

**THE USE OF MARKET-LIKE INSTRUMENTS IN OECD COUNTRIES: KEY INSIGHTS
FROM AN ORGANISATIONAL FRAMEWORK**

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ABSTRACT

It is generally recognized that market-based instruments have a strong role to play in improving the efficiency of fisheries management. This belief was strongly reinforced at the 2002 IIFET Conference, where the use of ITQ systems was extensively discussed. While ITQ systems are commonly referred to as “rights-based management” (RBM), it is also recognized that RBM are not restricted to ITQ systems. Most fisheries management instruments indeed possess some form of (property-) rights characteristics. In this context, The OECD Committee for Fisheries decided to launch in 2002 a project focusing on the role of all market-like instruments/incentives in the transition towards sustainable and responsible fisheries. Based on some preliminary findings of this project, the aim of this paper is to present and discuss the organizational framework developed to describe the extent to which market-like instruments are used in OECD countries. Using three criteria of classification (method of control, regulatory aim and variable of control), the paper first clarifies the place of “market-like” instruments within the regulator’s tool-box. The paper then presents the non-normative organizational framework developed, which is derived from the property-right theory. Finally, the paper shows how this framework can be applied to describe fisheries management instruments. Illustrations are limited to the Icelandic, Norwegian and Japanese cases. The Norwegian case in particular illustrates how the organizational framework can be used to compare different variants of a given instrument.

Keywords: market-like instruments; fisheries management; property-rights; organizational framework; OECD

INTRODUCTION

Decline in several key fish stocks and associated degradation in economic returns have prompted governments to consider overfishing and overcapacity as key challenges for future and sustainable development in fisheries. At the World Summit on Sustainable Development, held in Johannesburg, South Africa, from August 26 to September 4, 2002, management of fishing capacity by 2005 and elimination of subsidies contributing to overcapacity were for instance included in the WSSD Implementation Plan. To ease the transition towards sustainable and responsible fisheries, the OECD Committee for Fisheries decided to launch also in 2002 a study aiming at (1) Discussing how reform towards the shared objective of sustainable and responsible fisheries of fisheries management can be constructed using market-like instruments/incentives; (2) Exploring the different ways Member countries have used such instruments; (3) Exploring the different ways Member countries are dealing, or have dealt, with the inevitable tradeoffs between competing interests of stakeholders in the fishery during the reform process; (4) Understanding obstacles and incentives to use market-like instruments/incentives, including how different fishing/non-fishing interests are treated in the process.

By referring to the concept of *market-like instruments/incentives*, the OECD Committee for Fisheries decided to enlarge the analysis to any management instrument the introduction of which will lead to some of the positive outcomes which might be expected when using “pure” market-based instruments, rather than focusing only on “pure” market-based instruments themselves (e.g. ITQ).ⁱⁱ Instruments that may fall into such a broad category are presented in the first part of the paper. In a nutshell, market-like instruments encompass both those administrative regulations that influence fishers’ incentives to race for fish and overcapitalize and those economic instruments based on market interplay, as they all include some of the attributes which characterize RBM. In this paper, we want to focus on the second objective of the Study, i.e. the description of the market-like instruments/incentives in place in OECD fisheries. In order to provide such an inventory in a manageable way, there was a need to develop a framework organizing and normalizing the information across OECD countries. Based on the recognition that market-like instruments/incentives possess to some extent property rights attributes, it was decided to draw on property right theory to develop the organizational framework. The framework is presented in the second part. The third part discusses how the organizational framework can adapt to various situations. Due to space available, we

decided to limit the description of market-like instruments in OECD countries to three cases. The first case relates to the “traditional” and well-known Icelandic ITQ system. The second relates to the Norwegian management system, and underlines variants from a “traditional” individual quota (IQ) system. With respect to the conference context, the third case explores the use of one specific instrument in Japan, the so-called community right-based pooling system.

DEFINITION OF MARKET-LIKE INSTRUMENTS

To clarify the place of market-like instruments in the regulator’s tool-box, it is proposed to combine three typologies based, respectively, on the method of control, the regulatory aim and the variable of control.

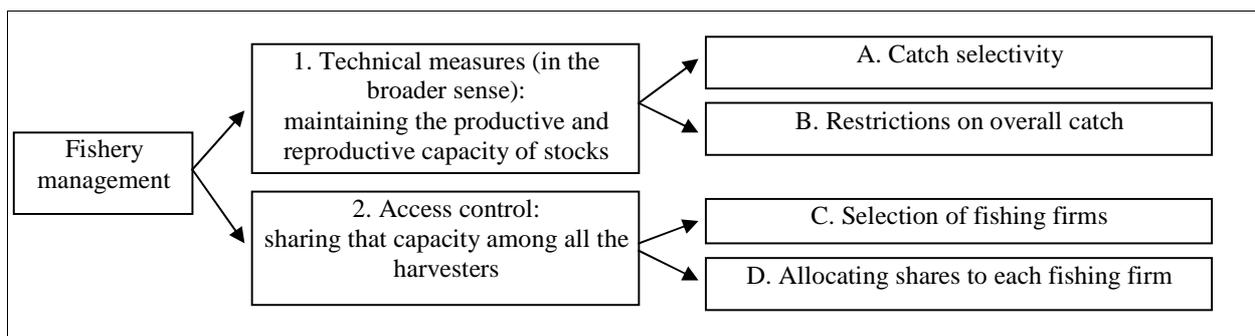
Typology based on the method of control: In general, management instruments fall into two categories, namely economic instruments and regulatory instruments. Economic instruments affect the costs and benefits of the choices facing fishing firms or individual fishers, the intended effect being to influence behavior in such a way as to make resource exploitation more efficient. Economic instruments involve either market creation (i.e. tradable rights or permits) or a monetary transfer – (i.e. *payments* or *charges/taxes* such as taxes, subsidies and fees). These latter instruments are aimed at influencing behavior through economic incentives not based on market interplay.

Regulatory and legal measures, also known as *command and control*, involve a compulsory restriction of the choices facing fishing firms or individual fishers – i.e. they are left with no choice but to comply with specific rules, or face penalties. Regulatory requirements tend to be less flexible than economic instruments, as they do not allow agents the freedom to determine the least-cost way of meeting their objectives.

Typology based on regulatory aim: Fisheries management draws upon two set of measures, which differ in terms of their aims and modalities (Troadec and Boncoeur, 2003):

- Maintaining fish stock productivity through technical measures,
- Adjusting catch capacity to stock renewal through access control. This implies sharing the productive and reproductive capacity of stocks among users.

Figure 1. The Two Components of Fishery Management



Source : Troadec and Boncoeur, 2003

Typology based on the variable of control: Unlike the situation in agriculture or forestry, fish are a “fugitive” resource, i.e. they are mobile and little is known about them; this usually rules out their direct use as a control variable. The mode of regulation applies either to the resources harvested by individual fishing firms (catch), or to the inputs used to harvest those resources (fishing effort).

Table 1. Typology of Management Instruments

Regulatory aim	Control method	Control variable	
		Fishing Effort	Catch
Maintaining productive and reproductive capacity of stocks	Regulatory (Administrative technical measures)	- mesh size - size/amount of gear - area/time closures	- size and sex selectivity - TAC
Regulating access (incentive-based access control)	Regulatory (Administrative access controls)	- Limited non-transferable permits/licences - Individual non-transferable effort quotas (IE) - TURF - Other types of effort limits	- Individual non-transferable quotas (IQ) - Community-based catch quotas (CQ) - Other types of catch limits (maximum landings; vessel catch limits - VC)
	Economic market-based (economic access control or "rights-based method")	- Transferable licences - Individual transferable effort quotas (ITE)	Individual transferable quotas (ITQ)
	Economic not market-based (monetary transfer)	- Input tax - Subsidy - Charges	- Landing tax - Subsidy - Charges

Source: OECD and Troadec and Boncoeur, 2003

Based on this typology, at least nine instruments fall into the category of market-like instruments. In short, market-like instruments encompass both those administrative regulations that influence fishers' incentives to race for fish and to overcapitalize and those economic instruments based on market interplay.

ORGANISATIONAL FRAMEWORK

Property rights characteristics and implications for fisheries management

To describe how OECD Member countries have used market-like instruments in a "normalized" and comparable way, an organisational framework was developed. It consists in benchmarking each market-like instrument in light of six property rights characteristics, in a non-normative wayⁱⁱⁱ. Based on the definitions by Scott (1988, 2000), Lane (1999) and Harte and Bess (2000), these six characteristics (exclusivity, duration, quality of the title, transferability, divisibility and flexibility) and their implications in the context of fisheries management are addressed in the following.

Exclusivity concerns whether others are prevented from damaging or interfering with an owner's rights. It refers to the extent that a person's property rights overlap with the rights of others. Every kind of property right has *some* exclusivity, but few, if any, are completely exclusive. The greater the possibility for excluding, the lower the common nature of the resource. In the fisheries context, high exclusivity is considered valuable because, by "closing the commons" (Hersoug, 2002), it reduces one of the key incentives to race for fish. In the long run, high exclusivity allows fishers to adjust their investment decision to the quantity of rights for which they have an exclusive use. In the short run, high exclusivity allows for efficient use of existing fishing capacity.

Duration is the length of time the owner of a right may exercise his ownership. A short duration leads to uncertainty. A longer duration allows the right holder to get the pay-off from investments. In a fishery, longer duration encourages the right-holders to make costly changes (or invest) in the size and age structure of the fish stock that may result in larger and more profitable catches even if there may be an extended waiting period for the pay-off to be realized.

Quality of title refers to certainty, security and enforceability of the property right. The more predictable the entitlement attached to the right, the higher the quality of their title. If property rights holders can expect little change over time to their entitlements, the more certain and secure are their rights. High quality of title is valuable because it increases the likelihood that rights holders will invest in the management of their fishery. Quality of title is also valued because it makes the right generally valid in disputes about rights of possession and use against third parties and indeed society as a whole or for banking purposes. Security refers to the strength of the entitlement of the right with regard to how susceptible it might be to being undermined by other users or by new arrangements and regulations that in effect arbitrarily reduce the characteristics of the right. Security depends on the explicit or implicit nature of the right and on the way it may be considered under legal cases. To protect the right from other users, some form of enforceability is needed. The higher the level of enforceability, the greater the quality of the title. In the context of fisheries, the “sovereign risk”, i.e. the 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. In the same vein, non compliance behaviors such as IUU fishing activities also strongly challenge enforceability.

Transferability is the extent to which the entitlement to a right can be transferred by selling, leasing or trading. All degrees of transferability are possible. On land, most freehold rights are highly transferable and most leases are transferable with the permission of the landlord. But there are exceptions (e.g. some landlords will not allow their tenants to sub-let a house). *Transferability* is valued because it provides more efficient operators with the option to buy rights from less efficient operators and then allows the holder to make the best use of his time and capital.

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.

Flexibility refers to the ability of property rights holders to “freely” structure operations to achieve their goals. Flexibility is valuable because it allows rights owners to both use their rights in the most efficient way given technical constraints (including through selling or leasing it) or to modify their production function in order to match their rights entitlements. In the fisheries context, flexibility is of particular interest due to natural fluctuations (in stock recruitment, weather, etc., i.e. the so called “stochastic nature” of fishing activities). Flexible management instruments may allow for increased efficiency in the use of fishing capacities through matching these natural fluctuations (e.g. banking of quotas from one period to another).

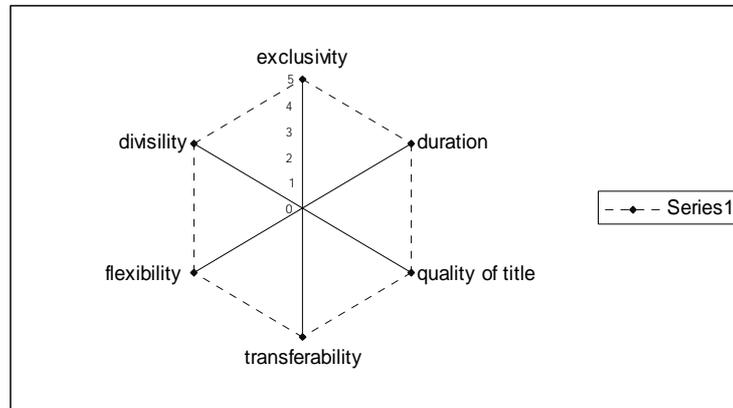
In the context of the transition towards sustainable and responsible fisheries, each of these six characteristics appears to have a role to play. Exclusivity can reduce incentives to race for fish; Duration can increase time horizon; Quality of the title can increase certainty; Transferability can allow for efficient allocation of the rights; and divisibility and flexibility can improve the adaptability to economic and environmental changes. These six characteristics are interrelated to a large extent. In combination, they generate a particular bundle of rights which will facilitate particular management outcomes. However, individual characteristics may have a stronger role to play in some areas. For example, it is often considered that some characteristics (exclusivity, duration and quality of the title) may be more likely to facilitate structural fleet adjustment, while others may mostly facilitate the efficient use of existing fishing capacities (Scott, 1988).

Measurement and representation of the characteristics

Part 3 describes selected market-like instruments with respect to the six characteristics of property rights. The strength of each characteristic can be regarded as continuous (i.e. not discrete) and can be expressed numerically (e.g. it might run from 0 to 100 %; Scott, 1988). For each instrument, characteristics of the property rights can then be depicted in a schematic form as shown in Figure 2. Using an indicative 5-level scale which varies from zero (low

level of the characteristic) to five (high level of the characteristic), this allows for the mapping of each combination of characteristics. A market-like instrument that maximizes all characteristics creates a large hexagon when the end points of each axis are linked.

Figure 2. Representation of property rights characteristics



EXAMPLES OF APPLICATION

Iceland: A traditional ITQ system^{iv}

The current fisheries management system is extensively based on ITQs systems as stipulated in the *Fisheries Management Act* of 1990. Exemptions from the ITQ system concern only small vessels^v. For example, small vessels allocated share in the TAC for cod is estimated to around 13.75% (OECD, 2003, p.283). It can be estimated that the “standard” Icelandic ITQ system applies to around 85-90% of the stocks.

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 “vessels 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).

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).

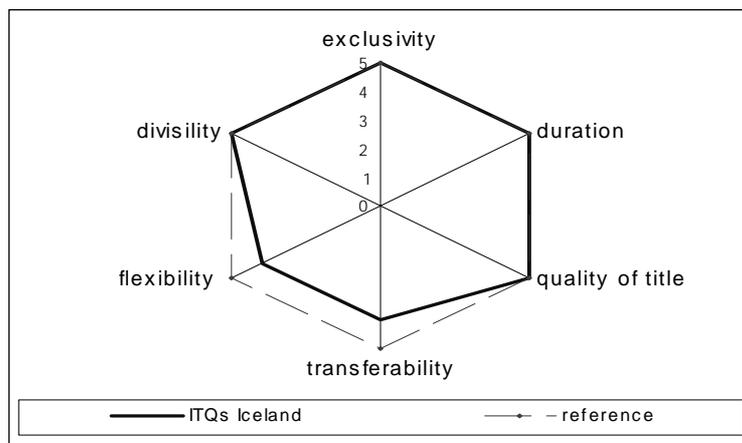
Divisibility: Both the permanent quota-shares and the annual vessel catch quotas are perfectly divisible. Perfect divisibility means that any fraction of a given quota may be transferred. The level of this characteristic is high (ranked 5 on the scale).

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).

Implications

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 3.

Figure 3. Characteristics of the Icelandic ITQ system (80-85% of the total production)



Norway: Variants from an IQ system^{vi}

Three types of market-like instruments are used, in combination, to regulate access to the resource. They are, namely, limited transferable licences (LTLs), vessel catch limits (VCs) and individual -vessel- quotas (I-V-Qs). In this paper, we are focusing on the latter case to illustrate the methodology developed. For further details, see OECD, *forthcoming*.

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 summarized 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 year). 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 receives 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. To supplement the “traditional” market-like instruments, innovative transferability mechanisms are also available for specific fleet segments. These three systems, designed to reduce overcapacity, are:

1) 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^{vii}. 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).

2) 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 percent of the quota attached to the scrapped vessel remains in the group the vessel was withdrawn from, while 80% of the quota is held in perpetuity by the buyer.

3) 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^{viii}.

When used, these mechanisms make IQs-variant schemes different from the traditional IQ system, as suggested by the following discussion.

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 uses the UQS system, he holds the extra quota either for 13 or 18 years (ranked 4 on the scale).
- When an IQ holder uses the SQS system, he holds 80% of the extra IQs in perpetuity (ranked 5 on the scale).
- When an IQ holder uses 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 submitted to the OECD Committee for Fisheries, 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, IQs alone are not transferable. What is transferable is 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 implemented to explicitly allow for trade in quotas.

- UQS: For transfers of quotas to be possible under this scheme, a fisher (or fishing company) needs to own 2 vessels. Once it is the case, available information suggests that there are few restrictions on trade. Yet, the system implies that renting, leasing or any other short term trade is not possible. The level of the characteristic may thus be considered as relatively weak (ranked 3 on the scale).

- SQS: As with UQS, trade is only possible between vessels belonging to a single owner. In addition, limitations on the use of SQS have been made to avoid geographical concentration of annual permits; the level of the characteristic can be considered as relatively low (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 relatively weak (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 withdrawn 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 withdrawn 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 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, IQs 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).

Implications:

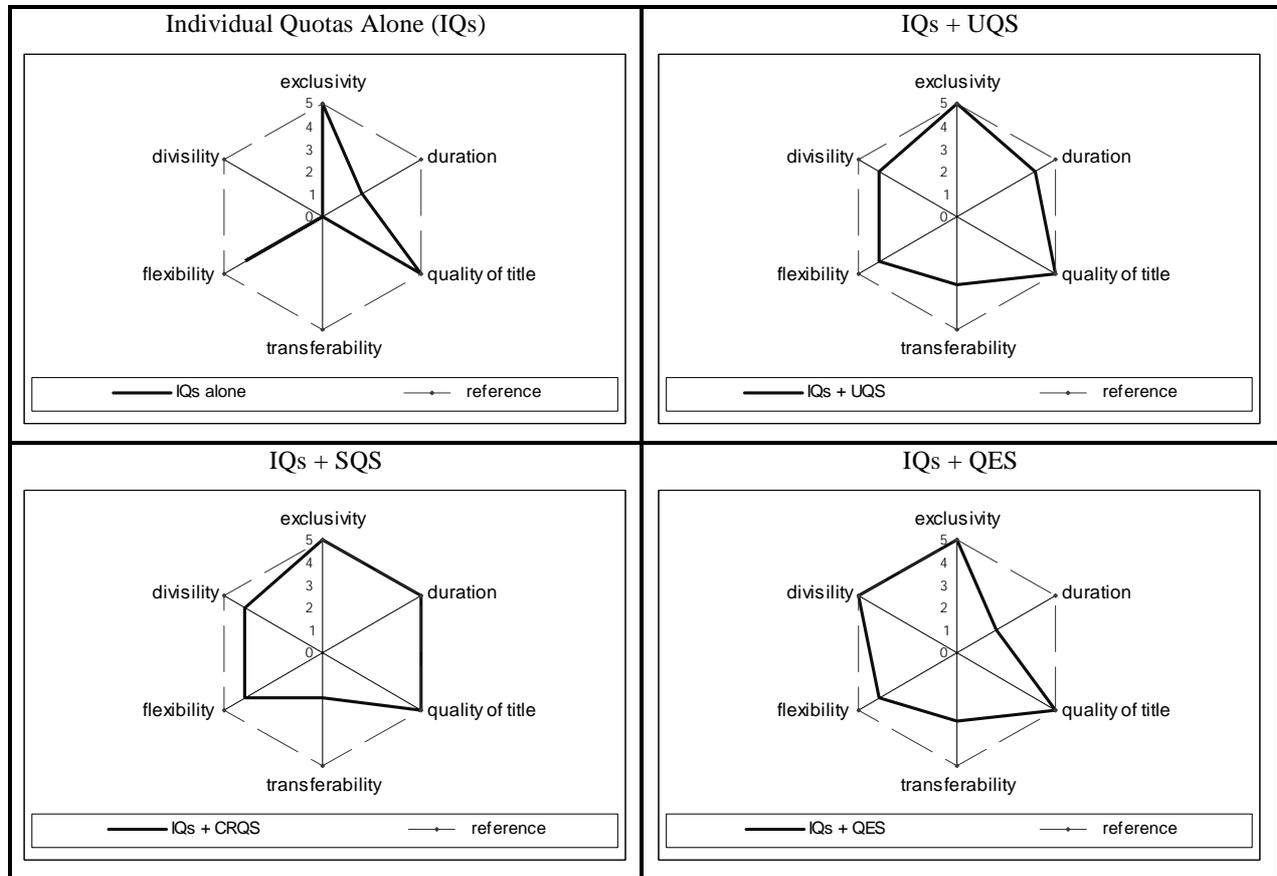
Available information suggests that the Norwegian "standard" IQs system, by providing relatively high level of exclusivity and quality of the title can allow fishers to plan their fishing activities during the year. This is expected to prevent the race for fish. In association with relatively high level 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 6.

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 more vessels with one vessel. While this is not likely to modify the effective pressure on the resource, such a system reduces the fixed costs of fishing and improves the resource rent.

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 in perpetuity 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, he can hardly contribute to the fleet adjustment. Yet, the coupled market-like instrument allows for short term adaptations to annual economic and environmental changes.

Figure 4. Characteristics of the Norwegian IQs variants systems



Japan: An example of Community Right-based Pooling system; the case of hard clam fisheries in Kashimanada^{ix}

The pooling system

Community-based fishery management has been employed in Japanese coastal areas for a long time. In the 1980s, fishermen in some areas started a new form of fishery operation called the "pooling system." It is a unique form of collaborative fishery operations established on the initiative of the fishermen themselves. The term "pooling system" was created by fishermen. 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" (Japan case study). 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. Some variations 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. As for distribution methods, simple uniform distribution is employed in some cases, while distribution based on certain criteria is employed in other cases. Pooling systems prevail under different management schemes, such as governor-licensed fisheries and right-based coastal fisheries. The fishery addressed in this paper belongs to the latter category.

Community Right-based hard clam fisheries in Kashima-nada

In the shallow sea in Kashima-nada from Ooarai Town to Hasaki Town in Ibaraki Prefecture, shellfish dredge net fisheries are carried out targeting shellfish species including hard clam (*Meretrix lamarckii*), equilateral venus (*Gomphina melanaegis*), and Sakhalin surf-clam (*Spisla sachalinensis*). A three-layer structure is observed for fishery management here. 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 fisheries 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 should be established.

Vessels must be licensed by the prefectural governor. The fishing ground is limited to the first-class joint fishery-right (*Kyodo-Gyogyoken*) fishing ground. This joint fishery-right fishing ground is shared by four fisheries cooperative associations along the coast of Kashima-nada. The license is issued only to fishery cooperatives, in which at least two-thirds of 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. Applying the organizational framework, this fisheries management instrument can be described as follows.

Exclusivity: This fishery is originally based on common ownership systems of local fishing grounds. Although it does not provide an exclusive right *per se* over sea areas, a right to engage in fisheries is provided under limited conditions to members of fishery cooperatives. The level of the characteristic is high (ranked 5 on the scale).

Duration: 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: The rights are authorized by prefectural governments through the licenses of governors. 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. The fact that all the responsibility for long-term sustainability of the resources is "devoluted" to a group of fishers leads to high compliance. The level of the characteristic is high (ranked 5 on the scale).

Transferability: The fishing right is non-transferable. Leasing of the rights is prohibited and there are restrictions on the creation of mortgage rights. The level of the characteristic is low (ranked 0 on the scale).

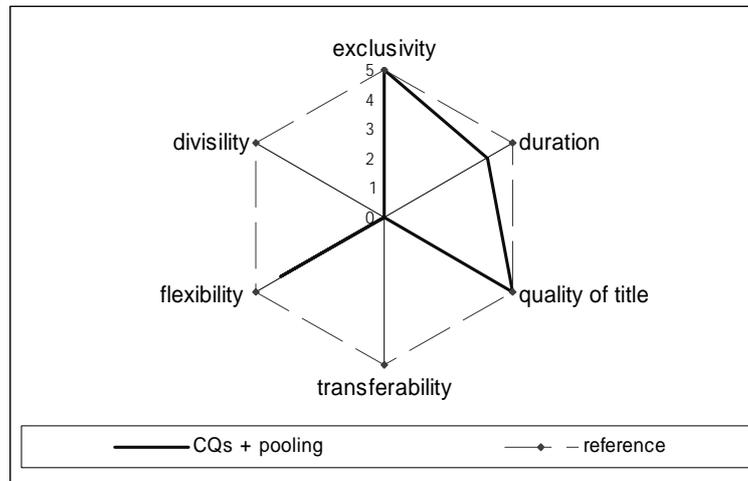
Divisibility: As the right to fish is attached to the non-transferable licence, it is not divisible. The level of the characteristic is low (ranked 0 on the scale).

Flexibility: Currently a one-area-four-group rotation system prevails, limiting the number of fishing days and catch volume per vessels and per area. Numerous regulations limit the freedom of operation of individual fishermen, hence individual flexibility is limited. However, it should be noted that those stringent measures are "self-restrictive", i.e. decided collectively by fishers. A two-third majority consent 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).

Implications:

Rather high levels of exclusivity, duration and quality of the title incite fishers to limit effective fishing effort to resource condition, in order to ensure more effective conservation of resources and stabilization of catch (i.e. that long-term benefits would be available for the community). Collective decision-process and the pooling system are expected to restrict both conflicts and "race-for-fish" behaviors. Furthermore, when simple uniform distribution is employed, the pooling system may incite fishers to reduce their fishing capacity ("positive" free-riding).

Figure 5. Characteristics of the Japanese Community right-based pooling systems



CONCLUDING REMARKS

To help understanding the transition towards sustainable and responsible fisheries, the OECD Committee for Fisheries launched a new Study on the use of market-like instruments as part of its 2003-2005 program of work. This paper focuses on one particular step of this Study, which consists in describing the different ways Member countries have used such instruments. Having first clarified the place of market-like instruments within the regulator's tool-kit, the paper presents the framework developed to organize the information provided by OECD member countries. The framework consists in "benchmarking" each market-like instrument in light of six property-rights characteristics (exclusivity, duration, quality of the title, transferability, divisibility, and flexibility).

Using 3 examples, the papers shows how the framework can apply to selected market-like instruments. It also demonstrates that the methodology used allows comparing instruments either within a single country or across countries, both in a non-normative manner. Such an approach is politically relevant because it allows both highlighting differences that may occur between a given instrument implemented in two different countries and similarities that may exist between two different instruments. As illustrated by the Norwegian case, such an approach also allows for the identification of innovative variants. Next steps of the Study will consist in understanding how market-like instruments developed and why differences prevail across countries.

REFERENCES

- Bjorndal T. and Munro G., 1998, *The economics of fisheries management: a survey*. International Yearbook of Environmental and Resource Economics, pp. 153-188.
- Harte M. and Bess R., 2000, The Role of Property Rights in the Development of New Zealand's Marine Farming Industry, in *Use of Property Right in Fisheries Management*, Proceedings of the FishRights99 Conference, Fremantle, Western Australia, 11 - 19 November 1999, FAO 2000.
- Hersoug, B., 2002, The closing of the Norwegian commons, Paper presented at the 11th biennial conference of the IIFET, August 19-22, Wellington, New Zealand.
- Lane D.E., 1999, Applications of Rights-based Fisheries: Experiences and Consequences, in *The Definition and Allocation of Use Rights in European Fisheries*, Proceedings of the second workshop held in Brest, France, 5-7 May 1999
- OECD, 2003, Review of Fisheries in OECD Countries, Policies and Summary Statistics.

OECD, *forthcoming*, The use of market-like instruments in OCED countries. A guidebook.

Scott A., 1988, Development of Property in the Fishery, *Marine Resource Economics*, vol.5, pp. 289-311

Scott A., 2000, Introducing Property in Fishery Management, in *Use of Property Right in Fisheries Management*, Proceedings of the FishRights99 Conference, Fremantle, Western Australia, 11 - 19 November 1999, FAO 2000.

Troadec and Boncoeur, 2003, Economic Instruments for Fisheries Management, unpublished report to the OECD.

ENDNOTES

ⁱ Opinion and ideas pertaining to this document are those of the author and are not necessarily shared by the OECD and its Member countries.

ⁱⁱ In this regard, Bjorndal and Munro (1998) for example stated that “*well working community based fisheries management schemes and well working ITQ schemes share a common attribute. They will both give the fishermen an incentive to view the fishery resources as long term assets, the conservation of which is in their self-interest*”.

ⁱⁱⁱ While drawing on property rights theory, it should be noted that the analysis does not discuss whether or not a given instrument constitutes a property right *per se*.

^{iv} Source: Iceland contributions to the OECD Committee for Fisheries, OECD, *forthcoming*.

^v Currently, the small vessel fleet, i.e. vessels under 6 GRT, operates under three different types of fisheries management regimes. A few dozens of them are in the normal ITQ system, several (about 500) are in a special ITQ system for small boats and the remainder (about 300) is still in a system based on limited fishing days.

^{vi} Source: Norway contributions to the OECD Committee for Fisheries, OECD, *forthcoming*.

^{vii} 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.

^{viii} The QES is currently tested in selected coastal counties. If the arrangement is regarded as successful, it may be introduced nationwide from 2005. The purpose of these arrangements is to improve vessel profitability and in the long run enhance incentives to reduce fleet capacity.

^{ix} Source: Japan contributions to the OECD Committee for Fisheries, submitted by Mr. O. Baba, Tokyo University of Marine Science and Technology, and Mr. Yagi, Fisheries Agency, MAFF; OECD, *forthcoming*.