policy set forth by the government.

### *The pooling system*

The so-called “pooling system” has been used in Japan since the 1980’s, when fishers started a new form of fishery operation to resolve a crisis. It is a unique form of collaborative fishery operation established on the initiative of the fishermen themselves. The term “pooling system” was created by fishers. Although no agreed definition of the term exists so far, it can be roughly defined as “the fishery operation system in which the value of landed fish of individual fishermen is pooled and redistributed to individual fishermen based on certain criteria.” It does not usually cover a fishery management system itself, but rather it mainly covers a redistribution system to ensure a collective use of fishing grounds. It can be interpreted that the pooling system is based on the allocation of sales, rather than allocating the catch quota to individual fishers.

The greatest numbers of pooling systems are found in shellfish and seaweed harvesting fisheries, followed by bottom trawl fisheries (mainly small-type trawl fisheries) and gillnet fisheries. This tendency has been rather stable for the past decade. Common features of these types of fisheries are: (i) they target sedentary living resources, (ii) good fishing grounds are limited, and (iii) concentration of and competition among fishing vessels can easily occur. Around 17% of the fishery management organisations employed the pooling system in 1998.

Some varieties exist among pooling systems. In some cases, freedom of operation of individual fishermen is strictly limited while, in other cases, the binding power of a group is lenient and fishermen have a relatively high degree of freedom for fishery operations. Also, in some cases, fishing gear and vessels are owned by individual members, while in other cases they are partially or wholly of collective ownership. As for distribution methods, simple uniform distribution is employed in some cases (50-55%), while inclining distribution based on certain criteria is employed in other cases (40-45%).

### *The Community Right-based Pooling system (CQ)*

This section presents the general features of a community right-based (joint fishery right) pooling system, although it should be noted that some features may vary slightly from case to case. In general, a three-layer structure applies. The first is the regulatory measures under the prefecture's fisheries adjustment rules. The second is the system for use and management of fishing grounds by the Federation. The last one is the operation management system built by each fishery's cooperative association. Under the prefecture's fishery rules, fishing is allowed all year round, but, under the Federation's rules, a closed season of two months or longer may be established.

*Exclusivity:* This fishery management system is based on common ownership of local fishing grounds. Fisheries cooperative associations have the exclusive right to use joint fishery-right fishing ground. The level of the characteristic is high (ranked 5 on the scale).

*Duration:* In the case of joint fishery-right, the license is effective for 10 years. The level of the characteristic can be considered as rather high (ranked 4 on the scale).

*Quality of the title:* Rights are authorized by prefectural governments through the licenses. The governors may revoke or revise the fishery rights in the light of public interests. In this case, compensation shall be paid. The security of the title is thus high. As for enforceability, the combination of two elements is expected to result in high compliance. First, the fact that all the responsibility for long-term sustainability of the resources is devolved to a group of fishers should increase the "collective control" of the community. Second, the way the pooling system works reduces to a large extent the incentives for non-compliance, as all participants would be affected by unsustainable behaviours. The overall level of the characteristic can be considered as high (ranked 5 on the scale).

*Transferability:* In the long run, the individual fishing right (*i.e.* the licence) is in principle non-transferable. Leasing of the rights is prohibited and there are restrictions on the creation of mortgage rights. Yet, some exceptions may take place in practice, in particular to allow transfers within a same family. In addition, it should be noted that in the short run, there is no distribution (or individual allocation) of the community quota among members. There is thus no need for "formal" transferability within the group, as transferability *de facto* takes place when deciding how to harvest the community quota<sup>45</sup>. As a result, the level of the characteristic can be considered as moderate (ranked 3 on the scale).

*Divisibility:* At a community level, the right to access the resource concerns a quantity of fish that can be divided and aggregated. The level of the characteristic can

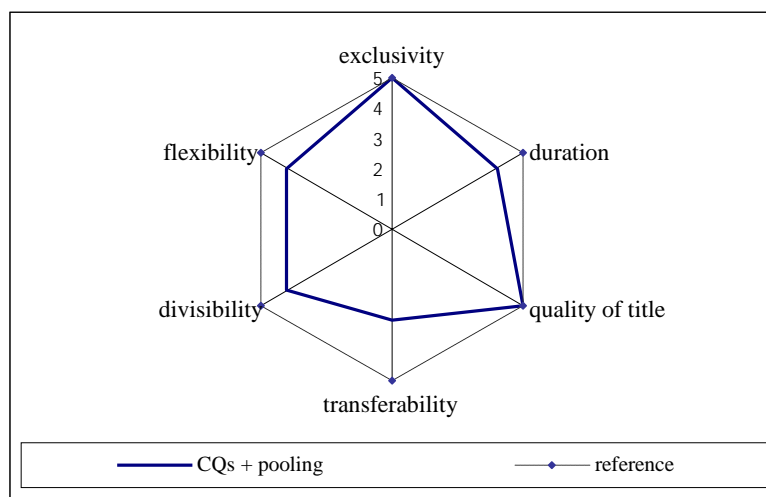
45 See footnote 20. In practice, everything takes place just as if the members of the pool were allocated an individual share of the quota and subsequently decided to trade it freely in order to maximise their annual privilege. In this context, maximisation of individual profit derives from the maximisation of collective profit.

thus be considered as high in the short term, allowing the community to adapt to environmental and economic changes. Yet, at the individual fisher level, available information suggests that the right to access the community pooling quota concerns the licence, which is not divisible per se. This restricts the “long term” divisibility of the right, and subsequently the individual ability to adjust. As a result, the level of the characteristic can be considered as high but limited (ranked 4 on the scale).

*Flexibility:* In general, numerous regulations limit the freedom of operation of individual fishermen, so as individual flexibility is limited<sup>46</sup>. However, it should be noted that those stringent measures are “self-restrictive”, *i.e.* decided collectively by fishers. A consent through a two-third majority from members of the cooperative (coastal fishers in the area concerned) is required to institute, amend or abolish the rules for implementation of fishing rights. In this case, it can be considered that the “collective flexibility” is rather high, as fishers are free (with respect to some general limitations) to decide how they want harvest their ground (ranked 4 on the scale).

*Synthesis:* Rather high levels of exclusivity, duration and quality of the title incite fishers to limit fishing effort to resource condition, in order to ensure the effective conservation of resources and stabilisation of catch (*i.e.* that long-term benefits would be available for the community). Collective decision-process and the pooling system restrict both conflicts and “race-for-fish” behaviours. Furthermore, when simple uniform distribution is employed, the pooling system should encourage fishers to reduce their fishing capacity and fishing costs. The Japanese variant of the community quota system (CQ) is illustrated in Figure II.12.

**Figure II.12. Characteristics of the Japanese Community Quota Pooling System**



46 In the case of the hard clam fisheries in Kashima-nada for example, a strict one-area-four-group rotation system prevails, limiting the number of fishing days and catch volume per vessels and per area.

## II.5. Canada<sup>47</sup>

### *Technical measures to maintain fish stocks productivity*

In order to maintain stocks' productive and reproductive capacity, a wide range of measures are used simultaneously (see Annex 1 of the Canadian submission). Total Allowable Catch (TAC), usually subdivided at area or fleet levels, are used for most species and are in place in 76 fisheries (out of the 88 fisheries described). There are a few major exceptions in which fisheries are managed with the objective of meeting escapement targets in terms of the number of adult fish returning to the spawning grounds (Pacific salmon), or increasing the survival rate of the female population (Pacific prawn and Atlantic lobster). In addition, limited-entry licensing with vessel and gear restrictions apply to all fisheries, while technical measures such as restrictions on mesh size or actual fish size and time/area closures apply respectively to 81 and 84 fisheries (out of 88).

### *Market-like instruments to regulate access*

Five types of market-like instruments are used in Canada to regulate access to the resource. Out of the 88 fisheries subdivided at area or fleet levels, individual quotas (IQs) are used in 22 fisheries, individual transferable quotas (ITQs) or individual vessel quotas (IVQs) in 26 fisheries, Enterprise Allocations (EAs) in 6 fisheries, community quotas (CQs) in 10 fisheries and vessels catch limits (VCs) in 44 fisheries. In general, rights-based systems<sup>48</sup> have gained increasing acceptance in Canada. In 2000, out of 67 850 commercial licences/permits issued in main marine fisheries, at least 12 729 were under a variety of rights-based systems, representing 19% of all major species licences/permits issued. Further, these rights-based fisheries registered a total landed value of CAD 1.2 billion, accounting for at least 56% of the total landed value (CAD 2.1 billion) reported in main marine fisheries.

Due to the wide use of market-like instruments in Canada, the following description focuses on four selected cases in order (1) to identify the key characteristics of each instrument, (2) to reflect the diversity of instruments used and (3) to underline some specific and innovative features.

#### *Individual Vessel Quotas (IVQ)*

The Pacific groundfish fishery involves over 50 species of fish, the majority of which are caught by bottom and mid-water trawl gear. The main species landed by trawl gear vessels include rockfish, Pacific hake, sole, pollock, dogfish and lingcod. The trawl fishery is a complex mixed-species fishery with as many as 15 different species caught in a single trawl. Groundfish are also harvested in commercial, recreational and First Nations' fisheries by traps and by hook and line gear. The landed value of the Pacific groundfish trawl fishery amounted to around CAD 49 million in 2000.

Since 1997, the groundfish trawl fishery has been managed by area and species specific fully transferable Individual Vessel Quotas (IVQ), which were determined according to vessel length and catch history.

47 See country submission on Canada for further details on the OECD Fisheries public web site: [www.oecd.org/agr/fish](http://www.oecd.org/agr/fish)

48 The term "right-based system" here covers IQ, ITQ/IVQ, EA and community-based quota systems.

*Exclusivity:* Fishing vessels are allocated a percentage share of the area/fleet quotas, which are then translated annually into actual quantities as a condition to licence based on current TACs. By attributing a direct right to catch a given quantity of fish, IVQs provide holders of the right with a relatively strong exclusivity. While the exclusivity might be attenuated by the fact that groundfish stocks are shared with other users, regular consultations between administration and representatives from the various stakeholders are conducted to avoid it. The level of the characteristic can be considered as high (ranked 5 on the scale).

*Duration:* An individual vessel quota is attached to a licence as a condition to licence. In principle, licences are annual privileges of access to the resource which must be renewed every year. In practice, licences are renewed as long as all eligibility criteria are met and licence fee paid, so the duration is being considered as important although implicit. In this context, the security of IQs and the permanent transferability of ITQs are merely affected, and the level of the characteristic can be considered as high but limited to a certain extent (ranked 4 on the scale).

*Quality of the title:* Available information suggests that the security of the title is important. For instance, to reduce risk related to the multi-users nature of the fishery, an agreement between the groundfish trawl and sablefish commercial fishing sectors on a pilot program that allows temporary reallocations of IVQs between these two sectors has been in place since 2002. As for enforceability, the fishery is subject to an industry-funded full-scale dockside monitoring program (DMP) at a limited number of designated landing ports and at-sea-observer coverage. In addition, the Canadian chapter stresses the fact that EA/IQ management usually requires consensus within the membership of a fishery, which affect positively both the security and enforceability of the title. The overall level of the characteristic can be considered as high (ranked 5 on the scale).

*Transferability:* Individual vessel quotas are fully transferable. Yet, overall individual species caps and total licence IVQ holdings caps have been set to inhibit excessive consolidation of IVQs. In addition, access by foreigners is restricted. As a result, transferability is high, but limited up to a point (ranked 4 on the scale).

*Divisibility:* Any fraction of an individual vessel quota may be divided, aggregated and transferred. The level of this characteristic is high (ranked 5 on the scale).

*Flexibility:* Some general technical measures apply to the groundfish trawl fishery. Yet, within these constraints, right holders are free to decide on how to use their quota (i.e. to adopt the least-cost way of using their quota). The level of this characteristic can be considered as high but limited (ranked 4 on the scale).

*Synthesis:* By providing high and rather high levels for all characteristics, the overall IVQ program has provided an opportunity for the industry to organize fleet and processing operations to make better use of catch and reduce at-sea releases. The Canadian IVQ system is illustrated in Figure II.13.

#### *Community Quotas (CQs):*

The Scotia-Fundy fixed gear fleet of vessels less than 45 ft. consists of over 2 500 licences and has adopted a community-based management (CBM) approach since 1996 as an alternative to individual quota systems. In 1996, the fixed-gear sector was initially divided into a series of community or geographic quota groups for cod, haddock and pollock stocks in the 4X5Y stock area. A quota was calculated for each group based on the average landings within the community using the average catch from 1986-1993. This

community management format was extended for a three-year trial period that began in 1997 where the fleet quota in 4X+5 was divided into seven geographic sub-allocations, based on the 1996 formula. The quota groups largely follow the county boundaries. Each of the different community management boards develops harvesting plans that generally include further quota divisions into three gear sector quotas for handline, longline and gillnet groups. Specific seasonal quotas are usually established for each of these quota groups, as are industry monitored trip limits. The landed value of this fishery amounted to around CAD 22 million in 2000.

*Exclusivity:* The multiple lays management system allocates a given amount of fish, subdivided at area and gear levels, to members of each community. Participants of a group know that outsiders are prevented to access the collective quota, which provides a rather high level of “external” exclusivity. To avoid the competitive use of the quota between members of a community (and resulting race for fish), the activity is in addition regulated by the community itself through seasonal and trip quotas. The level of the characteristic can be considered as high (ranked 5 on the scale).

*Duration:* To participate in a community quota scheme, fishers must have a licence. As annual licences are renewed rather automatically (see above), the level of the characteristic can be considered as high but limited (ranked 4 on the scale).

*Quality of the title:* As long as they belong to one community, right holders have access to the resource. Available information suggests that the security of the title is important. As for enforceability, industry monitored trip limits are expected to improve compliance. Yet, the resource exploited by Scotia-Fundy fixed gear fleet of vessels less than 45 ft. is shared with other fleets, which may affect the quality of control. The overall level of the characteristic can be considered as high but limited (ranked 4 on the scale).

*Transferability:* Community boards are permitted to trade quotas on a temporary basis at the community level. These measures have had the result of reducing the utilization of licences in these fleets, with some 700 licences actively engaged in the fishery at present. As available information suggests that trade between communities are restricted, the level of the characteristic can be considered as high but limited in the short term, allowing the community to adapt to environmental and economic changes. In a longer perspective however, it should be noted that the right to participate in a community quota system (i.e. the licence) is not transferable, which limits the availability of the fleet to adjust structurally. As a result, the overall level of the characteristic can be considered as moderate (ranked 3 on the scale).

*Divisibility:* At a community level, the right to access the resource concerns a quantity of fish that can be divided and aggregated. The level of the characteristic can thus be considered as high in the short term, also allowing the community to adapt to natural and economic fluctuation. Yet, at the individual fisher level, available information suggests that the right to access the community quota concerns the licence, which is not divisible per se. This restricts the “long term” divisibility of the right, and subsequently the individual ability to adjust. As a result, the level of the characteristic can be considered as high but limited (ranked 4 on the scale).

*Flexibility:* Specific seasonal quotas, trip limits and technical measures reduce the freedom of decision of each fisher about how to harvest its part of the collective quota. Yet, such decisions are taken collectively by fishers (or by the community board). It can be considered that the “collective flexibility” is rather high, as fishers are free (with



respect to some general limitations) to decide how they want to harvest their collective quota (ranked 4 on the scale).

**Synthesis:** By providing high or rather high levels of exclusivity, quality of the title, flexibility and temporary transferability, the community quota system allows for community solutions to problems in fish management and gives industry associations the opportunity to develop conservation harvesting plans that address seasonal fishing patterns and provide most benefit to their own groups. The Canadian CQ system is illustrated in Figure II.13.

*A variant of Community Quotas (CQs): The roe herring pooling system*

Pacific herring populations migrate in the fall from offshore feeding grounds to inshore spawning areas for spawning in the following spring. Since the early 1970s onward, a major roe herring and a small-scale spawn-on-kelp (SOK) fishery has occurred for short periods between mid-February to the end of April, just when herring spawn. This fishery was developed in response to the lucrative Japanese roe market. Purse seine and gillnet are gear used in harvesting roe. The landed value of this fishery amounted to around CAD 48 millions in 2000.

The roe herring fishery operates on a unique cooperative scheme. It is a short, intense fishery that extends over about six weeks from late February to early April, but openings in individual areas can be as short as a few days. It had seen many vessels on the grounds rushing for fish in a very short period. This inevitably led to unsustainable and unsafe fishing operations and an impossible policing problem. After implementing various management measures such as limited-entry licences and area licensing, DFO introduced a pooling system for seiners in 1998, and subsequently for gillnets in 1999. Pooling is a management tool whereby a group of vessels (licenses) will form a “pool”. Each pool has its own quota depending on the TAC for the area and the number of licenses included in the pool. A pool captain is appointed for each pool, who works on ground with a DFO resource manager to determine how many vessels will be allowed to fish at any one time. The net profits of the pool are then divided among the pool members.

**Exclusivity:** A share of the herring TAC is allocated to each pool. The exclusive “pool-quota” is subsequently harvested in a non-competitive way by members of the pool. The level of the characteristic is high (ranked 5 on the scale).

**Duration:** To participate in a pooling system, fishers must have a licence. As annual licences are renewed rather automatically (see above), the level of the characteristic can be considered as high but limited (ranked 4 on the scale).

**Quality of the title:** The system is designed in such a way that the security of the title is high. Regulation for instance stipulates that if a pool exceeds its quota, then arrangements should be made to have another pool in the licensed area take the excess. As for enforcement, all commercial landings are required to be checked at dockside under a DMP funded by the licence holders. In addition, the net profits of the pool are divided among the members, so the incentive for non-compliance within the group is reduced to zero. The level of the characteristic is high (ranked 5 on the scale).

**Transferability:** Within a pool system, there is no distribution (or individual allocation) of the pool-quota among members. There is thus no need for “formal” transferability between members of the group, as transferability *de facto* takes place when

deciding how to harvest the pool-quota<sup>49</sup>. In addition, a limited transferability exists between pools due to the requirement that, if a pool exceeds their quota, arrangements should be made to have another pool in the licensed area take the excess. Short term transferability can thus be considered as high, which allows fishers to adapt to economic and environmental changes. In a longer term perspective however, it should be noted that the individual privilege to access the resource (i.e. the licence) is not transferable, which limits the availability of the fleet to adjust structurally. As a result, the overall level of the characteristic can be considered as moderate (ranked 3 on the scale).

*Divisibility:* At the pool level, the right to access the resource concerns a quantity of fish that can be divided and aggregated, so the level of the characteristic can be considered as high in the short term, allowing the community to adapt to environmental and economic changes. Yet, as available information also suggests that “long term” divisibility is restricted to a certain extent (because being linked to the licence, see above), the overall level of the characteristic can be considered as high but limited (ranked 4 on the scale).

*Flexibility:* Fishing operations are organised by representatives from the pool and the administration. Individual flexibility is thus restricted. Yet, those stringent measures are “co-restrictive”, as fishers are free (with respect to some general limitations) to decide how they want to harvest their quota. The overall level of the characteristic can thus be as high but limited (ranked 4 on the scale).

*Synthesis:* By providing members of the pool with rather high levels for all characteristics, the pooling system has eliminated the race for fish and reduced overall operating cost within pools, reduced catch overages, and improved safety of vessels on the grounds. This also permits easier management of fishing effort on the grounds where large catches could be taken in very short periods of time. The Canadian pooling system is illustrated in Figure II.13.

*A hybrid system: Enterprise Allocation + community quota (EA/CQ) in the offshore northern shrimp fishery off eastern Newfoundland and Labrador*

The Canadian shrimp fishery is primarily based on the northern shrimp (or pink shrimp), one of several cold water species of shrimp found north of latitude 40° N in the Atlantic, Pacific and Arctic oceans. The Atlantic fishery has been managed in three broad areas: stocks off eastern Newfoundland and Labrador, stocks of the Gulf of St. Lawrence, and stocks on the Eastern Scotian Shelf.

The offshore northern shrimp fishery off eastern Newfoundland and Labrador is a capital intensive operation employing a fleet of modern freezer trawlers. It has been managed under an Enterprise Allocation system since 1987. EAs are based on an equal sharing arrangement among the participating licence holders for each of the northern shrimp fishing areas. The landed value of the offshore northern shrimp fishery amounted to around CAD 181 millions in 2000.

The number of offshore licences has been kept constant at seventeen since 1991 (i.e. which represents average revenue per licence of more than CAD 10 millions in 2000). The traditional offshore northern shrimp licence holders are represented by four

49 See footnote 20. In practice, everything takes place just as if the members of the pool were allocated an individual share of the quota and subsequently decided to trade it freely in order to maximise their annual privilege. In this context, maximisation of individual profit derives from the maximisation of collective profit.

organisations. The Canadian Association of Prawn Producers represents nine licence holders and the Northern Coalition represents six licence holders and the Labrador Inuit Development Corporation. The remaining two licence holders are not members of either of these organisations. The Northern Coalition licences are in effect community-based because its membership includes aboriginal, regional and cooperative based groups. The management system is thus hybrid, where a community participates in an EA regime (at the same level as any other participants) and secures a community quota for their constituents<sup>50</sup>. The following focuses on this specific situation.

*Exclusivity:* Each participant to the EA regime is allocated an even share of the area/fleet quotas. By attributing a direct right to catch a given quantity of fish, EAs in general provide holders of the right with a relatively strong exclusivity. In the case of the Northern Coalition, the resulting allocation is exploited by various stakeholders, including fishing communities. To avoid competitive behaviour within this group, EAs are further allocated to each stakeholder. Insofar as the community quotas are exploited in a non-competitive way, the overall level of the characteristic can be considered as high (ranked 5 on the scale).

*Duration:* To participate in the system, fishers must have a licence. As annual licences are renewed rather automatically (see above), the level of the characteristic can be considered as high but limited (ranked 4 on the scale).

*Quality of the title:* Available information suggests that the security of the title is important. This is reflected by the fact that the number of licences has been kept constant at seventeen since 1991. As for enforceability, there is full observer coverage and random dockside monitoring within the program. Yet, the Canadian chapter reports that highgrading continues to be an issue of enforcement concern. The overall level of the characteristic is thus high but limited (ranked 4 on the scale).

*Transferability:* Permanent transfers between enterprises are not allowed. Inter-enterprise transfers of EAs are permitted on a temporary basis within the fishing season and subject to DFO approval. The level of the characteristic can be considered as moderate (ranked 3 on the scale).

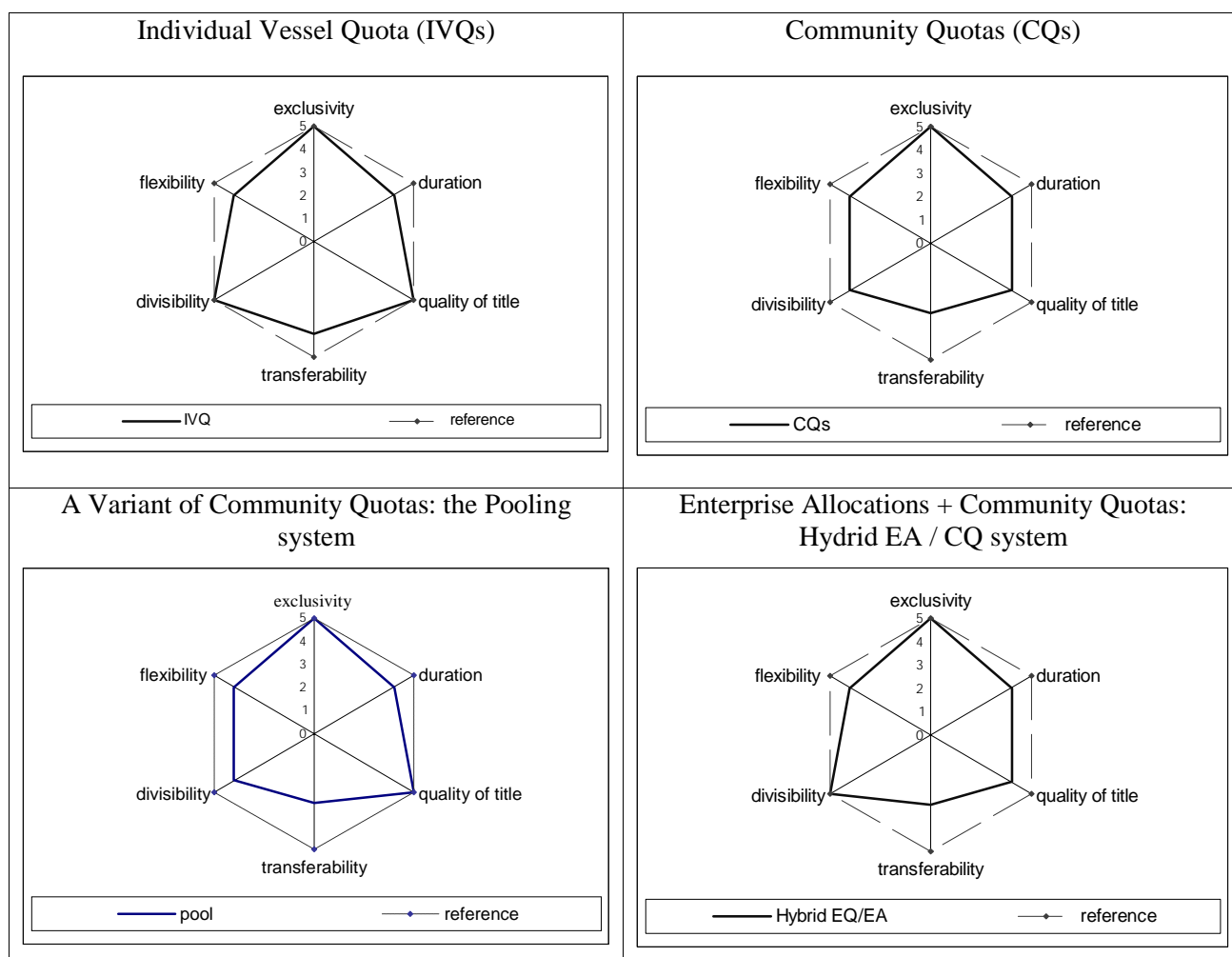
*Divisibility:* The privilege concerns access to a given quantity of shrimp, which can be divided, aggregated and - temporarily - transferred. The level of the characteristic is high (ranked 5 on the scale).

*Flexibility:* Some technical measures apply to the shrimp fishery, such as gear restrictions, minimum mesh size, and the use of an exclusion device known as the Nordmore grate to reduce groundfish by-catches. Beyond such general measures, EA holders are free in planning and conducting their fishing activities. The level of the characteristic can be considered as high but limited (ranked 4 on the scale).

*Synthesis:* The hybrid system gathers different users of a common resource, from a single company to members of a fishing community, under a unique scheme. Rather high levels of exclusivity, duration and quality of the title are expected to facilitate the adjustment of the fleet, although permanent transferability is not allowed. Rather high level of divisibility, flexibility and temporary transferability can facilitate the use of annual quotas. The Canadian pooling system is illustrated in Figure II.13.

50 Such a hybrid system also applies to the aboriginal commercial communal licences in a number of Gulf crab fisheries and many Pacific fisheries.

Figure II.13. Characteristics of the Canadian IVQ, CQ, Pooling and Hybrid EA/CQ Systems



## II.6. New Zealand<sup>51</sup>

### *Technical measures to maintain fish stocks productivity*

In New Zealand, most commercial fishing is managed under the Quota Management System (QMS). To maintain stocks' productive and reproductive capacity, two types of catch limits are at the heart of the system: the total allowable catch (TAC) and the total allowable commercial catch (TACC). The Minister first sets the TAC. From this the Minister quantifies the TACC for a particular fishing year, making allowance for recreational and Maori customary non-commercial fishing interests and all other sources of fishing. This includes the quantity required for research and an estimate of the amount taken illegally each year.

51 See country submission on New Zealand on the OECD Fisheries public web site [www.oecd.org/agr/fish](http://www.oecd.org/agr/fish) for further details.

The TAC represents the assessment of the total amount of fish that can be sustainably removed from a stock in any one year. It encompasses all extraction from the sea by all users. Except in limited cases<sup>52</sup> it must be set by the Minister of Fisheries with reference to the maximum sustainable yield (MSY) or the greatest yield that can be achieved over time while maintaining the stock's productive capacity. The stock might be fished down to MSY or rebuilt to a level that can produce MSY.

Key commercial species have been managed in the QMS since 1986. Since then, some additional species have been brought into the QMS and as from October 2004, 95 species are managed in the QMS (a further 15 species or species groups are being considered for QMS management from October 2005). The QMS now manages over 90% of the commercial fishery harvest.

Other sustainability measures include controls to avoid or mitigate bycatch of protected species such as albatross or Hooker sea lions. Technical measures, such as area closures and gear restrictions, are also used.

### ***Market-like instruments to regulate access: the QMS***

To regulate access to the resource, the TACC is divided into quota shares, which can be owned by individuals or companies<sup>53</sup>. Each quota share generates an Annual Catch Entitlement (ACE) at the beginning of each fishing year. ACEs therefore represent the amount of a particular species a fisher can physically catch in a particular fishing year. Both ACE and quota shares are freely tradable.

*Exclusivity:* Quota owners receive ACE commensurate with their ownership of quota shares in the TACC. Quota shares are multiplied by the TACC to give the quantity of ACE that each quota owner may use or sell. The system attributes quota owners with strong and exclusive rights to the resource. The comprehensiveness of the system contributes to reinforce the exclusivity by limiting the presence of potential “outsiders”. The level of exclusivity created by the QMS can be considered to be high (ranked 5 on the scale).

*Duration:* Quota shares are allocated in perpetuity once a stock enters the QMS. The level of duration created by the QMS can be considered to be high (ranked 5 on the scale).

*Quality of title:* Quota shares may be freely bought and sold and their ownership is recorded on a public registry. All catches and landings of the QMS stocks must be recorded and reported (regardless of whether ACE for that stock is owned by the fisher). The civil penalty regime (e.g., deemed values) discourage those that do not own ACE from catching the stock concerned and ensure catches are kept within ACE. Due to the export-led nature of the fishery and its geographical concentration, the level of enforceability is considered to be high. As ITQ are considered as permanent property-rights on the use of the resource, the level of sovereign risk is low, and the overall quality of title created by the QMS can be considered to be high (ranked 5 on the scale).

52 The exceptions are stocks whose biological characteristics mean MSY cannot be estimated (e.g. squid), enhanced stocks, and international stocks where New Zealand's catch limit is determined as part of an international agreement)

53 Overseas persons may own quota shares and annual catch entitlements, but they must first obtain consent from the Government.

*Transferability:* Quota shares may be freely bought and sold. Some restrictions are imposed on who may own quota shares and how much may be owned by any one entity or its associates. Overseas persons require specific consent if they wish to own quota shares (and ACE). Aggregation limits restrict how many quota shares any one entity and its associates may own (see Table below). Consent may be obtained for ownership of quota shares in excess of these limits. The catching right generated by quota shares (ACE) is not subject to aggregation limits. Despite these constraints on who may participate in quota share trading, there are no restrictions (other than normal contractual requirements) on the activity of trading in quota. Due to existing restriction, the level of the characteristic can be considered to be high, but limited (ranked 4 on the scale).

**Table II.3. Quota Share Aggregation Limits**

Aggregation limits	Species
45 per cent	Alfonsino, barracouta, blue warehou, gemfish, hake, hoki, jack mackerel, ling, orange roughy, oreos, packhorse rock lobster, red cod, silver warehou and squid
10 per cent	Spiny rock lobster for any Quota Management Area
20 per cent	Paua for any Quota Management Area
20 per cent	Bluenose
35 per cent	All other species

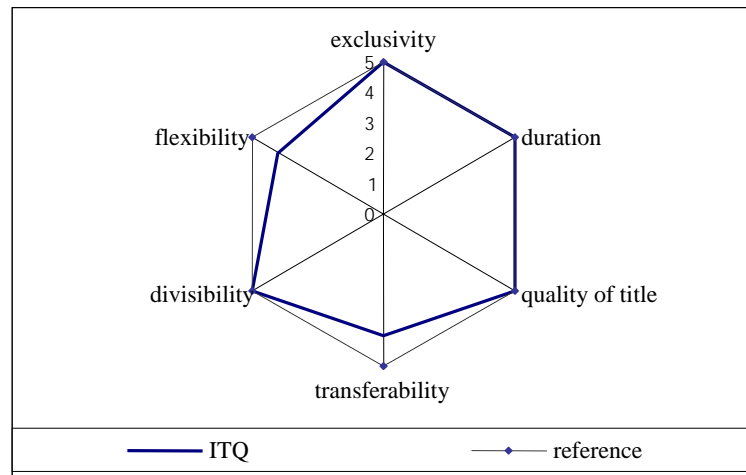
*Divisibility:* Each TACC has a 100 million quota shares. It is not possible to own a portion of a quota share. The smallest quantity of ACE that can be owned is one kilogramme. The lower limits on divisibility are extremely small quantities. As such, they do not negatively affect divisibility and the level of this attribute created by the QMS can be considered to be high (ranked 5 on the scale).

*Flexibility:* Quota share and ACE owners have a high degree of flexibility to determine how they wish to maximise the value of their property rights. Technical measures are still used extensively in New Zealand commercial fisheries, constraining the activities of ACE owners and possibly impeding further rent creation. New Zealand legislation and recent changes to institutional arrangements enable quota share owners to propose management approaches that augment rent creation off their property rights. Fisheries plans are a means for quota share owners to act collectively to shape the management of a fishery. Such approaches should improve planning and resource use and should lead to increases in economic rents. The level of this flexibility can therefore be considered to be high, but with scope for improvement (ranked 4 on the scale).

*Synthesis:* The New Zealand ITQ system is designed in such a way that it becomes more and more comprehensive and allows for the level of all characteristics to be high. High level of the quality of the title, associated with high levels of duration and exclusivity, allows fishers to take into account long term effects in their business decisions and may act as an incentive to invest in the fishery. Relatively high level of transferability and almost full divisibility has the potential to facilitate the fleet

adjustment process. High levels of flexibility, short term transferability and divisibility are expected to facilitate adaptation to unpredictable economic and environmental events. In addition, the move towards collective planning by the co-owners of the use rights is likely to facilitate both short and long term adjustments. The New Zealand ITQ system is illustrated in Figure II.14.

**Figure II.14. Characteristics of the New Zealand ITQ System (90% of the commercial fishery harvest)**



## II.7. Australia<sup>54</sup>

### *Technical measures to maintain fish stocks productivity*

In Australia, several measures are used to maintain stocks' productive and reproductive capacity. Total allowable catch (TAC) systems apply in seven Commonwealth fisheries (out of 15). In addition, technical measures are in place in most of both Commonwealth and States fisheries, and include time based controls, such as seasonal closures; location based controls, such as area closures; and gear based controls, such as net limits and boat size limitations.

### *Market-like instruments to regulate access*

Australian Government policy with respect to fishery management is based on the principle that fisheries are a community owned resource. While access rights to a fishery can be privately owned in Australia, marine resources remain the property of the community. Under the *Fisheries Management Act 1991*, AFMA may allocate four separate types of fishing concessions - statutory fishing rights; fishing permits; scientific permits; and foreign fishing licences. The following focuses on two types of market-like instruments, the Individual Transferable Quotas (ITQ) and the individual transferable effort (ITE) systems, although other forms of access regulation exist in Australia (such as limited entry system - LL - and effort quotas - IE).

54 See country submission on Australia on the OECD Fisheries public web site [www.oecd.org/agr/fish](http://www.oecd.org/agr/fish) for further details.

In general, the Australian Government maintains that ITQs provide the most effective mechanism to underpin management for ecologically sustainable and economically efficient fisheries. Importantly, ITQ-based management also provides the framework of market-based adjustment as the fishery changes over time. However, the Government also recognises there may be occasions where the nature of a fishery and of its broader ecosystem issues may mean that ITQs may not be the most appropriate management system. Under these circumstances, where the AFMA Board considers that a management system based on alternative management approaches, such as approaches based on individual transferable effort (ITE), will better pursue its legislative objectives, this form of management may be used.

### *Australian ITQ fisheries*

In Australia, there are currently twenty ITQ fisheries which accounted in 1997-1998 for approximately 26% of total landings by weight and 22% of total landed value<sup>55</sup>. On these 20 fisheries, 12 are single species fisheries, 5 are dual species fisheries, 2 are three species fisheries and 1 fishery, the south east trawl fishery, is multispecies (with sixteen species under quota).

ITQ fisheries are managed either by the Commonwealth (Federal) government or by the state governments (or both under the Offshore Constitutional Settlement - OCS). While no two Australian ITQ systems are identical, the following attempts to capture the main characteristics of the ITQ systems<sup>56</sup>. When relevant, distinctions between state and Commonwealth fisheries are operated, although this must still be considered as generalisations where some levels of heterogeneity remain.

*Exclusivity:* The basic quota entitlement in Australian fisheries is the Individual Transferable Share Quota (ITSQ), i.e. a share in whatever TAC is adopted by the fisheries authorities every fishing season. This multiplied by the TAC then gives the seasonal individual quota<sup>57</sup>. In principle, the system attributes quota owners with strong and exclusive rights to access the resource. The level of the characteristic can be considered to be high (ranked 5 on the scale).

*Duration:* The duration of the ITSQ varies. As for State fisheries it is in general the same as the duration of the fishing licence, with common terms of duration being one to five years. In some cases, e.g. in the Tasmanian abalone fishery, access rights have been granted for the duration of ten years. As the renewal is in principle fairly automatic, the overall level of the characteristic can be considered high but limited (ranked 4 on the scale).

The situation differs for ITQ systems issued as Statutory Fishing Rights (SFRs) issued under a statutory Management Plan in Commonwealth fisheries. These rights remain in existence for as long as the plan does. As it is in practice as difficult to revoke a Plan as it is to make a Plan, this means that SFRs provide a long term access right, so as the level of the characteristic can be considered as high (ranked 5 on the scale).

55 Sen S, Kaufmann B. and Gerry Geen. 2000. *ITQs and property Rights. A Review of Australian Case Law*. Proceedings of the tenth biennial conference of IIFET. Corvallis (USA).

56 Arnason R. 2002. A review of International Experiences with ITQs. Report 58. CEMARE.

57 Kaufmann B., Geen G. and Sen S. 1999. *Fish Futures: Individual Transferable Quotas in Fisheries*. Fisheries Research and Development Corporation and Fisheries Economics Research and Management Pty Ltd. Kiama.



*Quality of title:* Some observers (e.g. Arnason, 2002) consider the legal status of the Australian ITSQ to be stronger than in other countries, suggesting that quota right is in general regarded as a property by the Australian courts and that constitutional protection and certain rights to compensation may exist should the ITSQ be revoked. Yet, a review of case law regarding fishing entitlements shows that compensation should not necessarily be paid if modification or extinguishment take place (Sen et al., 2000). While the legal debate is still open, this suggests that the security of the title is not necessarily always as strong as it is sometimes believed, although a distinction has to be made between Commonwealth and States fisheries in general (with the exception of legislations of Victoria and Western Australia which make specific provision for compensation to be paid in the event licences are cancelled). Commonwealth ITQs have been identified by the courts as a form of property. Under the Australian Constitution (Section 51(xxxi)) the Commonwealth can only acquire property on “just terms”, and section 167A of the Fisheries Management Act 1991 set out compensations provisions/requirements.

As for the enforceability side, it was observed that the former paper trail system was complex and less than fully effective (Kaufmann et al., 1999). As an example, enforcement on the south-east ITQ system has apparently been problematic, due to the large number of landing places and the fact that some fishing methods are not subject to the quota constraints (Arnason, 2002). As a result, a new system has been implemented to overcome these problems, mainly focusing on the dockside monitoring of landings. As the outcomes of this new system still need to be assessed, the overall level of the characteristic can be considered as moderate (ranked 3 on the scale) for State fisheries, and high but limited (ranked 4 on the scale) for Commonwealth fisheries.

*Transferability:* Australian ITQs are in principle transferable, both permanently and within the season (e.g. the bluefin tuna and the abalone fisheries). Yet, transferability varies between fisheries. A common restriction is that quotas may only be transferred to those already participating in the particular fishery (closing the group of potential quota holders). When quotas can be transferred to non-industry members, foreigners are excluded. In most fisheries, transfers are subject to limitations placed on minimum and/or maximum quota holdings, and all transfers require the consent of the fisheries management authority (Sen et al., 2000)<sup>58</sup>. While arrangements do vary across fisheries, it can however be considered that in general State arrangements are nearly always more restrictive than Commonwealth arrangements. As a result, the overall level of the characteristic can be considered moderate (ranked 3 on the scale) for State fisheries, and high but limited (ranked 4 on the scale) for Commonwealth fisheries.

*Divisibility:* ITQs are in principle fully transferable. A notable exception is the case where quotas can only be transferred along with the fishing licence (making the quotas effectively indivisible). The general level of the characteristic is high (ranked 5 on the scale).

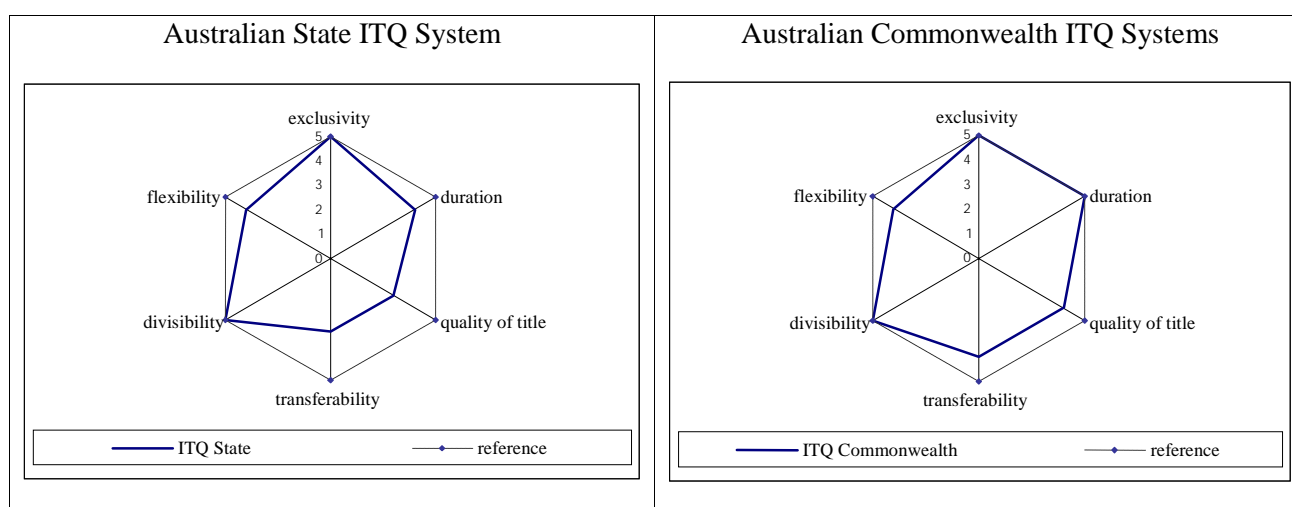
*Flexibility:* ITQ owners have a high degree of flexibility to determine how they wish to maximise the value of their property rights, subject to technical measures in place in most of Australian fisheries. The level of the characteristic can therefore be considered to be high, but limited (ranked 4 on the scale).

*Synthesis:* By allowing relatively high levels of duration and exclusivity, the Australian ITQ systems in general give the owner of the rights a planning horizon that is

58 Arnason (2002) reports that the quota market is generally quite thin due to the various restrictions.

relatively secure and which provides proper incentives to make efficient investment in harvesting techniques and in developing new markets. While high level of divisibility and flexibility has in addition the potential to facilitate adaptation to unpredictable economic and environmental events, fleet adjustment can however be limited in particular in States fisheries by constraints on transferability. Moreover, the enforceability of the system remains a challenge due to the number and diversity of the underlying fisheries. Having noted above that Commonwealth Statutory Fishing Rights are the strongest and most enduring of existing rights, the Australian ITQ systems are illustrated in Figure II.15.

**Figure II.15. Characteristics of the Australian State and Commonwealth ITQ Systems**



#### *Australian ITE system: the rock lobster fishery*<sup>59</sup>

With an annual value of approximately AUD 50 million the Southern zone rock lobster is among the most valuable fisheries in Australia. While the management system is often presented as an ITQ system (e.g. Arnason, 2002), it is also recognised that in effect, the “ITQ” units are the pots (Arnason, *ibid*). There is a limitation on the maximum and minimum number of pots that can be held by any licence holder in the fishery.

Since 1998, the pots quotas can be transferred to any licence holder provided the traders do not violate the minimum and maximum pot stipulation. While available information does not allow for the application of the analytical framework to this fishery, indications suggested that the ITE system is working well to restrict the harvest level and to increase economic efficiency.

<sup>59</sup> Another interesting example of ITE concerns the Northern Prawn Fishery. This is a Commonwealth fishery with a gross value of production exceeding AUD 100 million for which a very well defined ITE system (headrope units) has been implemented under a Statutory Management Plan.

## II.8. Korea<sup>60</sup>

### *Technical measures to maintain fish stocks productivity*

In Korea, a total allowable catch (TAC) system was introduced in 1999 to maintain the productivity of main fish stocks. As of 2003, 9 species were subjected to TACs (mackerel, jack mackerel, sardine, red snow crab, purplish washington clam, pen shell, cheju top shell, snow crab and blue crab). In addition, Korea has restricted the use of nets generating intensive catches such as gill nets and fish traps and implemented numerous additional technical measures to help maintaining the productivity of some stocks.

### *Market-like instruments to regulate access: the Fishermen-Oriented Co-Management System*

Recognising that the government's top-down, command and control approach to fisheries management have had limited success, the Korean Government adopted in 2001 a new market-like instrument to regulate access to the resource: the so-called Fishermen-Oriented Co-Management system, which is a form of community quota (CQ) system. Basically, the fishermen-oriented co-management system consists in extending the responsibility and rights associated with the management of fishing grounds, fishery resources and harvesting with a sense of co-ownership.

As of 2004, the Korean government designated 177 fishing villages as co-management fishery communities. These villages, with a total of 15 437 fishers (i.e. around 20% of the labour force employed in fisheries), have been granted an exclusive right to access the fish stocks that are placed under their responsibility. The following describes the main characteristics of this management system.

*Exclusivity:* This management system is based on common ownership of local fishing grounds<sup>61</sup>. Fishing communities participating in the Fishermen-Oriented Co-Management system have the exclusive right to use local fishing grounds. In addition, fishing communities consist of fishers operating under identical technical and regulatory conditions. This is likely to ensure the internal cohesion and reduce the (internal) incentives to compete. The level of the characteristic can be considered as high (ranked 5 on the scale).

*Duration:* The basic validity term of the fishing licence is 10 years. In principle, the term could be automatically renewed for another 10 years in case of application from the fishing community (providing compliance with rules). As a result, the level of the characteristic can be considered as high but limited (ranked 4 on the scale).

*Quality of the title:* Rights are generally authorised by law through the delivering of licences to the communities. Even in the absence of explicit licences, the law recognises the customary nature of the right (see above footnote). The validity of community fishing licence is basically secured except for limited cases that are specified in the law (e.g. for the purpose of protecting marine resources, shipping safety, public development). However, in case of the revocation of the fishing licence, Government has to compensate the community. The security of the title is thus perceived as high. As for enforceability, it

60 See country submission on Korea on the OECD Fisheries public web site [www.oecd.org/agr/fish](http://www.oecd.org/agr/fish) for further details.

61 In some cases, an exclusive right is explicitly granted to the community. In other case, the law recognises the right as "conventional" or "customary".

is thought that the devolution of responsibility is likely to increase compliance. The Korean case study indeed reports that one of the observed results was a reduction in illegal fishing. In addition, under the management scheme, rewards such as financial assistance are granted to the communities showing the best results. This can also act as a strong incentive to improve compliance. As a result, the overall level of the characteristic can be considered as high (ranked 5 on the scale).

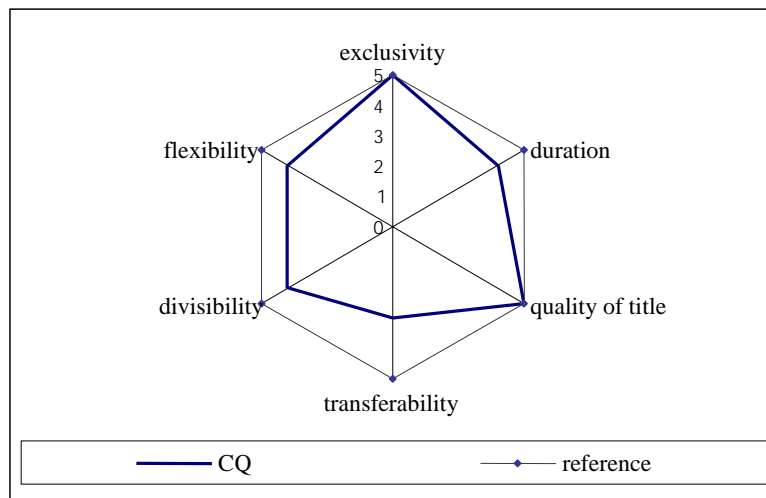
*Transferability:* In the short run, there is no distribution (or individual allocation) of the community quota among members. The fishing community organises joint fishing operations and distribution (as in the Japanese pooling system, see above). There is thus no need for “formal” transferability within the group, as transferability *de facto* takes place when deciding how to harvest the community quota<sup>62</sup>. Yet, available information suggests that the transferability is limited between fishing communities participating in the Fishermen-Oriented Co-Management system, and that there is no transferability scheme allowing for long term adjustment within a community. As a result, the level of the characteristic can be considered as moderate (ranked 3 on the scale).

*Divisibility:* At a community level, the right to access the resource concerns a quantity of fish that can be divided and aggregated. The level of the characteristic can thus be considered as high in the short term, allowing the community to adapt to environmental and economic changes. Yet, at the individual fisher level, available information suggests that the right to access the community quota concerns the licence, which is not divisible per se. This restricts the “long term” divisibility of the right, and subsequently the individual ability to adjust. As a result, the level of the characteristic can be considered as high but limited (ranked 4 on the scale).

*Flexibility:* In general, numerous regulations limit the freedom of operation of individual fishers, so individual flexibility is limited. However, it should be noted that those stringent measures are “self-restrictive”, *i.e.* decided collectively by fishers. Fishermen-oriented co-management communities, with various entities, create the details and rules of the fishermen-oriented co-management fisheries through coordination and agreement among members. In this case, it can be considered that the “collective flexibility” is rather high, as fishers are free (although subject to some general limitations) to decide how they want harvest their ground (ranked 4 on the scale).

*Synthesis:* Rather high levels of exclusivity, duration, responsibility and quality of the title incite fishers to ensure the effective conservation of resources and the stabilisation of catch (*i.e.* that long-term benefits would be available for the community). This in principle serves as a catalyst to invigorate the characteristics of local fisheries, boost active participations of fishers to put the systems into practice and restrict both conflicts and “race-for-fish” type of behaviour. Yet, potential conflicts between participating and non-participating fishers may raise some challenges about the long term effectiveness of the system, as well as the limited possibility to realise structural adjustments. The Korean variant of the community quota system (CQ) is illustrated in figure II.16.

62 In practice, everything takes place just as if the members of the pool were allocated an individual share of the quota and subsequently decided to trade it freely in order to maximise their annual privilege. In this context, maximisation of individual profit derives from the maximisation of collective profit.

**Figure II.16. Characteristics of the Korean community quota system (CQ)**

## II.9. Other OECD Countries

Several other OECD Countries have market-like instruments in place to regulate access to fisheries. While available information doesn't allow for applying the analytical framework to their description, this section lists these management instruments for the purpose of comprehensiveness.

- Finland: forms of TURF<sup>63</sup> and Community based quotas (CQ) where waters are privately owned. As described in the Finnish management system<sup>64</sup>, the Finnish water areas can today be divided into three groups on the basis of ownership. Some areas are owned by individual persons, i.e. parcelled water areas (or TURF). These areas are most common in the southern and western parts of the country. Secondly, there are areas that are jointly owned by groups of private real estate holders. In legal terms the proprietor of the areas owned by groups of private real estate holders is a shareholders' association for a registered village's common areas. The shareholders are not always organised, but sometimes they are replaced by the statutory shareholders' fishery association for the (respective) registered village's common waters (*i.e.* between TURF and CQ). The shareholding estates per village vary between two and several thousands. The system is furthermore complicated by the fact that the archipelago water area is split by a network of village and estate boundaries. Finally, outside the village boundaries (and in the middle of the largest lakes) there are public water areas owned by the state.
- Ireland: form of Vessel Catch limits (VC). Each month, on the basis of national quota allocations, the Department of Communications, Marine and Natural Resources in consultation with the industry decides on management regimes for the following month. These management regimes involve catch limitations per vessel.

63 i.e. a system similar to the one in place in Sweden up to 300 meters from the coast

64 <http://www.oecd.org/dataoecd/11/40/34429179.pdf>

- Mexico: form of Limited Transferable Licence (LTL) system, i.e. system of permits and concessions, where “the difference between permits and concessions lies in the amount invested and the economic prospects of the project” and where “the fact that (concessions) are transferable allows for the entry of new economic agents” (see the Mexican submission, paragraph 25, at <http://www.oecd.org/dataoecd/9/58/34430128.pdf>);
- Poland: form of Individual Transferable Quota (ITQ) under the so-called “individual catch limits” scheme (see the Polish chapter to the Review of Fisheries in OECD Countries, OECD, 2005). Under this scheme, which is applied to cod and salmon vessels above 15 meters, catch quota allocated by special fishing permit could be transferred wholly or partly to another ship owner who have had individual catch quota for the same fish. This transfer was possible with acceptance of Minister of Agriculture and Rural development given after taking the opinion of social fishermen’s associations. This system was in force until the 1st May of 2004;
- USA: TURF, Community-based catch quotas (CQ, e.g. through Community Development Quotas for Eskimo and Aleut Native Alaskans or the cooperative formed to manage Alaska pollack), Vessel Catch limits (VC), Individual non-transferable quotas (IQ), Individual transferable effort quotas (ITE, under the form of transferable pots systems), Individual transferable quotas (ITQ, for the wreckfish, halibut/sablefish, surf clam and tuna purse seine fisheries) (see the US case study in Appendix and OECD, 1997, for further details);

## II.10. Greenland<sup>65</sup>

### *Technical measures to maintain fish stocks productivity*

To maintain fish stocks’ productive and reproductive capacity, Total Allowable Catch (TAC) represents the cornerstone of Greenland’s fisheries management system. For each year, the Landsstyre (Greenland Executive) fixes TACs for specific fish stocks in the fishing territory of Greenland. Currently, 11 species in the offshore sector are subject to TAC, including shrimp, Greenlandic halibut, snow crab, grenadiers, redfish, Atlantic halibut, catfish, capelin, Blue Whiting, cod, and bottomfish (and 2 sub-stocks, including Arctic char and octopus/ squid, as well as by-catch). Individual quota agreements are established with Russia pertaining to haddock in Russian waters; Norway regarding haddock and saithe in Norwegian waters; the Faroe Islands in terms of herring; and, under ‘International’ agreements additional herring quota – these individual agreements establish quota limits for Greenlandic vessels fishing in the respective partners’ fishing territories. These species account for over 96.6% of the value of harvest taken within the EEZ, with shrimp accounting for the most significant portion (65% of the value of harvest subject to TAC in 2003). As pertains to the application of TAC limitations in the coastal fishery, only shrimp, crab and scallop are regulated.

In addition to the TAC system, there are a number of other measures designed to improve the sustainable yield of the stocks. This includes technical measures such as

<sup>65</sup> See country submission on Greenland for further details on OECD Fisheries public web site: [www.oecd.org/agr/fish](http://www.oecd.org/agr/fish)

protection periods and areas that shall be kept free of fishing; equipment and use of vessels; fishing tackle and equipment, including a ban on the use of certain gear; types of gear or catching methods; minimum sizes of fish, mesh sizes and the gauging of mesh sizes; maximum by-catches of specific species in fishing for other species. One particular example of this is on Greenland's east coast where a "Redfish protection area" was established, wherein fisheries with bottom trawl were completely banned. Since the year 2001, the Ministry also imposed the usage of sorting-grids as a mandatory requirement for shrimp fishing operations.

### *Market-like instruments to regulate access*

#### *General characteristics*

In Greenland, access to national TAC is regulated through several means. For species where a TAC has been established, each stock is divided in quotas<sup>66</sup>. To begin with, quotas are in general reserved for vessels and owners of vessels from Greenland recognized as Greenlanders<sup>67</sup>. Available quotas are allocated to fleet units (i.e. a delimited group of vessels registered in Greenland), occupational groups and non-Greenland fisheries according to time and geographical area. For instance, the TAC for shrimps off West Greenland shall be allotted 43% to the inshore fleet component and 57% to the offshore fleet component. Within fleet units, fleet quotas are in general divided among shipowners on the basis of the "quota share" possessed. In a given year, each shipowner is allocated a maximum allowable quantity expressed in tonnes from a given quota (the "annual quota").

Regulation is then based on four different types of licenses: time-limited licenses with and without quotas and time-unlimited licenses with and without quotas. The government decides what kind of license is mandated with the exception of those for shrimp (already pre-determined as both time-unlimited – quota allocations for offshore shrimp trawlers are renewed each 5-year period - and transferable quota required) and salmon fisheries, which according to the Fisheries Act require licenses. For fisheries where licenses are not required, the fisheries are open to all Greenlandic vessels, as long as the TAC has not been utilized to its full extent.

As the Greenland fisheries management system is extensively based on individual transferable quotas (ITQs) systems, this market-like instrument is described in the following section. Yet, it should be noted that a form of individual transferable effort system (ITE) also exists, in particular for vessels below 75 GRT operating in the shrimp fishery. In this case, the regulation method (the *Capacity Quota System*) is through a number of points given to each fisherman involved in the fisheries based on the individual's activities in the previous years and determined according to their respective technical capacity (e.g. vessel size, gear type, etc). The points are fully transferable, and it is feasible to upgrade the fishing capacity by buying a certain number of points and upgrading gear<sup>68</sup>.

66 For species where no quota has been established, there are no limitations according to the Fisheries Act.

67 Although the Home Rule administration has the possibility to make exceptions to this condition, as necessary.

68 See country submission for further details on the OECD Fisheries public web site [www.oecd.org/agr/fish](http://www.oecd.org/agr/fish). This may be further explored in the future.

### *The Greenland ITQ system in the shrimp fishery*

The Greenland ITQs or “individual quota share” system was introduced in 1990 for offshore shrimp fisheries and subsequently on January 1<sup>st</sup>, 1997 for coastal shrimp fisheries. As noted above, shrimps accounted for around two-thirds of Greenland revenue from fishing in 2003.

*Exclusivity:* For those licenses combined with a maximum allowable catch, as in the case of the shrimp ITQ system, the Landsstyre shall publish information about the size of the annual quota every year. Each operator knows the quantity that other right holders are entitled to fish. In addition, a quota share or annual quota allocated to one fleet unit shall not be fished by any other fleet unit. This provides a high level of exclusivity within and among groups, so the level of the characteristic is high (ranked 5 on the scale).

*Duration:* In general, quota shares are possessed by ship owners and shall be transferable by inheritance. In the case of shrimp, licences are also considered “time-unlimited”, as quota allocations for offshore shrimp trawlers are renewed each 5-year period. The level of the characteristic is high (ranked 5 on the scale).

*Quality of the title:* Due to the social and economic importance of the fishing industry in Greenland, particular efforts are dedicated to enforcement operations. Inspections are managed in tandem by the “Grønlands Kommando” (the naval inspection fleet stationed at Grønndal, South Greenland, as well as their aircraft based in Narsarsuaq) and the Fisheries License Control, the Home Rule government’s designated fishing licensing and monitoring authority. These operations include practical inspection of fishing vessels’ catch and fishing gear exclusively when they are at sea with onboard patrols. In addition, controls may occur at the fish processing plants’ level, which improve the comprehensiveness of the enforcement system. As for the security of the title, it should be noted that the Cabinet may issue notices about time-limited changes of the conditions for fishing activities, which entails a fairly significant sovereign risk. In addition, the Landsstyre may lay down rules on reduction of quota shares in the case of mergers of ship owning entities (duty of reversion), which also carries a risk. Yet, the Home Rule has also a precedent for buying quota shares in order to reduce the fishing activity or to redistribute the share<sup>69</sup>, which reduces such a sovereign risk. The overall level of the characteristic can be considered as high but limited (ranked 4 on the scale).

*Transferability:* A ship owner may, without effect for the operation’s license and quota shares, sell its annual quota or part of this quota, if damage or long-term repair at a shipyard transpires; natural obstructions such as ice or similar circumstances prevent the ship owner from exhausting the operation’s annual quota. Transfer of an annual quota may moreover take place in special cases warranted by economic or administrative conditions. Enterprises owned by the Home Rule Government may sell and buy annual quotas irrespective of the provisions of subsections (1)-(3) in the Fisheries Act. Yet, transfers of both quota share and annual quota must be approved by the Landsstyre, and several other restrictions on the transferability of the fishing rights are in force: No company or individual may by purchase of quota shares attain a total quota share which exceeds 33.3% in the regulated area for the offshore fleet unit; No company or individual may through purchases of quota shares acquire a quota share in the regulation area for the coastal fleet component which exceeds 10%; An annual quota allocated to one fleet unit

69 A policy maintained in 2004 through the administration of a quota bank.



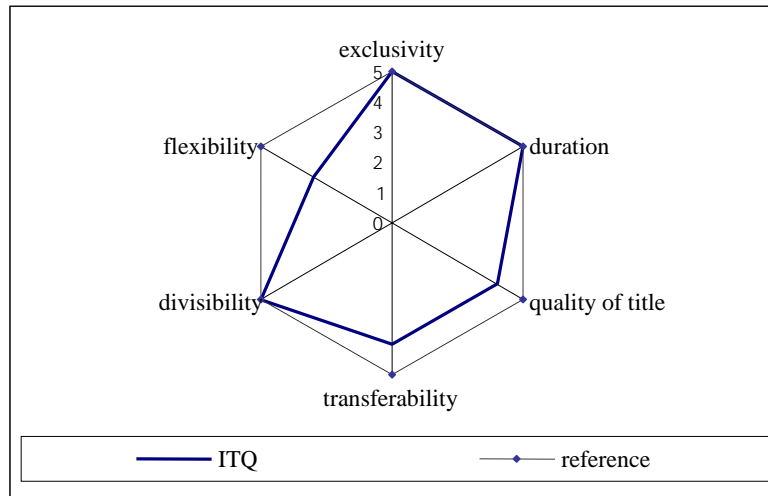
shall not be fished by any other fleet unit. The level of the characteristic can be considered as high but limited (ranked 4 on the scale).

*Divisibility:* Available information suggests that any fraction of the right can be divided, aggregated and traded, so the level of the characteristics is high (ranked 5 on the scale).

*Flexibility:* Right holders are relatively free in planning and conducting their fishing activities within a given year. In addition, the Cabinet may issue rules according to which a shipping company, which has exhausted its annual quota, may continue its fishing activities provided that the quantities fished in excess of the annual quota quantities are deducted from the shipping company's annual quota for the subsequent year. Further, the Cabinet may issue rules according to which a shipping company, which has not exhausted its annual quota, may, for the coming year, have its annual quota increased by a quantity corresponding to the unused portion from the preceding year. All this increases the level of the characteristic. Yet, some restrictions also apply to most fisheries. For instance, the Cabinet may issue notices setting out when fishing activities may be commenced and when fishing activities must be stopped. For Greenland fisheries according to section 6 of the Fisheries Law, it may also be required as a condition for acquiring a license (1) that the catch shall be delivered in full or in part to one or more specified processing plants in Greenland, possibly for definite periods and with respect to certain quantities, qualities and compositions of the catch (specified delivery), and (2) that a certain part of the crew shall be persons with a permanent connection with the Greenlandic society and/or community (crew share). As this attenuates the right, the overall level of the characteristic can be considered as moderate (ranked 3 on the scale).

*Synthesis:* By providing right holders with rather high levels for all characteristics, Greenland's ITQ system reduces the tendency of overcapitalization and overexploitation. On the one hand, quota owners do not have any economic incentives to invest more than their respective quota share can support. On the other hand, high levels of duration and quality of the title provide incentives for secure investments (e.g., the offshore fleet alone has invested DKK 570 million – EUR 76.6 million - in purchasing quota from the Home Rule Government since establishment of the ITQ system in the early 1990s). Yet, restrictions on transferability and on flexibility may affect the use of annual quotas. The Greenland ITQ system is illustrated in Figure II.17.

Figure II.17. Characteristics of the Greenland ITQ System



## **PART III**

## **COUNTRY CASES**

## List of Acronyms

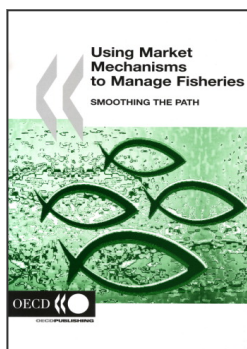
<b>Acronym</b>	<b>Definition</b>
ACE	Annual catch entitlement
CFP	Common Fisheries Policy of the European Union
CQ	Community-based catch quotas
DMP	Dockside monitoring program
EEZ	Exclusive economic zone
FAO	Food and Agriculture Organisation for the United Nations
FQA	Fixed quota allocations
GRT	Gross registered tonnage
ICCAT	International Commission for the conservation of Atlantic Tunas
IE	Individual non-transferable effort quotas
IQ	Individual non-transferable quotas
ITE	Individual transferable effort quotas
ITSQ	Individual Transferable Share Quota
ITQ	Individual transferable quotas
LL	Limited non-transferable licences
LTL	Limited Transferable licences
MCS	Monitoring, Control and Surveillance capacities
MSY	Maximum sustainable yield
NAFO	Northwest Atlantic Fisheries Organization
NEAFC	North-East Atlantic Fisheries Commission
OCS	Offshore Constitutional Settlement
PO	Producer's organisation
QES	Quota Exchange System
SFR	Statutory Fishing Rights
SQS	Structural Quota System
TAC	Total allowable catch
TACC	Total allowable commercial catch
TURF	Territorial Use Right in Fisheries
UQS	Unit Quota System
UNCLOS	United Nations Convention on the Law of the Sea
VC	Vessel catch limit
VCU	Vessel capacity unit

## Glossary

<b>Terminology</b>	<b>Definition</b>
Divisibility	Refers to the ability to divide (a) property rights more narrowly, producing new recognised rights specified perhaps by season, region, ground, species, age or other classification and (b), the amount of quota into smaller amounts and to transfer some quota to others.
Duration	Length of time the owner of a right may exercise his ownership. A short duration leads to uncertainty.
Exclusivity	Concerns whether others are prevented from damaging or interfering with an owner's rights.
Flexibility	Refers to the ability of property rights holders to “freely” structure operations to achieve their goals.
Quality of title	Refers to certainty, security and enforceability of the property right. In some cases the incentive to self enforce the property right may be strong .
Sovereign risk	Right of the government to change the rules (unexpected closure of a fishery) for environmental, safety (e.g. pollution) or social reasons (e.g. new allocation of rights) represent a challenge to the security aspect of the characteristic. Sovereign risk may also be affected by international cooperation.
Transferability	Extent to which the entitlement to a right can be transferred by selling, leasing or trading.

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