

Community Transferable Fishing Quota *The Best of Both worlds?*

I.B. van Schaik¹, M. Knol² and L. van Hoof³

Abstract:

The decline of fish stocks worldwide has often been attributed to problems inherent with resources that are treated as common property. The common practice around the North Sea is the allocation of fixed TAC shares to States, which in turn utilise specific allocation systems that guarantee each fishing company a more or less fixed share of the national quota.

This individual quota management, and especially the system of ITQs, has been criticized for inducing behaviour that contradicts the goal of sustainability and secondly for disregarding societal factors. Especially in regions considered fisheries dependent, such as Finnmark in Norway, Shetland in the UK and in Iceland, the debate centres on possibilities of introducing Community Fishing Rights or a system of community transferable quota in order to maintain local fisheries communities.

This paper discusses the background of the debate and seeks to assess whether the incentives to achieve a situation of optimal allocation of resources (labour, capital and fish stocks) can be cohesive with a strive to counter the trend of marginalisation of fisheries dependent regions.

Introduction

Sharp (In: Leclerc and Hall, 2006) states: 'although other factors (such as inadequate conceptual management models e.g. Larkin 1977, Downing and Plant 1993) may bring about the demise of fishing populations, unregulated economic activity (and the justification of that activity through the discipline of economics) is sufficient by itself to provide the destruction of many fisheries, either by itself or through exacerbating other causes'.

The European Commission (EC) has launched a debate on rights-based management tools in fisheries (through its communication SEC, 2007, 247) expressing that the large variety of management systems currently applied by the Community and by Member States lacks transparency, efficacy and in some cases overall coherence, which contributes to the economic difficulties of the fishing industry. The commission seeks to attain sustainable fishing practices, with higher fish stock levels, explicitly linked to the objective of creating an environment where fishing vessels and fleets can be more efficient from an economic point of view. The commission aims at a system of Rights-Based Management (RBM) as a formalised system of allocating individual fishing rights to fishermen, fishing vessels, enterprises, cooperatives or fishing communities.

The management systems set up at Member State and Community levels, imposing 'restricted' access to fishing, have implicitly resulted in allocating an economic value to the right to fish. In this way, markets in fishing rights *de facto* exist in most Member States. The economic value of these rights is at times substantial and can have a major effect on the development of the fisheries sector (COM, 2007, 73 and SEC, 2007, 247).

The commissions communication continues to state that it should be acknowledged from the outset that in theory any barriers to normal and free trade of rights (such as quotas) will lead to a situation where the allocation of quota will not be optimal in economic terms. As a result of fisheries management measures and the limitations these pose to the fisheries today, a large number of fleets are operating in an economic inefficient way and are overcapitalised; still a remaining pressure exists on the resource. The fisheries are not being used in the most optimal profitable way. As a result of the overcapitalisation of the fleet a smaller fleet (in terms of vessels and employment) could produce the same amount of fish and in a more efficient way (Brandt and McEvoy, 2006). Transferable license and

¹ M. Sc. Human Geography, University of Amsterdam, The Netherlands

² M. Sc. International Development Studies, Wageningen University, The Netherlands

³ Corresponding author; Institute for Marine Resources and Ecosystem Studies, PO Box 68, 1970 AB, IJmuiden, The Netherlands

quota systems are the only recognized systems that effectively create exit strategies in the industry where the participants themselves adjust catch and processing costs to the potential income from the available quota (Trondsen, 2004b).

The commission acknowledges that the introduction of a resource price may lead to large-scale buying of rights, resulting in concentration of ownership of quotas, geographical distribution of fishing activity and fleet composition.

The commission states that to counterbalance the risk of concentration, RBM systems can be designed to deter concentrations beyond a certain threshold, so as to preserve the geographical balance of fishing activities and to maintain to a large extent the current cultural, social and professional fabric. For example, when RBM systems are likely to affect small-scale inshore fishing activities, which exploit the same resource and have a major impact on the local economy, there is a strong argument in favour of a prudent approach. Small-scale fisheries could be protected as a political priority, by some form of community-managed quota system (community fishing rights), with the specific aim of protecting the interest of this part of the fishing industry against more capital-intensive competitors.

In this paper, we will use the examples of Iceland, Shetland Islands and Finnmark to discuss the potential of community fishing rights.

From ITQs to CTQs

Quota management

Effectively limiting the annual catch to a sustainable level is one of the most important objectives of fisheries management (ED, 2007, p. 13). In order to reach this biological objective, catch limits or TACs have been introduced in addition to the already existing input controls⁴. Economic models show that in fisheries with TACs and without restrictions on entry, an unbounded number of boats chase a fixed number of fish, promoting inefficiencies and overcapitalisation in the fishery (Brandt and McEvoy, 2006, p. 660).

Overcapacity and inefficiency in the fisheries have been, and still are, a rather large problem. Wingard (2000, p. 48) explains the inefficiency-overcapitalisation situation as a result of the lack of formal limits under an open-access resource regime that determines the number of fishers entering the fishery. This in turn leads to overcapitalisation as the level of investment in boats and technology exceeds that required to efficiently harvest the resource. Eventually this will lead to overfishing as more fishers attempt to cover the costs of their (capital) investment.

In order to tackle the problem of overcapitalisation and to achieve efficient use of the resources, economists opt for limited access through the creation of some form of property right (Wingard, 2000, p. 48). Fishing Quota (FQ) (hereafter called quota) is one option to create a property right. The allocation of quota varies between countries⁵ and can be characterized along lines of ownership; either linked to a fisherman- Individual Fishing Quota (IFQ); to a vessel- Individual Vessel Quota (IVQ); to a community- Community Fishing Quota (CFQ); or to a (Producer) organisation- Ring-fenced quota.

Quota that is freely transferable and divisible without being attached to for example a vessel is referred to as Individual Transferable Quota (ITQ)⁶ (Symes and Crean, 1995, p. 176). Officially, in only a few cases, such as the Netherlands and Iceland, quota can be traded; either hired, bought or swapped (Boude *et al*, 2001, p. 315-316). However, in practice all quota systems result in a possible trade in quota (van Hoof *et al*, 2006). ITQs may be allotted in perpetuity or subject to periodic reallocation. The

⁴ Input controls consist of restrictions on the type and amount of gear, and methods of fishing, but also on the length of fishing seasons (e.g. closed areas) (CRIFQ, 1999).

⁵ With reference to the European Union (EU) allocation of TAC and quotas: the allocation of quotas for every member state takes place through dividing the TACs from all members according to a number of factors, including countries' past catch records. This is known as the principle of 'relative stability', which ensures member states a fixed percentage of fishing opportunities for commercial species (Boude *et al*, 2001, p. 314).

⁶ It is also possible for individual quotas to be non-transferable, with the difference from ITQs lying in what happens to the individual quotas between years. Permanent sales or transfers are not allowed, so at the start of a new year, whatever temporary arrangements may have been made, the percentage of the TAC held by each fisher reverts back to what it was previously. Thus each fisher's share remains the same from year to year (Copes and Charles, 2004, p. 172).

basis for the initial allocation is usually the historic track record determined by the fishing unit's recent pattern of annual catches. The key feature of the system is that the shares, once allocated, may be freely traded allowing fishers to optimise their fishing operation and hence become a harvester with a vested interest in the resource and security of the investment (Cooper and Smith, 1997, p. 116).

Concerns of ITQs

Property rights in the form of quota and in particular ITQ are widely identified as being an effective way of dealing with overcapitalisation and inefficiency in the fishing industry. The rationalizing powers of the free market will eventually lead to a process in which shares will go to the lowest cost or most efficient producers. Inefficient fishers will be driven from the market (Wingard, 2000, p. 49).

This scenario, based on economic theory, is however a stark oversimplification of the socio-economic situation of fishers and does not account for the complexity and diversity of motivations and relationships that actually exist in fishing communities and the fishing industry at large (Wingard, 2000, p. 50). Moreover, quotas generate externalities; costs external to the market accruing to parties other than the immediate buyer and seller. Some externalities result from the inherent inflexibility in quota systems. As Wingard (2000, p. 49) explains: 'To reap maximum economic benefits, fishers must be able to match inputs with outputs. Quotas set in advance of the fishing season are the only way to do this reliably. Subsequent changes will undermine the economic benefits and increase fishers' uncertainty. If this occurs frequently, quota holders will lose confidence in the system and, in an attempt to catch their share of the quota before it changes, revert to practices that ITQs are meant to eliminate. Consequently, except in extreme cases, managers will resist altering the TAC. The externalities of these actions (or inactions) are a consequence of the resultant overfishing, delayed stock recovery, and reduction of economic and social benefits' (Wingard, 2000, p. 49).

Other externalities result from incentives to circumvent quota restrictions, which do not contribute to the conservation of fish stocks. Quota busting refers to attempts by fishers to underreport landings in order to catch more fish than their quota allows. High grading refers to the practice of discarding lower-valued fish at sea so they do not count against the fisher's quota. Price dumping is the practice of discarding fish if, upon reaching shore, prices are unusually low. This allows the fisher to reserve quota for higher prices. The aggregate effect of these practices is data fouling. Above described externalities will hamper quota systems to fully accomplish their economic goals, except possibly in very restricted cases or over short periods of time (cf. Wingard, 2000, p. 50).

While above described externalities are not exclusive to ITQ systems, they dramatically seem to undermine the benefits ascribed to such systems by their proponents. The problems arise because, contrary to the assertion of many economists, ITQ systems do not create true property rights in the fishery. Holding a share of quota only gives a particular fisherman a right or privilege to harvest fish. It confers no real control over the resource itself (Wingard, 2000, p. 50).

Many of the ITQ problems derive directly or indirectly from loss of access to the fishery, which results from the concentration of quota in the hands of a smaller number of fishers under an efficiency-focused ITQ program (with capacity rationalisation) (Wingard, 2000, p. 52). Copes and Charles (2004, p. 176) distinguish two forms of excessive concentration of fishery access rights that is taken place through capacity rationalisation⁷. First, in terms of financial concentration. Corporations and large investors in the fisheries sector may use their financial power to buy up larger aggregations of quota, thereby concentrating a substantial share of fishery access rights in their hands. They may assign their quota holdings to larger vessels which they operate directly, or lease out quota (with or without boats) to independent fishers, or provide loans to fishers to buy boats and quota – in all cases usually on condition that the fish caught be delivered to their plants. Second, in terms of geographical concentration. ITQs are likely to produce a geographical concentration toward the larger ports where the quota owners have their main facilities. This will occur for reasons of operational efficiency and control, with quota owners tending to concentrate the fleets they own, or support, close to their processing and holding facilities (Copes and Charles, 2004, p. 176). The long-term effect of the financial and geographical concentration of fishery access rights may be the formation of socio-

⁷ Capacity rationalisation in general is not a negative development (this can actually be healthy in a rather over-capitalized industry), but it is the process of fishery access rights concentration, which is considered to be a negative output of ITQs (Copes and Charles (2004, p. 176).

economic class divisions or monopolization of the fisheries, with a few who control access to the fisheries and the rest depending on those with access to the resource.

Although the capacity reduction that may be facilitated by an ITQ system is likely to generate economic benefits, the distribution of those benefits is widely considered to be inequitable. Quota initially is given out free of charge to individuals who happen to be vessel license owners at the time a quota system is introduced⁸. The first generation of quota-holders therefore benefit financially as their quota have become valuable assets with the introduction of an ITQ system. Later generations must buy or lease quota at high prices from the original holders, and indeed may be unable to afford to get into the fishery at all. Clearly, there is a notable inter-generational inequity involved in having initial recipients receive a free gift of quota from a public resource, while subsequent generations face relatively high purchase prices or lease rates (cf. Copes and Charles, 2004, p. 175).

Moreover, crew members are especially likely to lose out when ITQs are implemented (Copes and Charles, 2004, p. 175). If a vessel owner decides to sell quota, crew members usually receive none of the proceeds of that sale, despite having been closely involved in creating the catch history which generated the ITQ in the first place. In addition, it is quite common practice that the costs for temporarily hired additional quota are shared between owner and crew, whereas the benefits of renting out quota accrue solely to the owner (van Hoof *et al*, 2002 and 2005).

Another concern of concentration of fishery access rights into fewer hands is that it seems to generate a negative effect on the socio-economic viability of (small) fishing communities. ITQs allocated strictly through market mechanisms will not reflect the broader needs of a community. Quota will flow to those with greatest access to the capital, which may have little correlation with community dependence on fishing. Small, rural coastal communities with the greatest reliance on fishing (as a proportion of their total economy in terms of produce and employment) have less access to capital than do urban corporations. Consequently, the access to the fishery will be withdrawn from the very areas with the greatest relative reliance on fishing. The profits from the resource will likewise, not return to the communities with the greatest reliance on marine resources, but will accrue to the corporate owners of quota and their shareholders (Wingard, 2000, p. 53). As a result, small fishing communities will have fewer active boats left, boat repair, baiting, and other related activities are reduced, whereby total fishery-related employment is diminished to an even greater extent. Reduction in employment and income may lead not only to a reduction in the number of fishers (short-term impacts), but can eventually lead to a reduction in size or even elimination of some fishing communities.

According to Wingard (2000, p. 50), this disruption of (small) fishing communities may lead to the loss of existing social capital which can be a critical force behind economic growth. Reduced employment will also mean a reduced demand for fishing-specific skills. Consequently, there will be a reduction in the value of the human and social capital involved in the industry. Those with the least skills will be the first to lose their jobs. Those remaining in the industry may also see their incomes decline due to skill devaluation. The socio-economic costs to society on the concentration of fishing operations through ITQs are likely to be quite significant, and may be substantially larger than the gains enjoyed by the benefiting companies and vessel operators (Copes and Charles, 2004, p. 176-177).

However, the reduced wealth in the fishing communities can also be seen as an expression of the inability of capital and labour within the fishing industry to find its way to other allocations. Partly this can be attributed to the social capital embedded in the fisheries industry: fisher folk know their trade and know it well, but this knowledge is not per se applicable to other sectors. And on the other hand, invested capital in a fisheries undertaking is not easily reinvested in other sectors. Especially when local investment opportunities are restricted.

Economic performance and community quota

In order to assess whether (local) fisheries communities will be significant, one can consider the economic performance of a fishing community. 'Economic performance' consists of two analytical concepts; 'economic efficiency' and 'fishing effort'. These two concepts strive for the optimal allocation of resources (labour, capital and fish stocks) in the fisheries and opt for 'fishing capacity

⁸ ITQ systems might prove very difficult to dismantle once in place; based on the fact that quota have become very valuable and consequently prohibitively expensive to buy back from quota holders (Wingard, 2000, p. 51).

rationalisation': reducing excessive capital investment (vessels, gear, business overheads, and labour costs) in catching fish. Reducing fishing capacity has the desirable effect of increasing the total economic benefits from harvesting - at least in the short term - as it allows the TAC to be caught with fewer boats, with lower fishing costs per unit of catch.

In an ITQ or quota system, fishing capacity reduction or rationalisation occurs in an unplanned manner with respect to socioeconomic impacts. The market decides on the movements of the quota traded on the principle of willing seller meeting willing buyer. In the extreme, without limits on such buying and selling of ITQs, there would be nothing to prevent the fishery from becoming permanently controlled by a few large companies or even a single operation. Such monopolisation in the fishery would imply an undesirable concentration of economic power that could easily be abused and that is intrinsically inefficient (Copes and Charles, 2004, p. 175) by excluding competition, in this case not for the available resource but competition on the (consumer) market.

Transferable quotas managed by communities (CTQs) rather than individuals have great potential to achieve more successfully the hoped-for economic and biological benefits of ITQs while reducing the social impacts (Wingard, 2000, p. 56). Community-managed (transferable) quota systems (allocating quota to communities instead of individuals) aim at protecting the rights of communities to the resource they depend on by framing access rights within a definition of common property as communal property (LeDrew, 2003, p. 7). According to LeDrew (2003, p. 8) communal property systems seek to address the social nature of common property, and do not restrict access based on financial resources, but leave access open to those within a defined community. Within this system, an emphasis is placed on fishers as members of coastal communities, rather than as components of a fleet (in the conservation paradigm⁹) or as individualistic fishing firms (in the language of fishery rationalisation) (Boude *et al*, 2001, p. 316).

Community quota could be held by municipalities, regional organisations, or other groups representing the community – unlike traditional individual fishing quota, which are generally held by individual boat owners, fishermen, or firms (cf. GAO, 2004, p. 12-13). The community quota would still be issued in relatively small shares that could be sold, traded, leased, or rented. Rather than individual fishers making such decisions, however, individual communities would (Wingard, 2000, p. 51).

Quotas allocated to, and managed by communities provide the community with access, through their resident fishermen, to a valuable resource to augment their overall economic base. Communities with a vested interest in marine resources would be guaranteed a share of the quota. This could contribute to maintaining and improving the social and economic stability of these communities. Stability would contribute greatly to the long-term social and economic health of communities that otherwise might not survive under an efficiency-focused approach (Wingard, 2000, p. 53).

Moreover, managers at the community level will be in a better position to reallocate quota from multiple fisheries in a fashion that best reflects local needs and conditions in the short term (Wingard, 2000, p. 53). And, by reducing both the social and geographical scale of management, many of the costs and benefits of management will be internalised, and those who reap the benefits will also bear the costs and vice versa (Wingard, 2000, p. 52).

Case studies

Iceland's property rights fisheries management

Surrounded by highly productive waters and with hardly any other economic alternative¹⁰, fisheries has always been, and continues to be, the most important industry in Iceland¹¹. The typical firm in the fishing industry is based in a fishing community, which can be found in the remote fjords along Iceland's coast. Originally developed as single enterprise communities where one company owned the main processing plant as well as some fishing vessels, these fishing villages are now linked into an international economy and produce fish products for a world market with the aid of high technology

⁹ The conservation paradigm is based on the premise that the primary duty of fishery management is to take care of the fish.

¹⁰ However, the development of energy intensive metal smelting and the tourism industry since the late 1960s has influenced Iceland's total export of fish and fish products (from 90% to 75%) (Hannesson, 1996, p. 69).

¹¹ Though fish is of major importance for Iceland's economy, remarkable is that only 10% of the total population is directly involved in the fisheries and less than 20% live in fishing communities/ villages (Skaptadóttir, 2000).

fishing vessels and fish plants¹² (Skaptadóttir, 2000). Hence, any fluctuations in catches or seafood market prices have immediate regional impacts as it will influence the living standard of most Icelanders (Arnason, 1996).

In 2000, the Icelandic fishing fleet measured around 115 000¹³ Gross Registered Tonnes (GRT) (van Hoof *et al*, 2002, p. 53) and consisted of 2000 registered vessels (892 decked vessels) and 61 fishing ports (Arnason, 1996, p. 67). The main fisheries are:

- a demersal fishery which is a typical multispecies fishery;
- a pelagic fishery based exclusively on herring and capelin;
- a crustacean fishery involving shrimp and Norwegian lobster;
- and a mollusc fishery based on scallops.

The most important of these fisheries is the demersal or groundfish fishery with species as cod, haddock, redfish and saithe on average generating between 80% and 90% of the total wetfish value (cf. Arnason, 1996, p. 67).

According to Gylfason and Weitzman (2003, p. 1), the share of fisheries in economic activity, exports and employment in Iceland has declined markedly over time due excessive catch capacity in the industry and overfishing which has reduced fish stocks and catches. Specifically since 1980, the share of the fishing industry in Gross Domestic Product (GDP) has declined from 17 percent to 10 percent, its share in total exports has fallen from 60% to 40%, and its share in the labour force has decreased from 14 percent to 9 percent.

Iceland's fisheries management

Iceland's historical dependency on fish resources has resulted in relative early fisheries management policies in which regulations on fisheries gear and the closure of fishing grounds have long been used (and still are) (Danielsson, 1997, p. 123). However, these regulations could not prevent that several fish stocks (herring, cod) were declining from the 1950s after years of extensive fishing.

In 1975, in light of a possible collapse of the cod stock and the possible fear for overfishing of other species, Iceland introduced more direct fisheries management measurements such as a TAC for cod, effort restrictions on individual vessels and regulation of entrance to the fishery (including fisheries access licenses, investment controls and buy back programmes). Moreover, Iceland extended its Economic Exclusive Zone to 200 nautical miles, excluding foreign fishing vessels (Eythórsson, 2000). Despite these several measurements, fish stocks and especially cod were still declining.

A re-examination of the basic concept of fisheries management led eventually to the introduction of an Individual Vessel Quota (IVQ) system in Iceland's fisheries¹⁴ during the mid-1970s. Vessel quotas were based on the catch history of each vessel for the three previous years and were transferable to a certain degree. Soon after the IVQ system was introduced, exchange and leasing of quota was allowed and could freely take place within the same fishing community or between vessels owned by the same company (Eythórsson, 2000, p. 485).

Hence Iceland was one of the first nations that introduced property rights-based fisheries management systems in her ocean fisheries (Arnason, 1996, p. 64)¹⁵. By the end of the 1980s, fisheries economics opted for more economic efficiency and flexibility in Iceland's fisheries management (Eythórsson, 2000, p. 486). As a result, the Althing (Iceland's parliament) introduced the 1990 Fisheries

¹² In order to develop the national economy after the Second World War, Iceland modernized its fishing industry (providing loans to buy trawlers) and took measures to integrate remote fishing villages into the national economy. Investments were made to improve life in the villages along the coast, such as providing local services, especially in health care and education, road construction, bridge building and assistance with building new harbours (Skaptadóttir, 2000).

¹³ Undecked vessels are excluded.

¹⁴ An IVQ system was initially imposed in the herring fishery in 1975 and transformed in a fully ITQ system in 1979. An IVQ system was introduced in the capelin fishery in 1980 and turned into an ITQ system in 1986. An ITQ system was introduced in the demersal fisheries in 1984. Small boats, up to 10 GRT were not included in any of the systems, but were initially allowed to fish practically without restrictions. However, in 1991, vessels between 6-10 GRT were included in the ITQ system. At this moment, vessels up to 6 GRT remain outside the ITQ system and are only allowed to use fishing gear based on 'hooks and line' (Arnason, 2005).

¹⁵ Formerly the ITQ system was introduced in Iceland as early as 1979 (herring fishery), however with restrictions on transferability. ITQ-shares could be leased relatively freely, but they could only be bought or sold along with the fishing vessel to which they were originally allotted. Thus, the quotas were not fully divisible or independently tradable (Pálsson and Helgason, 1995, p. 121).

Management Act, which established a single uniform system of fishery management in Iceland in 1991. Effort quotas were abolished and permanent TAC-shares of all commercial species were allocated to vessel owners. In addition, a liberation of quota transfers took place when TAC-shares became divisible and freely tradable between vessels. This meant that quota could be transferred as separate commodities. Iceland's IVQ system transformed in the beginning of the 1990s into a market-based fisheries management system or Individual Transferable Quota (ITQ) system.

Outcome of Iceland's ITQ system

Today, ITQs are the cornerstone of Iceland's fisheries management. Fish species subjected to a TAC are managed based on quota. The quotas are assets of indefinite duration, perfectly divisible and transferable with minor restrictions. Moreover, they are subject to a fee. All commercial fishing (except vessels under 6 GRT) is included in the ITQ system. Now, the quota of the commercial fish species account for about 97% of the value of harvest taken within the EEZ (Arnason, 2005, p. 251).

After almost two decades of ITQ fisheries management in Iceland, several authors have argued that the system has been an economic success (Arnason, 2005; Eythórsson, 1996a/b). The economic efficiency in Iceland's fisheries has increased. New investment in fishing capital has been reduced, the fishing fleet is contracted and in some fisheries the number of operating vessels has dropped significantly¹⁶. Moreover, the fishing effort is reduced and the economic rent from the fisheries sector has increased. Even fish stock declines have generally been halted and some previous depleted stocks have been rebuilt (Arnason, 2005).

However, a substantial concentration of quota shares has taken place within the larger, vertically integrated companies. Since the introduction of ITQs more than a quarter of the original quota holders have been eliminated through the operation of the transfer market between 1984 and 1994 (Symes and Crean, 1995, p. 179). Pálsson and Helgason (1995) carried out extensive research on the actual distribution of fishing quota in the Icelandic cod fishery and indicated a growing inequality in Icelandic fisheries. They have noticed an increase of the number of large companies over the years, which have almost doubled their share of the overall ITQs. As an indication; 26 companies, so-called 'giants' (those owning more than 1% of the total ITQs), held 47,2% of the total ITQs in 1994, compared to 16 giants who held 25,5% in 1991. As a response, fishery managers have set limits on where quota can be sold or leased to protect certain groups, such as local fishermen and the communities themselves¹⁷. A 'community right of first refusal' rule has been adopted to provide communities the opportunity to buy vessels with their quota before the vessels are sold to anyone outside of the community (GAO, 2004, p. 11)¹⁸.

Despite the trade limitations, significant local but also inter-regional trade has developed. An estimated average of 17% of annual quotas, roughly 100,000 tonnes, was transferred between vessels from 1984 to 1990 at an average cost of 20-30% of the landing prices (Symes and Crean, 1995, p. 179). The trend of a few companies that buy up quota from smaller vessel operators seems to have led to a geographical reallocation of the fishing industry and increasing vulnerability of fisheries communities in Iceland. Rather surprisingly the movement of quota has been away from the metropolitan area, with net losses along the south-western and southern coasts and reciprocal gains accruing to the northern and north-eastern regions, largely reflecting the sharp decline in the spawning cod fishery off south-west Iceland (Symes and Crean, 1995, p. 179). Owners of quota have moved out of the small fisheries communities or sold their quota. Local fishing (processing) companies have been bankrupted and inhabitants who held little or no quota can no longer bring fish to land. The locally based control over the access to resources seems to be increasingly lost (Skaptadóttir, 2000). As a consequence,

¹⁶ In general the fishing fleet has decreased, however fleet capacity (engine capacity and power) has been gradually increasing, especially of the biggest and smallest fleet. Boats up to 6 GRT remain outside the ITQ system, but do offer an attractive alternative for fishermen who want to enter the fishery, including for those who have lost their jobs because of the shrinking inshore fleet. The growth of the factory trawler fleet can be explained as these vessels are capable to fish beyond the 200 nautical miles. The economic risk of such operations can be considerably reduced by offers to lease the vessels' ITQs to the inshore fleet (Eythórsson, 1996, p. 216).

¹⁷ In order to limit the concentration of quota shares by only a few companies, the Parliament in Iceland set an upper bound to maximum quota holdings that ranges from 12% of the TAC for cod up to 35% of the TAC for ocean redfish. Moreover, the individual companies must not control more than 12% of the value of all TACs (Arnason, 2005, p. 253).

¹⁸ According to GAO (2004, p. 13) however, companies holding quota in Iceland easily avoid this 'community right of first refusal' by selling their companies as a whole to an outside company, rather than just selling their vessels and associated quota. As a result, communities can not use this rule to prevent the sale.

unemployment in the often remote fisheries communities has increased as there are little employment alternatives.

Moreover, the concentration of quota has resulted in new relations of production as inshore vessels with a shortage of quota have become dependent upon companies with quota holdings for lease (this happens when giants invest in trawlers/vessels who are capable of fishing outside the 200 miles and they will lease their ITQs to the inshore fisheries) (Eythórsson, 1996a, p. 218). This is also called 'fishing for others'¹⁹, where fishing vessels have leasing arrangements or contracts to fish the ITQs for the larger companies. Until recently, these practices resulted in conflicts between vessel owners and the crewmen as the latter group faced a drop in their income as they received a fixed part of the net profit, hence after reduction of costs of quota rental. Eythórsson (1996b, p. 277) already concluded in 1996 that 'the bargaining position of fishing crews has not been strengthened under ITQ management'. A new institutional framework developed in 1998 to control prices, resolve disputes and to control leasing transactions has somewhat eased the situation of crew members, but problems are not completely solved yet (Eythórsson, 2000, p. 488).

However, the distributional outcomes of Iceland's ITQ system are certainly not generated by the system alone. The liberalization of the economic policy in Iceland by the end of the 1990s (policies that created a free market environment) has resulted in the development of Iceland's fishery from being local embedded to become a globally oriented free market industry with highly mobile units of production (Eythórsson, 1996a, p. 222). Changes in technology have introduced vessels with freezing capacities on board. These vessels are not dependent on the nearest processing plant anymore as they can also land their catch to a cheaper processing plant at a two-three days distance. Moreover, evidence shows that Iceland has less of a problem with by-catch because its quota system allows flexible quota that can be transferred between the different species. No increase in 'high-grading' has been observed since the introduction of the flexible quota management system (Hentrich and Solomon, 2007, p. 717).

However, losing the right to catch fish has a strong demoralising effect on people living in fisheries dependent communities. Interestingly is therefore the outcome of a recent poll among the general public in Iceland: only 7,1% of the respondents wanted to keep the present ITQ system unchanged, 17,3% wanted to abolish the quota system altogether. And one-third (33,3%) favoured some kind of regional allocation or 'community quota' (Arnason, 2005).

A proposal for regional quota management in Finnmark

Finnmark is the northernmost of Norway's 19 counties, often said to be in Norway's outermost periphery. Finnmark is furthermore the most scarcely populated county in Norway with about 73.000 inhabitants - of who estimated about 25.000 Sami - on an area of almost 49.000 square kilometres (1,5 persons per square kilometre). By far, we can state that Finnmark is the most fisheries dependent region of Norway. Other economic activities are mining, reindeer herding (in the inland) and public services. Now the petroleum industry is introduced, starting with an innovative natural gas project in Hammerfest. It is expected that Finnmark will become Norway's next petroleum province. At this moment though, the fisheries are still the cork on which the region floats.

Norway's fisheries sector

Norway is the tenth largest fishing nation in the world according to FAO statistics. Catch volumes reach about 2.5 metric tons per year. Most of the fish is caught in the Norwegian EEZ, which encompasses around 1,2 million square kilometres. Norway is also responsible for two fishing zones around Spitzbergen and Jan Mayen. Eighty per cent of the catches are based on shared stocks. While in 1950 fisheries still contributed 3,7 per cent of the GDP, this number declined to 0,7 in 2002. The export value of fish products as a percentage of total exports is 5,6 per cent in 2002 (OECD, 2004). The Norwegian model for sustainable marine resource management is based on the following key principles: sustainable harvesting, multi-species approach, adequate regulations and efficient control and enforcement schemes. It is regarded vital that the fishermen consider these principles legitimate and that the stakeholders are involved in the regulation process (OECD, 2004).

¹⁹ In some other systems known as 'slipper skippers' practice or 'sofa skippers'.

The quota management system

A TAC is set for each stock. Input and output regulations were formulated and introduced in the late 1970's with the introduction of the EEZs. For certain fish stocks these TACs are negotiated between Norway and Russia, Greenland, Iceland or the European Union. For the coastal cod-stocks, the TAC is subdivided into quotas, which are distributed to the fishermen and vessel companies. Until 1990 the fishing waters were open access for the coastal fleet with limitations on use of gear. There were no enforced output limitations and thus no quota for the cod fishery. A crisis in the cod stocks changed this, and a vessel quota system was introduced.

The division of quota between the coastal fleet and the trawlers in the offshore fleet changes with the volume of the TAC. The smaller the TAC, the higher the share of the coastal fleet. When the TAC is set under 100 000 tonnes, the coastal fleet gets an 80 per cent share of it, while the trawlers receive the remaining 20 per cent. When the TAC is set over 300 000 tonnes, the coastal fleet (principally those vessels under 28 meters) receives only 65 per cent, while the other 35 per cent will be divided among the offshore fleet (the vessels over 28 meters). Approximately 90 per cent of the total Norwegian fleet (6658 active vessels in 2000) are coastal vessels (Hersoug *et al*, 2000). In Finnmark the proportion of the coastal fleet is even higher.

Within Norway's IVQ system (introduced in 1990), two different kinds of quota were introduced: group 1 and group 2 quota. Group 1 is the individual vessel quota group. In this group are the most active vessels. They obtain their individual quotas on the basis of historical catches within their length group. These quotas are exclusive, so that the vessel owner has full discretion to decide when and where to take it. Quota cannot be sold, but selling or buying a vessel transfers the quota to the new owner.

The less active vessels fish competitively under a group quota (group 2). There are no restrictions to participation in this fishery; any registered fisher is free to join. The allocation to this group only amounts to about 20 per cent of the total quota in coastal cod fishery, and each vessel is subject to a small maximum quota, much smaller than any quota in the vessel quota group (group 1) (Holm *et al*, in Symes, 1998). The group 2 fishery could be stopped anytime when the maximum quota is reached.

When the quotas were set in 1990, they were determined by 'historical use', which implies that the catches of the individual vessels over the three years before were averaged; in this way each vessel got its own fixed percentage of the TAC (group 1) or its maximum quota in group 2. Every vessel within one size group would get the same quota; regardless of the amount a particular vessel had fished (Hersoug *et al*, 2000). The quota of each length group was not calculated as a constant share of historical catches across length groups. They were calculated on the basis of a key that was decreasing with increasing vessel length. The smallest vessels received 100 per cent of their historical average catches, whereas the largest only received 50 per cent (Hersoug *et al*, 2000). This measurement was taken because it was expected that the smaller vessels would be the main losers of this transition to a rights-based regime.

Finnmarks fisheries sector

Finnmark is dependent on the Norwegian Arctic cod in the Barents Sea. The main season is the spring. The turnover of the fisheries in tonnes in Finnmark in 2003 was 164.255 tonnes; worth a 160 million euros (www.fifo.no). Much of the fish landings are produced in Finnmark itself. A great part is produced and exported as fresh fish. Other types of processing are salting, hanging (stockfish), and production of frozen fillets.

Fiskeripolitikk med Finnmarksvri (literally translated 'Fisheries politics with a Finnmark-twist') (Finnmark County Council, 2004) is the title of the project initiated by the county of Finnmark in order to gain back fishing quota on the ground of historical rights. Although the case study is outdated (the exact proposal was rejected by the government autumn 2005), it serves a good illustration of regional thinking about quota and regional ownership.

The fisheries in crisis

Finnmark faces problems in its fishing industry since the 1980s. This started with a resource crisis that hit larger parts of Norway. The quotas were reduced and the landings were delivered to the best

paying regions outside Finnmark. The fleet and the processing industry faced a large surplus capacity (Arbo and Hersoug, 1997).

The resource crisis ended in the early 1990s. The stocks were rather substantial in the mid 1990s, which led to a price reduction for the fish. A substantial drop in payments to exporters and producers was met in 1995, together with shifting exchange rates due to a booming oil industry. A complex set of factors is needed to explain the crises. Among them is the management regime change from open access to the IVQ-system in 1990. Other explaining factors are modernisation and globalisation on a broader scale that moved past the developments in the fisheries sector in Finnmark. A diversity of interrelated dynamics has contributed to the current state of Finnmark's fisheries (see for example Arbo and Hersoug, 1997; Hersoug, 2005).

Consequences of the market crisis are enormous. Finnmark is struggling with high unemployment rates. Fishermen are facing problems to find outlets for their fish and vessels are being sold out of the county. Only three of the processing companies in Finnmark managed to survive these crises without any bankruptcies since 1980 (-1997) (Arbo and Hersoug, 1997). The fleet is rather old, and renewal goes very slowly. Finnmark saw a reduction in the number of fulltime fishermen of 38 per cent between 1984 and 1994 (www.fifo.no). Recruitment in and exit from the fisheries is very hard. Fishermen have often too low quota to be able to gain a living, while extra quota is too expensive. There are few alternatives besides the fisheries sector; hence the region still experiences large depopulation.

All in all, there are many drivers for change behind the proposed plan for regional quota. Among them are the closure of the fisheries due to overcapacity, trading of fishing rights, and the expansion in factory vessels and big purse seines. As Trondsen (2004a) explains, the localisation of fishing rights has become a function of capital and market control. Other drivers for change are the exit of coastal fishermen without individual quota and weak (or no) regional management of fishing rights (Trondsen, 2004a).

Regional Resource Enterprises for Regional Quota Management

In the proposal for 'Fisheries politics with a Finnmark-twist' Regional Resource Enterprises (RREs) are established on a regional and local level. A one-time national investment makes the RRE at the regional level the owner of ten to fifteen per cent of the national TAC. Various ways to buy these quotas are outlined in the proposal. The RREs then own and rent these *extra* quotas to fishermen or associations. The county owns the regional company; municipalities can co-own the local companies under it. Industrial companies or associations of fishermen can be shareholders. The result is a form of fisheries co-governance, with corporatist structures in state-owned enterprises.

The County Council, through the resource enterprise, gains possibilities to structurally use money for the development of the fisheries sector in Finnmark (or projects outside the fisheries sector) by using the income from rent as newly accumulated capital.

The use of quota contracts stimulates a viable regional fisheries branch, functioning after the market principles of supply and demand. Opportunities for flexible combinations of leases, greater involvement of individual fishermen and industry participants, will result in a more stable competitive framework (Trondsen, 2004a).

A principled framework with practical obstacles

The proposal for regional management in Finnmark is based on such principles as justice (*historical, traditional and cultural rights for extra quota*) and subsidiarity (*management at the lowest possible level*).

Various different interests are at stake in this complex situation. Regional quota is a highly discussed issue and is not by all regarded as the right solution. The largest organisation representing the Norwegian fishermen, the Norwegian Fishermen's Association (NFA), is against this plan. They consider it practically unrealistic and principally unfair. Questions are posed as: *How to get these quotas? How to equally distribute them among municipalities and individual fishermen? And how to*

reach levels of equal representation in the RRE committees? How to go against further concentration of capital?

Principal issues raised are among the following: *Who owns the coast? Who owns the quotas? Why can only Finnmark claim historical dependency? Is not the Norwegian coast national property? The NFA regards the plan unjustifiable: why take quota from fishermen and give them to others?*

The Norwegian Parliament has refused the plan for Finnmark-quota. What follows are some important lessons to be learned for those aiming for regionalised management. Important challenges within the discussion for regional quota and regionalisation of resource management are to gain a higher level of agreement within parties and organisations. More effective communication is needed to make negotiations profitable. Definitional agreement could make discussions much more effective (*What is the problem and the exact proposed solution?*).

In the case of Finnmark, regional quota must be seen in a broader perspective and promoted as part of a package deal for regional development. Moreover, the Norwegian Fishermen's Association makes a point when referring to the practical and principal objections of where to obtain quota for community-managed quota systems. The case proves the harshness of approaches that are aimed to satisfy all actors. An RRE construction for Finnmark is not impossible, but embraces a couple of large obstacles that have to be dealt with at multiple levels of scale and among, within, and between actors and organisations.

Shetlands' system of community-managed fishing quota

The Shetland Islands (classified as part of the Highlands and Islands of Scotland) are located in the most northeastern part of the United Kingdom. Shetland's harsh climate and poor transport and communication links has resulted in little economic diversification (Brookfield *et al*, 2005, p. 63). In addition, the cool climate, hard winds and poor nutritional status of the island's soils create unfavourable conditions for agriculture production (Crean, 1999, p. 249).

Yet, Shetland has a small, but rather wealthy island community, with a 20% higher per capita income compared to the rest of the UK (Brookfield *et al*, 2005, p. 55), grounded in rapidly developing oil, gas and services industries since the 1970s. The oil and gas industry is now the third largest economic sector of Shetland, next to Shetland Islands Council and fisheries and aquaculture.

Despite the importance of the oil industry, fishing (capture), fish farming and fish processing are the keystones in Shetlands' economy. Shetlands' fleet consist of around 150 boats catching upwards of 100 000 ton of fish every year (Goodlad, 1999, p. 1). Demersal (cod, haddock, whiting) and pelagic species (herring, mackerel) dominate the landings of Shetlands' fishery. Moreover, shellfish species, such as crabs and scallops have become more important since a decade (Coull, 1996, p. 187). Mariculture (particular salmon farming) is an activity in Shetland, introduced in the 1970, and by now proven a valuable addition to fishing.

According to Brookfield *et al* (2005, p. 55-56) Shetland's fishing and fish-related industries contribute between 20,5% and 41% to the islands' total GDP. Moreover, fish and fish products account for over 80% of all Shetland's exports, and bring the economic output of the fishing industry to a total of 200 million pounds. Around 11% of all jobs in Shetland are in the fishing industry: 600 jobs in catching, 400 jobs in aquaculture; and 900 jobs in processing. Approximately 25% of all jobs are dependent on fisheries/fisheries-related industries including supplies, repairs, equipment, and power (Stead, 2005, p. 678). Today, Shetland is considered to be one of Britain's principal fishing centres and its community as most heavily dependent on fishing within Europe (Goodlad, 1999, p. 1).

UK fisheries management

Till 1984, the Shetland Islands fisheries were managed under a national UK government scheme (on a fortnightly or monthly basis) allocated as quota to individual vessels (IVQs). This system proved to be inflexible as it did not take account regional variations nor the requirements of different sectors of the UK fleet. Moreover, in this system fishermen (through their organisations) were not directly involved in the decision-making process as such (Goodlad, 1999, p. 2). Particularly, criticism came from the Shetland Fish Producers Organisation (SFPO) since the inflexible quota-management system

prevented effective marketing of its member' catches. The SFPO introduced a decentralised form of quota management within the UK, namely that of allocating quota to fishermen's organisations instead of individual vessels. This system came to be known as Sectoral Quota (SQ). Individual fishermen's organisations or Producer Organisations (PO's) (including the SFPO) obtain their annual 'regional' or 'part shares' of the total UK quota for pelagic and demersal species and have the ability to regulate fishing according to regional and local circumstances (Goodlad, 1993, p. 350). Moreover, quota swaps between PO's are possible in order to avoid discarding of fish at sea and illegal fish landings.

In the UK, the 20 PO's have come to play a central role in fisheries management since they are allowed to manage national catch-quota²⁰. They currently manage over 95%²¹ of all quotas and represent around 60% of the total number of boats (mainly vessels over 10 m with large Gross Registered Tonnage (GRT) and engine power). The PO's adopt a Fixed Quota Allocation (FQA)²² system of which the quotas are calculated on the basis of the actual catches (individual track-record fishing performance) of member vessels during a fixed reference period (1994 to 1996). Thus, each PO allocates individual quota to individual member vessels (based on that vessel's track-record catch) and thereby quota can only be traded when a vessel is sold, bought or leased.

Over the years, quotas have become valuable assets, while they officially still do not have legal title of ownership and remain in the hands of the UK government. One of the consequences of increasing quota value and its trading has been an increasing cost of entering the fishing industry. Not only does a fisherman have to pay for a boat and fishing license, he must also finance the cost of fish-quota²³. The UK fishing industry is becoming concentrated into fewer hands as successful fishing partnerships and companies buy additional quota from other fishermen or communities and expand their operations.

Shetland and community-managed fishing quota

The EU membership of the UK in 1973 was of significant importance for the Shetland community as it led to devolvement of decision-making powers from central government to local government institutions. The Shetland Fishermen's Association (SFA) and its sister organisation the SFPO were set up in 1984. All fishermen are represented in these two organisations, where the SFA stands for a trade association in political sense and the SFPO deals with responsibility for implementing EU market regulations and manage the ground fish and pelagic quotas in close cooperation with the fishing processing industry.

As quota became more valuable and quota trading increased during the 1990s, the SFPO became concerned that Shetland's quota would be traded out of the community resulting in fewer fishing opportunities, fewer vessels and a lower level of income (Anderson, 2006, p. 8). After a UK government scheme made it possible for PO's to purchase fish quota (which was in association with the decommissioning of vessels/licenses in the entire UK), the SFPO (with support of the Council) decided in 1993 to buy fishing vessels with large quota holdings elsewhere in the UK for use by Shetland fishermen (Crean, 1999, p. 251). The quota was financed through an extra levy paid by member vessels and purchased with the aim of holding it in common ownership for the benefit of all member vessels, both at present and in the future (Goodlad, 2000, p. 2).

In addition to the relatively small SFPO quota, the SIC also decided to invest in quota. SIC purchased quota through its commercial arm Shetland Leasing & Property Development Ltd (SLAP)²⁴ funded by Shetland's oil revenues. In short, the SFPO held two pools of ground fish quota; one represented its

²⁰ In the Netherlands for example POs have played a crucial role in the management of the ITQ uptake: groups manage their joint quota holding and are together responsible for not overfishing their quota allocation.

²¹ The rest of the national quotas (5%) represent the 'non-sector', which is not in membership of the PO sector and consists of a large amount of smaller vessels. The non-sector is managed as all fisheries in the UK were managed before 1984, by individual vessel monthly-allocation set by Fisheries Departments (Goodlad, 1999, p. 4).

²² Prior to 1999, UK quota allocations were based on the individual track record (fishing performance) of fishing vessels over the previous three years (historical landings of vessels). However, in this system individual vessels were increasing their track-record fishing performance by deliberately increasing their landing records. 'Ghost fishing' occur; fish which had not been caught were 'landed and sold' (Goodlad, 1999, p. 6).

²³ In many cases, the value of fish quota is the combined costs of a fishing boat and fishing license (Goodlad, 1999, p. 9).

²⁴ Now Shetland Development Trust (SDT) (Anderson, 2006, p. 9).

own investment and another one held by SLAP (on behalf of the wider Shetland community)²⁵. Taken together, 37% of the total ground fish quota administered by the SFPO was held in community ownership in 2000 (either by SFPO itself or by SLAP) (Goodlad, 2000, p. 3).

The purchase of fish quota through the SFPO and the SLAP came to be known as community held fishing quota. The SFPO was the first PO in the UK who held quota in its own right and who introduced a Community Quota Scheme (CQS). This scheme was implemented by local communities with the aim to purchase and distribute fish quota in a way that would benefit local fishermen, sustain local fishing fleets and safeguard fishing opportunities for future generations (Anderson, 2006, p. 8).

The CQS in Shetland consisted of a 'ring-fenced' or 'pooled' system. The additional quota which the SFPO and SLAP purchased was not allocated to individual member vessels, but instead attached to a 'dummy vessel', effectively meaning the quota would be kept in the PO or community (Anderson, 2006, p. 8). Thus if any vessel owner, possessing a share of the community held quota, were to leave the SFPO, the owner would be required to relinquish the 'community quota' holding (Crean, 1999, p. 251).

The CQS consisted of some preferential arrangements only accessible by current and future members of the SFPO. It allowed members to lease additional quota against lower than market prices. Moreover, as young fishermen wished to enter the fishing industry they could become full members of the SFPO and benefited from the community held fishing quota: paying a proportion of their gross earnings to the SFPO in order to 'rent' a share of the community quota pool (Goodlad, 2000, p. 3). The 'return on capital' for the investment, which SFPO/SLAP made, consisted of the rental income, the appreciation in quota values and, finally, the fact that investment in these quotas was enabling fishing activity to continue to develop within the islands (Goodlad, 2000, p. 2).

However, in 2001 the EC investigated the Shetland CQS after it received complaints within the UK fishing industry about increasing prices of certain UK quotas. The EC concluded that the CQS in Shetland did not comply with the equality objectives of the EU Common Fisheries Policy as unlawful 'state aid' (oil revenues) had been used in order to finance the community held quota. This aid reinforced the competitive position of those fishermen involved in the Shetland CQS in comparison with those-out with the scheme. Moreover, the preferential leasing arrangements were only afforded to members of the SFPO, which was not compatible with the rules of the Common Market (Anderson, 2006, p 11).

Since the Commissions ruling in 2001, the SFPO has decided to make modifications into its CQS in order to continue the access to quota. It has removed the price and allocation preferences for SFPO members. Quota leasing prices are now set at the current market rates. And any person who has a registered UK vessel with required quota units and an economic link to the UK or UK business has equal access to the SFPO quota pool (Anderson, 2006, p. 12).

Over the years, Shetland is still considered as being a fisheries-dependent community²⁶ with a future focus on the development of the fishing industry (Brookfield *et al*, 2005, p. 57). Using funds obtained from the offshore oil and gas business, the Shetland Development Trust (SIC) has created various financial assistance schemes designed specifically to aid fishers expand and modernize their business. It seems that despite modifications in the CQS through EC ruling, Shetlands' fleet size and employment levels have remained constant in a period where more job and vessel losses were expected due to various UK decommissioning efforts and catch restrictions resulting from various EU management measures. Moreover, safety on board has been improved as quota rentals can easily be achieved. The trade in illegal landings has virtually disappeared in Shetland as whitefish landed in the Islands now goes through an auction market. Finally, the availability of community held quota has resulted in fewer individual Shetland fishermen seeing the need to purchase their own additional quota. Fishermen have experienced higher revenues as they have the ability to catch more fish (Anderson, 2006, p. 13).

²⁵ The SFPO quota pool was being used to provide additional fishing opportunities for future generations of Shetland fishers. In contrast, the SLAP quota pool was meant to maintain fleet viability and encourage new entrants with their vessels to enter the local industry (Goodlad, 1999, p. 9-10).

²⁶ Brookfield *et al* (2005, p. 57) define this concept as 'a population in a specific territorial location which relies upon the fishing industry for its continued economic, social and cultural success'.

However, increasing costs of leasing quota against market prices has resulted in no new boats entering the Shetland' fleet and decreasing vessel profitability. Young vessel owners can still become members of the SFPO without any track record, but leasing costs are now the same as everywhere else in the UK. It seems that Shetlands' community- managed quota failed to encourage new entrants into the industry, as new boats would create jobs at sea as well as employment onshore in the fishing processing and ancillary services. Nevertheless, community held quota have offered a degree of protection to existing members of the Shetland catching sector and related onshore industries (Anderson, 2006, p. 14).

Discussion

Having described the outcomes of fisheries management policies in three different fisheries-dependent regions, a different level of community quota implementation in all three cases can be noticed. Iceland is still in an early stage, in which a market-based approach of ITQs has led to efficiency and capacity reduction, but has also resulted in a call from the population for community protection. The unequal distribution of valuable assets among those who were lucky to receive free quota at the time quotas were allocated, seems to lay at the basis of the discussion to modify the ITQ system into a more social community quota managed form. Finnmark on the other side is in the middle of the process of debating regional fisheries management and initiating a community-managed quota system. However, practical obstacles with the implementation have led to a refusal from national side. The Shetland case is the clearest example of an attempt to implement community-managed quota. Its community quota scheme worked in order to prevent massive fleet reduction and unemployment in fisheries communities. Nevertheless, an optimal and working system compatible with the EC equity rules has still to be found.

Fishery managers face an inherent tension between the economic goal of maximizing efficiency and the social goal of protecting communities. This tension occurs because a community often may not be the most efficient user of quota. For example, according to Icelandic fishery experts, some communities did not have the knowledge and skills to manage their quota effectively and eventually sold it, reducing the communities' economic base. Adopting rules that constrain the free trade of quota, such as those designed to protect communities, would likely limit the efficiency gains of the IFQ program. Therefore, fishery managers have to decide how much economic efficiency they are willing to sacrifice to protect communities (GAO, 2004, p. 11-12).

Further, when community-managed quota will be introduced as a fisheries management tool one has to take into account that although community quota can stimulate the local or regional fishing industry and economy, it will hamper further development and increased efficiency of the fisheries sector in other areas and as an industry as such. Noting that in the near future TACs are not expecting to be growing (rather the opposite), introducing community-managed quota will call for a redistribution of quota between fisheries communities, fleets and companies. Consequently, this redistribution or relocation of quota would mean a decreasing efficiency of the overall fisheries sector.

Moreover, one needs to consider the effect of a rather smaller scale local fishery on the entire fish marketing chain. Relocating quota from one fleet to the other can imply that the further processing and trade structures receive less raw material (unless of course the fish is still marketed through the same channel). Further, quota availability in the local communities does not necessarily promote a local (efficient) processing and trade industry.

In addition, as became clear from the Shetland case, methods for protecting communities may also raise concerns about equity aspects and the role of the national government in the light of prevailing EC policy. Quotas acquired (with oil revenues) and kept in a community-pool (that was only accessible for members of the PO) was found not to be in line with EC policy as it favoured those fishermen who were members of the SFPO. In the end, the quotas kept in the community pool also still prove to be expensive for starting fishermen. Moreover, allowing communities to purchase quota may be considered unfair or inequitable because relatively wealthy communities would more readily have the funds needed to purchase quota, while relatively poor communities would not (GAO, 2004, p. 12).

A further question can be raised on the revenues created by the lease of community quota. If these benefits accrue to the body managing the quota, this will provide funds which for example could be used to acquire more quota. In this case, the cumulative effect of CTQs might be that the effective

demand for additional quota rises, hence, in case of a stable supply, the price for quota will go up. Hence, as a result of trying to protect the local community against competition for available quota from the outside, the final effect is that through an increase in price it will be harder to enter the fisheries and investments in quota will become even more expensive.

Another issue focuses on the management of the quota in communities. Fishery managers can give each community control over the use of quota in order to protect the community's economic viability. Community quota could be held by municipalities, regional organisations, or other groups representing the community. However, the community representatives have to decide whether to keep their quota, sell it, or lease it to others. If they keep their quota, they also have to decide how to allocate it. Similarly, if they sell or lease their quota, they have to decide how to allocate the proceeds. Unless communities can decide how to allocate quota or the proceeds, the community quota may go unused and thus prevent the community from receiving its benefit (GAO, 2004, p. 11,13).

Finally, decisions have to be made about controlling trade in quota. In principal, one could imagine two ways of accomplishing that: all trade be under the control of the local community or only the trade outside the community is controlled (restricted) by the managing body. Prohibiting quota sales/trade in principal may not allow fishing communities or businesses to change over time as the fishing industry changes. Rules that prevent change may actually freeze fishing communities at one point in time. For example, prohibitions on quota sales/trade prevent the fishery from restructuring, thus forcing less efficient quota holders and fishing businesses to remain in the fishery. Consequently, prohibitions on quota sales/trade may actually undermine the economic viability of the fishing communities they were designed to protect (GAO, 2004, p. 13).

Conclusion

In several countries, (individual) quota systems have been introduced in fisheries as management tool to achieve economic efficiency. As argued by Arnason (2005) and Eythórsson (1996a/b), the Icelandic case has been an economic success after almost two decades of ITQ fisheries management. The economic efficiency in its fisheries has increased. New investment in fishing capital has been reduced, the fishing fleet is contracted and in some fisheries the number of operating vessels has dropped significantly. Moreover, the fishing effort is reduced and the economic rent from the fisheries sector has increased.

However, from other cases, such as Shetland and Finnmark, the economic drivers of the quota system make local small fisheries dependent communities vulnerable for losing the (economic) basis. Quota concentration is one of the effects that from an economic perspective contributes to create a fisheries sector focused on an efficient utilisation of resources. Trade in quota however, could also lead to larger regional differences in countries, especially if fishing rights move away from regions where there are little or no employment alternatives present other than in the fisheries sector.

As Copes and Charles (2004, p. 177) already concluded: The socio-economic costs to society of the concentration of fishing operations through ITQs are likely to be quite significant (especially if those leaving the fisheries have no alternatives) and may be substantially larger than the economic (efficiency) gains enjoyed by the benefiting companies and vessel operators. But typically these socio-economic costs are not accounted for in decisions to move toward an ITQ system.

The introduction of community-managed quota systems with community (transferable) quota could be an option to counter this trend by fixing catch rights to an existing coastal fishing community that could guarantee the existence of the community's socio-economic structures and the local (small-scale) fishery. As shown in the case studies, this will call for a societal debate in order to make the system be transparent, efficient and coherent.

Following Wingard (2000, p. 53), stability or community protection measures through community managed quota systems (for example CTQs) could contribute to the long-term social and economic health of communities that otherwise might not survive under an efficiency-focused approach. Yet this (relative) stability comes at a (economic) cost: fleets operate less than efficient, hence resources that could be allocated elsewhere are tight up in the fisheries, creating less wealth than if the production factors could be allocated freely. Therefore, fishery managers have to decide how much economic efficiency they are willing to sacrifice to protect communities (GAO, 2004, p. 11-12).

The EU Commission aims at a system of rights-based management (RBM) as a formalised system of allocating individual fishing rights in order to attain sustainable fishing practices, with higher fish stock levels, explicitly linked to the objective of creating an environment where fishing vessels and fleets can be more efficient from an economic point of view. The commission acknowledges that the introduction of a resource price may lead to large-scale buying of rights, resulting in concentration of ownership of quotas, geographical distribution of fishing activity and fleet composition. The commission states that to counterbalance the risk of concentration, RBM systems can be designed to deter concentrations beyond a certain threshold, so as to preserve the geographical balance of fishing activities and to maintain to a large extent the current cultural, social and professional fabric.

Whereas the Commission acknowledges that any barriers to normal and free trade of rights (such as quotas) will lead to a situation where the allocation of quota will not be optimal in economic terms, the commission indicates situations in which the trade of quota might be legitimately regulated. As stated above, this regulation will come at a cost, both in economic terms as with a perceived impact on the resource. In addition, in order to assess the final efficiency, effectivity and equity of the system one has to take distributional aspects into consideration both of fishing rights as of resource rent. Further, it can be queried whether the management objectives of the community and the individual fisheries entrepreneurs do at all times concur.

The discussion about ITQs and CTQs comes down to a matter of philosophy: whether there is to be a role for the community or whether all decisions are to be made at the individual level, through the marketplace. This is particularly noticeable with respect to socio-economic aspects, where the market-based approach focuses primarily on concepts of economic efficiency and fishing effort (reducing overcapitalisation) (Copes and Charles, 2004, p. 172).

In this respect, one could mark the development in fisheries management towards a system catering for governance aspects, especially in terms of participation, openness and transparency. For example, the coming about of Regional Advisory Councils (RACs) can be seen in this light: regionalizing the management increases participation and the linkage between the fisheries sector and management measures taken. From this perspective one could argue that through CTQs fisheries communities, so direly needed in order to have a social fabric and social capital needed for proper sustainable use of the marine resources, can be maintained thus providing a local basis for fisheries management.

References

- Anderson, J. (2006), The future of the market based approach towards quota management in the UK – the case of the Shetlands Isles, Sea Fish Industry Authority, United Kingdom
- Arbo, P. and B. Hersoug (1997), The globalization of the fishing industry and the case of Finnmark, *Marine Policy*, vol. 21, no. 2, pp. 121-142
- Arnason, R. (1996), On the ITQ fisheries management system in Iceland, *Reviews in Fish Biology and Fisheries*, vol. 6, pp. 63-90
- Arnason, R. (2005), Property rights in fisheries: Iceland's experience with ITQs, *Reviews in Fish, Biology and Fisheries*, vol. 15, pp. 243-264
- Boude, J-P., Boncoeur, J. and D. Bailly (2001), Regulating the access to fisheries: learning from European experiences, *Marine Policy*, vol. 25, pp. 313-322
- Brandt, S. and D. McEvoy (2006), Distributional effects of property rights: Transitions in the Atlantic Herring fishery, *Marine Policy*, vol. 30, pp. 659-670
- Brookfield, K., Gray, T. and J. Hatchard (2005), The concept of fisheries-dependent communities. A comparative analysis of four UK case studies: Shetland, Peterhead, North Shields and Lowestoft, *Fisheries Research*, vol. 72, pp. 55-69
- COM (2007) 73 final, Communication from the commission on rights-based management tools in fisheries {SEC (2007) 247}
- Copes, P. and A. Charles (2004), Socioeconomics of Individual Transferable Quotas and Community-Based Fishery Management, *Agricultural and Resource Economics Review*, vol. 33, no. 2, pp. 171-181
- Coull, J.R. (1996), Towards a sustainable economy for the Shetland Islands: Development and management issues in fishing and fish farming, *GeoJournal*, vol. 39, no. 2, pp. 185-194
- Crean, K. (1999), Centralised and community-based fisheries management strategies: case studies from two fisheries dependent archipelagos, *Marine Policy*, vol. 23, no. 3, pp. 243-257
- CRIFQ (1999), Committee to Review Individual Fishing Quotas, Sharing the Fish: Toward a National Policy on Individual Fishing Quotas, Ocean Studies Board, Commission on Geosciences, Environment, and Resources, National Research Council, National Academy Press, Washington D.C., http://fermat.nap.edu/html/sharing_fish/
- Danielsson, A. (1997), Fisheries management in Iceland, *Ocean & Coastal Management*, vol. 35, no. 2-3, pp. 121-135
- ED (2007), Environmental Defense, Sustaining America's Fisheries and Fishing Communities: An Evaluation of Incentive-Based Management
- Eythórsson, E. (1996a), Coastal Communities and ITQ Management. The Case of Icelandic Fisheries, *Sociologia Ruralis*, vol. 36, no. 2, pp. 212-223
- Eythórsson, E. (1996b), Theory and practice of ITQs in Iceland, *Marine Policy*, vol. 20, no. 3, pp. 269-281
- Eythórsson, E. (2000), A decade of ITQ-management in Icelandic fisheries: consolidation without consensus, *Marine Policy*, vol. 24, pp. 483-492
- Finnmark Fylkeskommune (2004), Regional forvaltning av kvoterettigheter i et nasjonalt Perspektiv, Vadsø Fisheries Department, 2003

GAO, (2004), INDIVIDUAL FISHING QUOTAS Methods for Community Protection and New Entry Require Periodic Evaluation, Report to Congressional Requesters, United States General Accounting Office

Goodlad, J. (1993), Sea fisheries management: the Shetland position, *Marine Policy: Journal of Ocean Affairs*, vol. 17, no. 5, pp. 350-361

Goodlad, J. (1999), Industry Perspective on Rights-based Management: The Shetland Experience, FAO Fisheries Technical Paper 404/1: Use of Property Rights in Fisheries Management, 11 pp. Proceedings of the FishRights99 Conference, Fremantle, Western Australia, 11-19 November

Goodlad, J. (2000), Innovations in Fisheries Management± Community Based Management Initiatives in Shetland, Proceedings of the Tenth Biennial Conference of the International Institute of Fisheries Economics and Trade Presentations

Gylfason, T. and M. Weitzman (2003), Icelandic Fisheries Management: Fees versus Quotas, Centre for Economic Policy Research (CEPR), Discussion Paper No. 3849, pp. 1-33

Hannesson, R. (1996), *Iceland: End of a Golden Age?*, Chapter 4, pp. 63-83, In: *Fisheries Mismanagement: The Case of The North Atlantic Cod*, Fishing News Books, Oxford

Hentrich, S. and M. Salomon (2006), Flexible management of fishing rights and a sustainable fisheries industry in Europe, *Marine Policy*, vol. 30, pp. 712-720

Hersoug, B. (2000) *Closing the Commons. Norwegian fisheries from open access to private Property*, Delft: Eburon, 2005

Hersoug, B., P. Holm and S.A. Ranæs (2000), The missing T. Path dependency within an individual vessel quota system – the case of Norwegian cod fisheries, *Marine Policy*, vol. 24, no. 4, pp. 319-330

Holm, P., Ranæs, S.A. and B. Hersoug (1998), Political Attributes of Rights-based Management Systems: The Case of Individual Vessel Quotas in the Norwegian Coastal Cod Fishery, in *Property Rights and Regulatory Systems in the Fisheries (72-82)*, D. Symes. Oxford: Fishing News Books

Hoof, L. van, Smit, J., Hoefnagel, E., Buisman, E., Rommel, D. and A. Daniellson, LEI (2002), The Management of Fisheries through systems of Transferable Rights, The Hague, *Report to the European Parliament*

Hoof, L. van (coord.), Jentoft, S., Nielsen, J.R., Suarez de Vivero, J., Rommel, D., Mikalsen, K., Hoefnagel, E. and G. Karlsen (2005), Sharing Responsibilities In Fisheries Management, final report LEI, The Hague

LeDrew, S. (2003), Property Rights and the Fishery: ITQ's and CTQ's as solutions to the problem of the commons, OMRN Sustainability Node

Matthíasson, T. (2003), Closing the open sea: Development of fishery management in four Icelandic fisheries, *Natural Resources Forum*, vol. 27, pp. 1-18

OECD; Directorate for Food, Agriculture and Fisheries; Fisheries Committee (2004), Further examination of economic aspects relating to the transition to sustainable fisheries: a case study from Norway

Pálsson, G. and A. Helgason (1995), Figuring fish and measuring men: the individual transferable quota system in the Icelandic cod fishery, *Ocean & Coastal Management*, vol. 28, no. 1-3, pp. 117-146

SEC (2007) 247, Commission Staff Working Document, Accompanying the Communication from the Commission to the Council and the European Parliament on Rights-based management tools in fisheries, Brussel, 26-02-2007 {COM (2007) 73 final}

Sharp, G. In: G. Leclerc and C.S. Hall (Editors) (2006), *Making World Development Work: Scientific Alternatives to Neoclassical Economic Theory*, University of New Mexico Press

Skaptadóttir, U.D. (2000), Women coping with change in an Icelandic fishing community: a case study, *Women's Studies International Forum*, vol. 23, no. 3, pp. 311-321

Stead, S.M. (2005), Changes in Scottish coastal fishing communities – Understanding socio-economic dynamics to aid management, planning and policy, *Ocean & Coastal Management*, vol. 48, pp. 670-692

Symes, D. and K. Crean (1995), Privatisation of the Commons: the Introduction of Individual Transferable Quotas in Developed Fisheries, *Geoforum*, vol. 26, pp. 175-185

Trondsen, T. (2004a), Modell for regional forvaltning av fiskerettigheter, Norges Fiskerihøgskole/ Universitetet i Tromsø

Trondsen, T. (2004b), Toward market orientation: the role of auctioning individual seasonal quotas (ISQ), *Marine Policy*, vol. 28, pp. 375–382

Wingard, J.D. (2000), Community Transferable Quotas: Internalizing Externalities and Minimizing Social Impacts of Fisheries Management, *Human Organization*, vol. 59, no. 1

www.fifo.no; September-December 2005