



Design or pragmatic evolution: applying ITQs in EU fisheries management

Luc van Hoof

Institute for Marine Resources and Ecosystem Studies, PO Box 68, 1970 AB, IJmuiden, The Netherlands

**Corresponding Author: tel: +31 317 487 173; fax: +31 317 487 326; e-mail: luc.vanhoof@wur.nl*

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Among the proposals for the 2012 revision of the EU Common Fisheries Policy, a strong case is made for the introduction of a system of rights-based management. The EU perceives individual fishing concessions as an important instrument for capacity management. We will use the introduction of individual tradable quotas in the management of the Dutch North Sea beam trawl fisheries as a case for exploring the effect of the introduction of such an instrument. The effect will be assessed in terms of reduction of fishing capacity in the Dutch beam trawl fleet and its economic and social impact. These Dutch experiences will be translated to the current debate on the reform of the EU Common Fisheries Policy. Especially, we will focus on the issues of "relative stability", the concentration of rights, and the effects on the small-scale fisheries sector. Some of the negative effects associated with individual tradable rights can be addressed through design. However, trying to maintain stability and counter perceived negative impacts on fishing communities will modify the effect of introducing individual fishing concessions.

Keywords: CFP, fisheries management, individual fishing concessions, individual tradable quota, property rights.

Introduction

Fisheries are characterized by the "Tragedy of the Commons" (Hardin, 1968; Commission of the European Communities, 2011c); individuals operating in their own interest tend to overexploit a common-pool resource. The ensuing race for fish creates an incentive to emphasize short-term gains and de-emphasize long-term incentives for stewardship (Hanna, 2001). Hence the core question in fisheries management, as in other environmental and resource dilemmas, is how to bridge the gap between private decisions and societal and environmental impacts?

Rights-based approaches to fisheries management have shown potential for promoting biologically sustainable and economically viable fisheries in several parts of the world (MRAG et al., 2009). Providing individual rights to fishers aims to close the gap between private decisions and societal and environmental impacts by creating economic incentives for owners of vessels to decrease their inputs of labour and capital to a fishery and to use the resource in an efficient, sustainable way (Committee to Review Individual Fishing Quotas, 1999). Within the current debate in the European Union on the upcoming reform of the Common Fisheries Policy (CFP), rights-based management tools in fisheries have been put on centre stage. The Commission's reform proposals aim at the

introduction of a system of rights-based management using transferable fishing concessions (TFCs) to eliminate overcapacity (Commission of the European Communities, 2011d). TFCs, in the form of individual transferable quotas, were introduced in the 1980s in the Netherlands. In this article we will use this case to assess whether controlling access to a fishery through the privatization and marketization of catch rights creates sufficient incentive to reduce the input of labour and capital and use of the resource in a more efficient, sustainable way. We will discuss the principles of tradable fishing rights and look at the current proposals for individual fishing concessions in the revision process of the CFP. We will go on to describe the history of the Dutch system of individual tradable quota- (ITQ-) based fisheries management and then analyse the outcome of the system. We will bring the discussion back to the current EU CFP reform debate and, finally, draw some conclusions on the applicability of tradable fishing rights at an EU scale.

Rights-based management and transferable fishing rights

Rights-based management systems in fisheries, allocating fishing rights to fishermen, fishing vessels, enterprises, cooperatives or fishing communities (MRAG et al., 2009), occur in many forms. Across Europe today we can find systems of limited non-

transferable licensing; limited transferable licensing; community catch quotas; individual non-transferable effort quotas; individual transferable effort quotas; individual non-transferable catch quotas; vessel catch limits; ITQs and territorial use rights in fisheries (MRAG *et al.*, 2009).

The European Commission's CFP reform proposals aim to use the introduction of TFCs to eliminate overcapacity for all vessels ≥ 12 metres in length, and all other vessels fishing with towed gears. In the terms of the European Commission, "transferable fishing concessions" are "revocable user entitlements to a specific part of fishing opportunities allocated to a Member State or established in management plans adopted by a Member State in accordance with Article 19 of Regulation (EC) No EN 23 EN 1967/200634, which the holder may transfer to other eligible holders of such transferable fishing concessions" (Commission of the European Communities, 2011d, p. 22). "Individual fishing opportunities" are annual fishing opportunities allocated to holders of transferable fishing concessions in a member state on the basis of the proportion of fishing opportunities pertaining to that member state (Commission of the European Communities, 2011d).

Introducing ITQs into fisheries is a combination of privatization and marketization of state intervention (cf. Hulsink, 2001; Letza *et al.*, 2004; Yesilkagit and de Vries, 2004; Savas, 2005; Castree, 2008a, b). Privatization concerns the "right of access" to a resource, and marketization refers to the mechanism of "distribution" of the resource. Whereas initially the state holds and distributes the right to fish, with the introduction of ITQs these rights are held by (individual) fishermen and the allocation of these rights, by way of trade, is left to the market.

There are some negative impacts associated with the introduction of ITQs such as discards, underreporting landings, and a concentration of fishing rights resulting in communities losing access to fisheries (Commission of the European Communities, 2007b). These problems can be attributed partly to the fact that ITQ systems do not create true property rights in the fishery; holding a share of quotas only gives a particular fisherman a right or privilege to harvest a given amount of fish, it provides no real control over the resource itself (Squires *et al.*, 1995; Wingard, 2000). Hence, fishing rights should rather be looked at as "user rights" (Commission of the European Communities, 2011a) rather than as true property rights.

In addition there are concerns over the loss of access to the fishery of fishermen through a concentration of quotas in the hands of a smaller number of fishers (Copes and Charles, 2004), which can eventually lead to a reduction in size or even elimination of some fishing communities, as with fewer active boats left, boat repair, baiting, processing, trade and other related activities are reduced, further reducing fishery-related employment (Hatchard *et al.*, 2006; Hatchard *et al.*, 2007). Also, although the capacity reduction facilitated by an ITQ system is likely to generate economic benefits, the distribution of those benefits is widely considered to be inequitable (cf. McCay, 2004), such as initial recipients receiving a free gift of quotas from a public resource, while subsequent generations face relatively high purchase prices or lease rates (cf. Copes and Charles, 2004; Commission of the European Communities, 2007b).

Experiences in member states where a TFC system is used show that some of these risks of introducing ITQs can be avoided through design (Commission of the European Communities, 2011b). The European Commission proposes the introduction of TFCs to adhere to five basic principles (Commission of the

European Communities, 2011b): (i) marine resources are and must remain a public good. TFCs cannot confer property rights over marine resources, but only user rights to exploit them for a limited time. After the time is up the TFC has to fall back to the member state, who is free to allocate it again using the same allocation criteria or different ones; (ii) selling, leasing or swapping of TFCs can only happen under strict conditions as only owners of registered and active vessels seeking to use them on a licensed and active vessel, can buy TFCs; (iii) relative stability must be respected; (iv) member states have to withdraw TFCs in the case of a serious infringement by the vessel owner; and (v) member states have to reserve quotas and TFCs for new fishermen who are looking to enter the fishery. The Commission proposes to member states to use a toolbox of measures (Commission of the European Communities, 2011b), such as: (i) excluding small scale fishing (<12 m with passive gear), in order to ensure that the fishing rights of this important segment will not be sold to larger vessels; (ii) preventing excessive concentration by setting maximum percentages of a given resource that can be held by any given vessel owner; (iii) reserving part of national quotas for coastal communities that depend on small scale fleets; and (iv) limiting the transferability to inside specific fisheries.

We will now turn to the Dutch case and try to establish how the Dutch experience relates to the current European debate on the introduction of TFCs. The impact of the introduction of an ITQ system can be measured in economic and societal terms such as size and engine capacity of the fleet, profitability of the fleet, employment, and influence on the fishing communities' economy. The rights themselves can be assessed on the basis of four criteria (Commission of the European Communities, 2007b): (i) the "exclusivity" of rights; (ii) the "security" of title; (iii) "longer validity" to ensure trust in the capacity of the system to respond to long-term concerns; and (iv) "transferability" and the rules and means to make TFCs function. These latter criteria are closely related to what Anderson labels the "attributes" of fishing rights in order to provide conservation incentives to the owners: rights must be exclusive, defendable, enforceable, transferable and flexible (Anderson, 1995).

The Dutch ITQ system

Management of North Sea fisheries has evolved over the past 30 years. After the establishment of the North East Atlantic Fisheries Convention (NEAFC) in 1964, it took till 1975 for NEAFC to take its first management measure: the establishment of TACs for several species of fish, including sole and plaice, the two most important species for the Dutch beam trawl fleet (cf. van Densen and van Overzee, 2008). The Dutch government responded by setting up a system of Individual Quota (IQ) for the fishermen. The IQs were distributed based on historic rights. The IQs could not be sold, leased, or used as collateral. One reason for this was that quota transfers would cause extra management problems; another was the fear that quotas would be concentrated in an undesirable way. Nevertheless, "unofficial" transfers of IQs developed rapidly, for instance by transfer of vessels together with their IQs to other enterprises, by merging or splitting enterprises and by individuals switching from one firm to the other, taking IQs with them (Smit, 2001).

Up until the mid-1980s, these IQs were perceived by the vessel owners as an attempt to limit their operations, rather than as fishing rights. As enforcement of the quota was rather weak (Davidse, 2000) the quota did not provide secure property

rights; the flatfish fishery would be closed once the national quotas for sole and plaice were exhausted. This induced uncertainty and the fishermen's race for fish became even more stimulated than before (Dubbink and van Vliet, 1992).

The EU CFP established in 1983 not only aimed at the implementation of the TACs, it also saw the introduction of the CFP structural policy. Limits were set on the capacity of the fleets under the Multi Annual Guidance Programme (MAGP). In order to fulfil the obligations resulting from the first MAGP, the Dutch Ministry responsible for fisheries implemented a licence scheme in 1984, which led to an engine capacity (horsepower) ceiling for the fleet. As the informal trade of IQs increased over time, in 1985 the Ministry officially allowed the trading of IQs for sole and plaice (cf. Davidse, 2000). In order to get fishing effort in line with allocated TACs a days-at-sea regime was established in 1987 (van Densen and van Overzee, 2008).

Despite all these management measures the Dutch fishing industry was characterized by reports of illegal fishing, under-reporting of catches, grey and black trade circuits, and inadequate policing and enforcement by the Dutch state (van Ginkel, 2005). To address these enforcement problems, government sought a new division of responsibilities between the state and the private fishing sector. In order to be able to devolve specific management responsibilities to fishermen, the fishermen had to organize themselves into groups, the so-called "Biesheuvel groups", named after the chairman of the committee that advised on the new policy, former Prime Minister Barend Biesheuvel. (For a more extensive discussion on these management groups, see van Hoof, 2010a.) A robust 97% of all beam trawl fishermen (van Ginkel, 2005) joined the co-management system, partly because of a threat by parliament to limit engine power across the board if fishers did not sign up, but also because group members were entitled to more days-at-sea than non-members. Also, the period in which non-group members could trade quotas was restricted.

The aim of the management groups was twofold: first, to arrive at quota compliance; secondly, to improve economic performance of the fleet. The co-management regime hinges to a large extent on the idea of social control and peer pressure. The management groups are administered by a board, consisting mainly of fishers but chaired by an independent chairman. The primary task of the management groups is to manage and control the quotas of their members. Within the groups, individual fishers pool their individual quotas and their days-at-sea allocation. Fishers remain the owners of their catching rights and days at sea, but within the group, they can easily and in the short term buy, sell, or lease quotas and days at sea, if they have a shortage or a surplus. In this way, individual fishers gain more short-term flexibility and have more options to react to unexpected events. Fishers must deliver a "fish plan" to the board, detailing how they want to spread their days at sea and catches over the year (van Hoof, 2010a).

Each individual group member takes his individual rights to be managed within the confines of the group. This allows decisions which otherwise would be made by government, such as the fishing season planning, to be made by the fishermen themselves. In addition group members can constantly modify their initial right allocation as they can buy, sell or rent their quotas and fishing days (Davidse, 2000). The group as a whole is responsible for the management of the quota uptake, ensuring landings are in line with total group entitlements. In addition, the group facilitates

trade, hiring and renting of the ITQs between their members, which makes the system far more flexible.

The ITQs are specified as a right to land a specific quantity of fish in a certain year, based on a percentage share of the annual national Dutch TAC of species like sole, plaice, cod and whiting in the North Sea. The fishing rights are given to the fishermen in perpetuity. Whereas the ITQs are individual and freely transferable there are some government rules and restrictions as to the transfer of ownership. ITQs are distributed as a government document issued by the Ministry. Transfers of ITQs must be approved and are registered by the Ministry, and fishers are not allowed to sell parts of ITQs separately. Only Producer Organizations can buy ITQs and sell parts of them to individual fishers (Davidse, 1996). Fishers can only buy an ITQ from another ITQ holder if they are in possession of a fishing licence. However, not only real fishing companies, but also banks or shipyards may hold an ITQ, although only temporarily (Salz, 1996). And ITQs have to be attached to a principal vessel and can only be held independent of a vessel for a restricted period of up to 5 years, and only then when the individual holding is part of a group holding; this is to allow owners to lease out their rights within any period that they are in between vessels. Members of the co-management groups may trade freely within the group until November; those individual firms who do not participate in the groups transfers are not allowed after April of the particular year. The under-exploited ITQs in one year cannot be transferred to the next (Salz, 1996). As for exclusivity, the ITQs are an exclusive property of a specific fishing company. The exclusivity is maintained also within the co-management groups. The legal standing of the ITQs, however, is not perfect, as overexploitation of ITQs by some vessels will be at the expense of other members of the group; indemnity is agreed upon between the group members (cf. Salz, 1996).

With the progressive bringing of species under a TAC, such as for example the introduction in 1994 of quotas for cod, and in 1996 the quotas for herring and mackerel, the ITQ system was further extended. Today all of the main species of the beam trawl fisheries (plaice, sole, cod, whiting) are under the ITQ system. Only a few such as ray, dab and brill have a national TAC and no individual quotation, and only the likes of red mullet and gurnard are not under any quotation restriction. Part of the TAC is not shared through ITQs but is retained by the Ministry for management purposes.

The impact of the introduction of ITQs in the Dutch system

In this section we will assess whether the Dutch system of introducing ITQs reached its goals and how it dealt with the impact of the ITQ system. The downward trend in the number of vessels, total engine capacity and crew over the period 1984–2007 becomes quite clear from Figure 1. Of course total employment on board has a straight-forward relation with the number of vessels (average crew size remaining rather stable over time at just over four).

As Figure 2 shows, not only have total annual investments in the fleet (in real terms measured in million Euros) dropped significantly over the period, a logical consequence of a shrinking fleet, but also the annual investment per vessel in real terms has dropped from an average of about 80 000 Euro annually over the 1980s to 40 000 Euro annually in the 1990s and 2000s. The

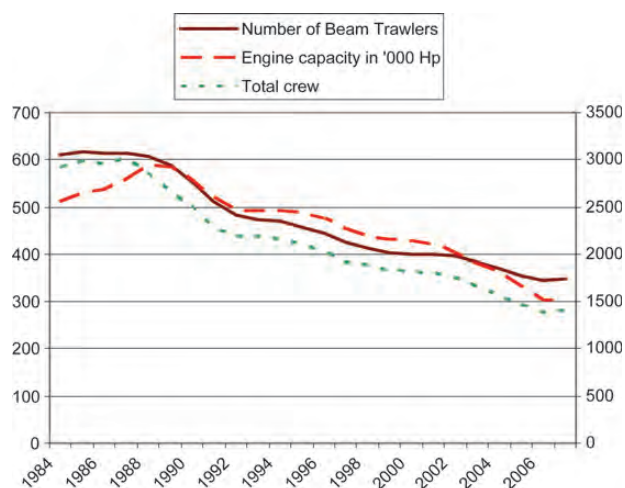


Figure 1. Development of the number of beam trawlers, total nominal engine capacity, and total crew employed (secondary axis) over the period 1984–2007; data from LEI (LEI Statistics, 1985, 1990, 1995, 2000, 2008).

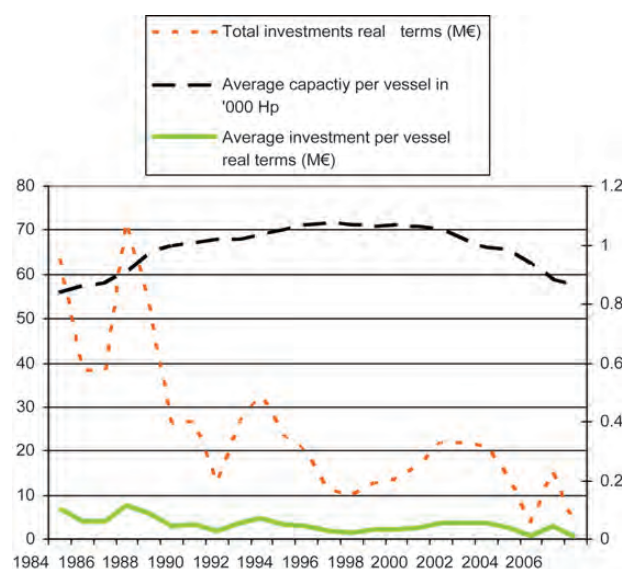


Figure 2. Development of the total investments in the fleet (primary axis), average investments per vessel, and average capacity of vessels of the Dutch beam trawl fleet over the period 1984–2007; data from LEI (LEI Statistics, 1985, 1990, 1995, 2000, 2008).

average capacity per vessel in nominal terms shows a downward trend since the late 1990s.

Whereas for sole nominal landings have over the entire period been in line with the Dutch quota allocation of the total TAC (Figure 3), for plaice Figure 4 shows that after the 1980s, in which landings overshot allocated quotas, landings were in line with Dutch TAC entitlement. As for discards, according to Catchpole *et al.* (2008), based on a rather limited sample over 2001 and 2002, the discard rate (including all fish and benthic material) was estimated at 77% of the catch.

As for profitability of the beam trawl flat fish fleet (presented in Figure 5 below), we note that for the period immediately following

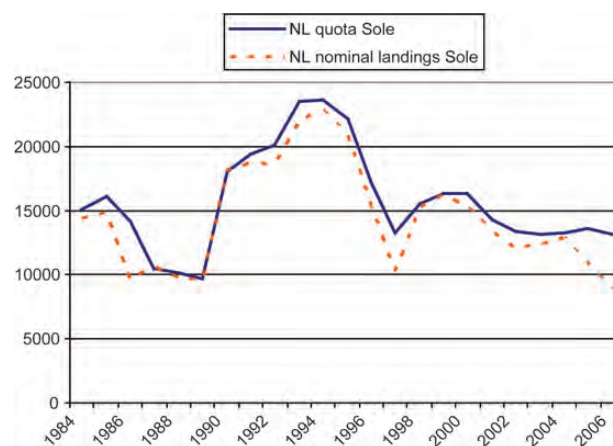


Figure 3. Dutch North Sea sole quotas including swaps and nominal landings over the period 1984–2006; nominal landing data from ICES ACFM 2007 (ICES, 2007), Dutch quota data from LEI (LEI Statistics, 1985, 1990, 1995, 2000, 2008).

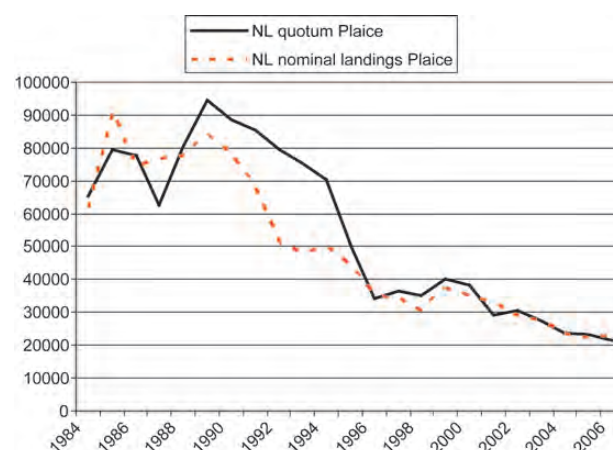


Figure 4. Dutch North Sea plaice quotas including swaps and nominal landings over the period 1984–2006; nominal landing data from ICES ACFM 2007 (ICES, 2007), Dutch quota data from LEI (LEI Statistics, 1985, 1990, 1995, 2000, 2008).

the introduction of ITQs, the sector became more profitable. The period 1991–2001 marks a rather long period of good economic results compared to developments in the 1970s and 1980s (Davidse, 2000). With the increase in the oil price of the mid-2000s we see the results of the fleet diminish rapidly.

In interpreting the effects of the Dutch ITQ system we should realize that this management instrument has not been introduced in isolation, but was part of a series of government management measures among which the establishment of the co-management system, intensified control, a days-at-sea regime, a maximum gear-width for double-beam trawls and, in addition, an overall limitation of fleet capacity under the MAGP and a maximum engine capacity of 2000 HP for new ships. The compulsory landing of catches at an auction greatly enhanced the monitoring and enforcement capabilities of the system.

In Figure 6 the development of the Dutch fleet of vessels with an engine capacity of 150–2000 kW is compared with the development

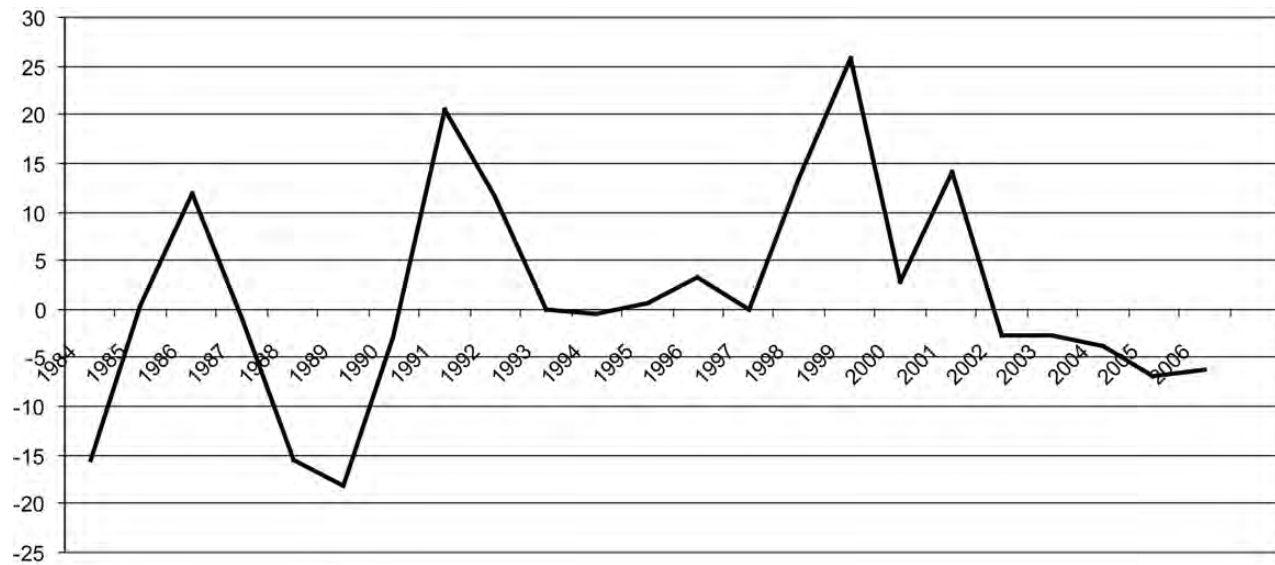


Figure 5. Net results Dutch North Sea beam trawl fleet in million Euro real value 1984 = 100. Data from LEI (LEI Statistics, 1985, 1990, 1995, 2000, 2008).

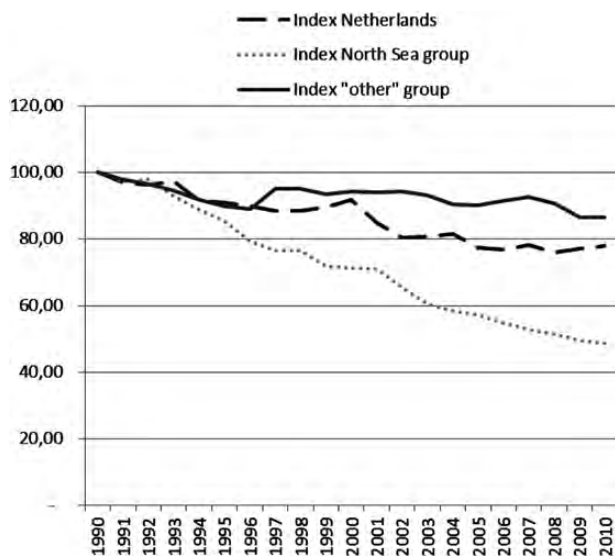


Figure 6. Index of number of vessels in 150–2000 KW group (1990 = 100) for the Netherlands, North Sea (Belgium, Denmark and United Kingdom) and reference group (Germany, Ireland, Portugal and France) (EuroStat 2012).

of similar fleet segments of the Belgium, German, Irish, Portuguese, Danish, French and UK fleets for the 1990–2010 period. Figure 6 is based on EuroStat data (EuroStat, 2012). This database does not provide a distinction between fisheries (metiers), other than documenting fleets in terms of length and engine capacity. As in Beam trawl fisheries, engine capacity is a main contributor to catch success; here fleets are compared with respect to engine capacity. Unfortunately, Eurostat does not provide European data for the 1983–1990 period; this is rather unfortunate as it is in this period that the Dutch ITQ system was introduced and would logically portray the largest impact on number of vessels. In addition, Eurostat data are based on the national fleet registers; these registers

do not make a distinction between economic active vessels and inactive vessels. Hence the trend depicted in Figure 6 is to be considered indicative of fleet development, but not of actual fleet development. In order to allow for comparison, the total number of vessels of the individual countries was divided over three groups [the Netherlands; a North Sea group (Denmark, United Kingdom and Belgium); and a reference group (France Ireland, Portugal and Germany)] and indexed based on the number of vessels of 1990. Over this period the Dutch fleet in number of vessels in this engine capacity segment reduced by 22%, whereas in the other countries the fleet segment reduced on average by 36% (for the North Sea group by 51%, and for the reference group by 14%). It should be noted that the main reduction of this fleet segment in the Netherlands was realized in the 1983–1990 period; unfortunately Eurostat does not provide fleet data for this period. If we, based on LEI data, analyse the fleet development over the period 1983–2007 the Dutch cutter fleet reduced by 43%. Noting the limitations of using the Eurostat database there is still an indication that the reduction of the Dutch fleet over 1983–2007 is in line with the fleet development of other EU Member states. However, fleet reduction varies between the member states.

From the above, it remains inconclusive whether the introduction of an ITQ system in itself brings about a substantial reduction of fleet size. On the one hand, as mentioned above, the Dutch ITQ system was introduced in a suite of fleet and quota management measures. Hence attributing fleet reduction to a single management instrument is unwarranted. In addition, it should be noted that during this period Denmark introduced an ITQ system for the entire fishery in 2007 (Andersen *et al.*, 2010), and the UK introduced a system of Sectoral Quota—although not officially regarded an ITQ system, this can be regarded as a *de facto* tradable fishing rights system (Shotton, 2000; van Hoof 2003). Hence general economic developments, such as high oil prices, and management instruments such as MAGP do have an influence on fleet development in Europe.

From the perspective of the individual fisher the introduction of the ITQ system provided both a necessity and an opportunity

to bring individual quota holdings in line with the fishing capacity of the vessel. In addition, the individual and perceived perpetual character of the ITQ, although perhaps not a real property right over the resource in the sense as meant by Squires *et al.* (1995) and Wingard (2000), is a right to fish that can be exerted and defended and can be used as collateral. Access to the group system allows the individual fisher to fine-tune quota holdings and landings during the year by leasing out or hiring additional quotas; rather convenient in a mixed fisheries in which plaice and sole are never caught in fixed proportions.

In fact, what was introduced as individual property rights is managed during the year as a cooperative catch right. The individual fisherman remains proprietor of the individual quota entitlement, yet during the year the management of the uptake of the quota is collectively managed in such a way that landings match the total of the group quota holdings. In addition, groups can take an active role in acquiring additional quotas. This is achieved by collective buying of quotas on the market: the quotas become the property of the group. In addition, groups can take an active role in so-called quota swaps: the exchange of quotas between EU member states. At the European level these quota swaps play a significant role. Some, known as “traditional exchange” are quotas that are usually exchanged each year between the same member states. In addition there are the more *ad hoc* exchanges, dependent for example on the development of a fishery (acquiring of additional rights for a species that is temporarily landed in large quantities) or more strategic exchanges, for example in times of high oil prices the search for the exchange of quotas in more faraway stocks (Skagerrak/Kattegat) for stocks that are more nearby (North Sea). Quota swaps play an important role in group management of the quotas. The groups play an active role in on the one hand ensuring landings are in line with total quota holdings, and at the same time, by being involved in quota transfers and swaps, ensure that the quota holding of the group is in line with landings and desired catch opportunities.

The managerial role the groups have adopted in quota trade might be the reason that within the Netherlands there is no clear evidence that quotas have on a significant scale left the segment of family-owned beam trawlers. Indeed, the fact that individual quota holdings are being brought into a management group might have made a major contribution to this, as in the first instance quota transfers are being traded within the confines of the group. Then again, it is true that the first allocation of quotas privileges the original group of fishermen who received their quota share gratis. After the initial allocation the fishermen (owners) further invested in obtaining an appropriate quota holding, thus developing a market for the transfer of quotas and setting a price. This of course puts a strain on new entrants to the sector: they have no access to a start-up quota share for free.

As for the effect of ITQs on local communities, in the Netherlands the significance of fisheries is rather small and diminishing. Out of the 23 communities in the Netherlands with a significant cutter fleet the contribution to employment on average is less than 0.5%; only in communities like Den Oever (9%) and Urk (7%) the contribution to employment is more significant (Salz *et al.*, 2008). The communities are, compared to for example Iceland and Norway, not very isolated. Of course the disappearance of fishing vessels and hence related fishery activities does have an impact on local communities. But then again, as these communities are closely linked to the wider economy, in recent years we have seen that wage opportunities in other sectors have

facilitated crew members to take other jobs. In addition, increasingly the fish processing and trade industry in the Netherlands have become less dependent on national landings and more involved in international trade flows.

As for the so called “slipper skippers” (former fishermen holding on to quotas, leasing them out instead of actively fishing on them) this phenomenon is of minor importance (Visserbond, personal communication). On the one hand only a small proportion of quotas is currently owned by slipper skippers, and the period in which quotas can be held without being attached to a vessel is limited. On the other hand these quotas are made available to fishers to lease. In fact this illustrates the process in which ITQs can facilitate the gradual withdrawal of a fisher from the fisheries.

Design or pragmatic evolution?

The Dutch transition towards a system of transferable fishing concessions based on ITQs did not come about overnight but developed over a period of years in which a system of quotas held at the national level evolved via a system of individual quotas into a system of ITQs. The introduction of I(T)Qs in the Netherlands was embedded in a package of fisheries management measures, out of which the establishment of co-management groups can be seen as being a main contributor to the success of TFCs.

Today the Dutch ITQs are exclusive, defensible, enforceable, transferable and flexible. The exclusivity of rights is embedded in the monitoring and enforcement of quota uptake in the co-management groups. The wider legal system provides security to the titles. However, although the ITQs do provide exclusive and secure fishing concessions, the specific entitlement to catch an amount of fish is far from secure as it depends on the state of the stocks, the pursuant biological advice, and the political decision on the annual TAC. As for the longer validity of the rights, the Dutch State has not limited the period of validity, yet of course the individual fishing opportunities allocated to holders of transferable fishing concessions do vary annually.

In economic terms, the fleet has become smaller in number of vessels, capacity and employment. For a period of 10 years (1991–2001) the net results of the fleet have been rather positive. Yet the beam trawl fleet is still operating at an economic loss, largely due to high operating costs (MRAG *et al.*, 2009). The reduced employment in the fleet and the effect on the ancillary industry overall is limited, although they can in some communities still be quite extensive.

As for the discussion on the concentration of rights, the Dutch example shows that embedding the ITQ system in a co-management structure around groups of fishermen may well limit the concentration of fishing rights in the hands of a few. Also, as the beam trawl sector is not a small-scale fisheries sector, little competition with other commercial fishing sectors over fishing concessions occurs.

The initial allocation of Dutch catch rights was based on the individual historic catch record and the “grandfathering” principle of distributing the first allocation of rights for free. As the rights do not fall back to the state at a certain point in time, the state has little influence on the quota market in terms of pricing and distribution. The introduction of the ITQ and co-management system did bring about a system of more efficient enforcement controls. However, high grading and discard problems remain as TAC and ITQs are monitored in terms of fish landings, not in actual catches.

The two main issues in the current EU debate are whether private rights can be allocated to a public natural resource, and the principal of relative stability. As for granting private rights, as they are catch shares, they are not full private property rights, but a use right that allows access to the fishery and a percentage of the TAC for an individual species (Emery *et al.*, 2012).

In the Netherlands the debate on relative stability is more essential. Relative stability, which commenced in the early 1980s as a simple expedient for distributing fishing opportunities among member states through fixed allocation keys for the most important commercial stocks, now limits the flexibility of management and frustrates attempts to reform the system (Symes, 2009). Since the introduction of relative stability, the conditions have changed for example due to stock development, evolution of fleets, new fishing strategies on different stocks, changes in demand for given species, and evolution of imports. All these changes cannot be accommodated within the straight jacket of the fixed allocation keys (Commission of the European Communities, 2011c).

In addition the phenomenon of “quota hopping” should be taken into account. “Quota-hopping” is understood as the reflagging of fishing vessels in order to fish against the catch quotas of another country (Hatcher *et al.*, 2002). According to Morin (2000) the effects of quota-hopping vary from country to country. Especially in the 1980s and 1990s, considerable Dutch investments in the UK fleet were realized. This of course has also contributed to a reduction of the Dutch cutter fleet. The freedom of establishment and the free movement of capital have enabled EU ship-owners to purchase vessels and to use national quotas in other EU countries. States have to cope with economic actors who are increasingly capable of bypassing protective national policies by using the Community’s rules of law (Lequesne, 2000).

In assessing the impact of several policy options for a revised CFP, the option under which TFCs are fully tradable between segments and countries would result in the largest reduction of capacity, but also the largest increase in profitability of the fleet (cf. MRAG *et al.*, 2010; Commission of the European Communities, 2011c). The rigidity, inherent to the principle of relative stability, limits the economic efficiency and the economic performance of the catching sector, which cannot optimize the scale of their operations and which cannot follow and respond to the evolution of market demand (Commission of the European Communities, 2011c).

Conclusion and discussion

The Dutch case of introducing ITQs in fisheries management shows that managing capacity of a fishery through the privatization and marketization of catch rights creates an incentive for a reduction of input of labour and capital to a fishery and for use of the resource in a more efficient, sustainable way. To this should be noted that the emphasis lies on the marketization of catch rights (making annual individual catch allocations tradable) much more than on privatizing fish stock ownership: fishers have an annual catch allocation, but do not own the stock.

The establishment of co-management groups has been a main contributor to the success of TFCs in the Netherlands. Ownership of the catch rights remains fully with the fishing fraternity and no over-concentration of rights has occurred. The Dutch case presents an example of how a system can be designed and adjusted

over time to accommodate emerging challenges. However, the initial allocation and durability of fishing rights, and high grading and discards do remain rather problematic. The latter could be further addressed by more effective enforcement controls and a transition from *de facto* landing rights to true catch rights, e.g. by way of an effective discard ban. The former is a more serious challenge, as the Dutch state has no influence on the allocation of quotas. In future modifications to the system it would be worth considering having a certain portion of the quotas retained annually by the state. The state could then decide whether to re-allocate or retain these quotas. The question could be raised of whether it is time to open up the ITQ market to, for example, recreational fishers, but also to environmental organizations, fishing communities and (local) governments, so other actors could play an active role in fisheries management, and fishing communities could safeguard access to the resource for their fishers.

Dutch fishermen used the group system not only for private optimization of quota holdings but also for the collective management of quota uptake, as well as for developing a collective quota holding. In linking privately owned quotas to collective (group) management, and linking the realm of nationally managed quotas with international quota swaps, the fisheries sector, as a private entity, gained a navigating role in the steering mechanism of the state.

Limiting tradability of TFCs between fleets (be it national fleet segments or between member states) either through exclusion of small-scale fishing, preventing excessive concentration of rights, reserving quotas for coastal communities, or limiting the transferability to inside specific fisheries, as proposed by the Commission, although in the short run promoting a social-economic equilibrium in the coastal areas (Coelho, 2010), will defer reaching economic efficiency in the long run. Restricting transferability will limit capacity reduction and hence will prolong overcapacity. This is the fundamental quandary of any TFC system: the purpose is to see fishing rights move to the most efficient operation, hence producing the same amount of fish using less capacity, by making fishing rights tradable on a willing seller–willing buyer basis. Yet this reduction of capacity affects employment and the distribution of income.

Did the Dutch ITQ system bring about a major change? What we observe is that the total package of management instruments (of tradable fishing rights, co-management, increased enforcement, engine capacity limitations and MAGP) did bring about an operational system of TFC management. The achievements in fleet reduction cannot be attributed solely to the introduction of the ITQ system. Also, noting the recent economic results of the fleet, the system has not resulted in the long-term increased viability of the fleet. Also, by giving the fishing rights to the fishermen in perpetuity reduces the state’s control over the management of the system.

The Dutch case shows that a number of issues (first allocation, exclusivity, security and transferability) should be considered in the design of the system. But also that, through pragmatic adaptation of management, an effective system of TFCs can be developed. Linking TFCs to co-management has in the Netherlands reduced some of the negative effects associated with individual tradable rights.

Efficacy, design, the impact and the costs of a TFC system, compared to other management options, depend on the characteristics of fisheries, the institutional setting, the particular design of the TFC system, and the underlying legal framework (cf. van Hoof

et al., 2002). Whether the Dutch experience can be applied in other countries is dependent on the local political and institutional setting rather than on the specific characteristic of the fisheries and fishing fleet. Following Salz (1996) in his definition of ITQs, TFCs depend on the way they are defined in a specific context. The term “individual” in ITQs is often interpreted as a fisherman, a vessel or fishing company. In practice it is a “legal person”, an entity allowed to hold property, which is defined in the general (and possibly also in the fishery-specific) legal framework of a specific country. A TFC system can have many different modalities, with different legal attributes. Proper functioning of ITQs requires that all entitlements, privileges and responsibilities are defined in detail. This is especially true if European ITQs were to be introduced, because the different member states have very different legal systems and might not define property rights in the same manner (van Hoof *et al.*, 2002).

Adjacent to this are aspects of the overall debate, such as whether a public resource should be allocated to private interests (McCay, 1995), as reflected in the position of some of the EU member states that oppose privatization of a public good (European Commission, 2010). As for transferability, as seen in the Dutch case, conditions and rules associated with the trade in ITQs can create a wide range of nuances which may vary from total freedom to non-transferability, and be distinct for separate groups of right holders, such as group members and non-group members in the Dutch co-management system. Also, the definition of what a fisheries concession consists of influences the specificity of a TFC, whether it is an absolute quantity of fish, or a percentage share in a TAC, or even a quantity of fishing effort, and whether it is further specified in e.g. terms of species, time period and/or specific fishing area.

Being able to define and secure exclusive and transferable fishing concessions is a prerequisite. As for the European debate of introducing TFCs under the CFP reform, the Dutch experience shows that pragmatic adaptation of the system to local circumstances is needed as much as a thorough initial design.

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