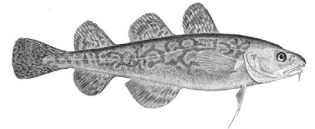


CATCH SHARES IN ACTION

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## **Danish Pelagic and Demersal Individual Transferable Quota Programs**



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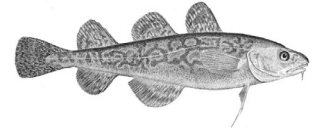


# SEASALT

- Secure
- Exclusive
- Accountable
- Limited
- Transferable

## CATCH SHARES IN ACTION

### Danish Pelagic and Demersal Individual Transferable Quota Programs



#### SPECIAL DESIGN FEATURES



MULTI-SPECIES, INDIVIDUALLY-ALLOCATED, QUOTA-BASED, TRANSFERABLE

The Danish Pelagic and Demersal Individual Transferable Quota Programs (ITQ Programs) include a number of thoughtful design decisions in order to meet the programs' goals, including promoting economic growth in the fisheries sector by balancing the capacity of the fishing fleet with the available resource, and addressing social concerns. Important features of the catch share program include quota set-asides for small vessels and new entrants; Fishpools, which promote cooperation and coordination among participants; and programs to reduce discards. Denmark's catch share programs demonstrate how innovative design features can be used to promote social goals within a system introduced for economic and biological reasons.

In 2003, the Danish government introduced an ITQ Program for the Danish herring (*Clupea harengus*) fishery. In 2007, the system was extended to cover additional pelagic species including mackerel (*Scomber scombrus*), horse mackerel (*Trachurus trachurus*), sprat (*Sprattus sprattus*), pout (*Trisopterus esmarki*), sandeel (*Ammodytes marinus*) and blue whiting (*Micromesistius poutassou*). At the same time, managers introduced an ITQ Program for the Danish demersal fisheries.

The major Danish fisheries occur in the North Sea, the Skagerrak, the Kattegat and the Baltic Sea. In 2009, over 2,800 Danish commercial fishing vessels and over 2,500 people were engaged in fish harvesting (Danish Directorate of Fisheries, 2009). The pelagic and demersal fisheries are comprised of a variety of vessels, most of which operate in many locations and use multiple gear types. Vessels vary in size, with the largest vessels operating in the pelagic fishery and the industrial reduction fisheries for sprat, sandeel, pout and blue whiting. The smallest vessels, skiffs, target nearshore demersal species with gillnets. In 2007, the value of Danish landings was over \$450 million, 90% of which were under catch share programs (55% in the ITQ-Pelagic Program and 35% in ITQ-Demersal Program) (MRAG et al., 2009).

#### SYNOPSIS

## Road to a Catch Share

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Denmark has a long fishing tradition. With over 400 islands and close proximity to productive fishing grounds, the Danish fisheries have historically been one of the top producers within European Union member states (FAO, 2009). The contribution of fisheries to the Danish economy is relatively low, around 0.5% of gross domestic product (Christensen, 2009), yet many coastal communities depend on commercial fishing, especially those located in northern and northwestern regions (Christensen, 2009).

Danish fisheries have experienced periods of booms and busts in landings and revenue. During the two decades preceding the ITQ management, Danish fisheries' policies attempted to reduce capacity and curb overfishing through vessel decommissioning, and through policies limiting vessel entry and investments in vessels. Denmark's vessel decommissioning used public funding to remove vessels permanently from the commercial fleet. From 1989 to 2006, 1,272 vessels were removed at a total cost of 1.4 billion Danish kroner (U.S. \$245.3 million) (Danish Directorate of Fisheries, 2009). While a reduction in gross tonnage has been achieved with this program, efficiency has not increased and biological goals have not been met. From 1994 to 2002, overall catch and catch rates steadily declined, showing no evidence that the fleet reduction program led to increased catch opportunities (Lindebo, 2005). Perhaps most importantly, vessel decommissioning does not change the underlying incentives that lead to overcapacity, which often makes it a short-term solution for overcapacity in fisheries (Beddington et al., 2007).

The Danish Ministry of Fisheries developed the ITQ Programs in the pelagic and demersal fisheries to achieve the following goals: ensure that fleet capacity is in line with fishing opportunities, create a viable fishing economy, and benefit the coastal fisheries (Schou, 2010). While the ITQ Programs were designed primarily to promote economic efficiency, they were also designed to support the coastal fishery (and those communities dependent on it), provide young fishermen with the ability to participate, and indirectly reduce discards by removing excess capacity.

## Performance

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Under the ITQ Programs, the capacity in Danish fisheries has been reduced by 25% without the use of public funds for decommissioning. Profits have increased from 9% – 20% and fishermen have doubled new investments in value-added efforts, rather than in catch maximization technology, which fuels the race for fish (Schou, 2010). The coastal fishery has increased its shares of the catch, indicating success for coastal communities.

Before introducing the ITQ Programs, the Danish government clearly stated that a necessary consequence of removing overcapacity would be a reduction in the number of vessels and participants in the fishing industry. However, the government also said the fleets would have newer vessels that are able to carry high-quality fish and be more attractive for young fishermen to work on. The ITQ Programs have achieved all of these goals at a surprising speed.

By using innovative approaches such as Fishpools (voluntary cooperatives that facilitate trades between fishermen), managers and fishermen have successfully balanced fleet capacity with fishing opportunities. Importantly, overcapacity has been reduced without compromising social goals.

## STEP 1 IN ACTION

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### Define Program Goals

Conventional fishery management approaches have resulted in overfished stocks and left coastal communities suffering from underperforming economies (Schou, 2010). Over the last two decades, there has been a concerted push in the Danish fisheries to create sustainable harvests with balanced, profitable fishing fleets. Policies have mostly focused on reducing capacity (by using public funds to decommission fishing vessels) and implementing effort controls to regulate fishing mortality (such as limiting days-at-sea and total kilowatt days per year). These two policies have been ineffective, yet the goals for the fisheries have remained the same.

ITQ management was adopted in 2007 as a means to achieve economic, biological and social goals. Economic goals were a focal point of the ITQ Programs, with objectives to balance fleet capacity with fishing opportunities, create economic growth in the fishery sector, and allow fishermen to create long-term value-added investments in fishing operations. Biological goals focused on reducing discards in the fisheries. Specific design features were added to meet the social goals of the fishery, which included maintaining a competitive coastal fishery and improving entrance for young fishermen (Schou, 2010).

## STEP 2 IN ACTION

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### Define and Quantify the Available Resource

The ITQ-Pelagic Program includes the pelagic fisheries and industrial reduction fisheries, including herring, mackerel, horse mackerel, sprat, pout, sandeel and blue whiting. The ITQ-Demersal Program includes the lobster fishery and the demersal fish stocks – cod (*Gadus morhua*), saithe (*Pollachius virens*), plaice (*Pleuronectes platessa*), haddock (*Melanogrammus aeglefinus*), hake (*Merluccius merluccius*), whiting (*Merlangius merlangus*), sole (*Solea solea*), turbot (*Psetta maxima*), and monkfish (*Lophius piscatorius*). A number of fishing areas are further subdivided into zones based on designations determined by the International Council for the Exploration of the Sea (ICES).

Through the authority of the Common Fisheries Policy (CFP) of the EU, the European Commission (EC) sets a catch limit for each species and area combination and allocates these to EU member states according to a fixed percentage. Country-level quota can be transferred between EU member states so long as the EC is given

advanced notice. The catch limits set by the Commission reflect the goal of achieving maximum sustainable yield for European fisheries (European Commission, 2010). Member states measure and report landings. To account for discards, the EC normally sets the catch limits lower than the advised maximum.

Effort is also restricted in a number of different areas, mainly the North Sea, the Skaggeak, the Kattegat and the Baltic Sea. In these areas, days-at-sea and total kilowatt hours per year are capped by the European Commission.

## STEP 3 IN ACTION

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### Define Eligible Participants

The two ITQ Programs follow general principles regarding who can hold and fish shares, but each program has some unique features. In both, allocations are made to individual registered fishermen to use on a registered fishing vessel. Thus, only active fishermen can use the quotas on active vessels ensuring that benefits from operation accrue to those in fishing communities (Schou, 2010). To be eligible for allocation, fishermen must have had more than 60% of their earnings come from fishing.

Concentration limits are also in place to avoid excessive consolidation of shares. Concentration limits are higher for the industrial and the pelagic fishery where efficiency and large holdings are important, and they are lower in the demersal fishery, where operations are smaller and tied to local communities.

The coastal fishery, a sector comprised of vessels under 17 meters, has additional requirements for quota holders. Vessels can voluntarily enter this sector and in return receive additional quota shares of cod and sole, two of the most important demersal species. The quota set-aside is fixed at 10%, so the amount each operator receives depends on the number of vessels that join (Danish Ministry of Food, Agriculture and Fisheries, 2010). Quota cannot be sold out of the coastal fishery, but operators in this sector can purchase additional shares from both coastal fishermen and non-coastal fishermen. Operators in this sector must stay in the sector for a minimum of three years, and the majority of their fishing trips must be fewer than three days in length. In every year since this feature was introduced, the coastal segment has experienced landings higher than their historical average (Danish Ministry of Food, Agriculture and Fisheries, 2010).

Providing opportunities for new entrants was an important program goal and there are three main ways in which the program accomplishes this. First, the shares are transferable and new entrants may purchase shares in order to participate in the fishery. Second, the Fishfund is an initial set-aside of quota shares for new entrants who demonstrate an investment in the fishery, such as by purchasing a new vessel. Participants are allowed to access Fishfund quota annually. Finally, new entrants are allowed to join one Fishpool (Fishpools are described in more detail below) and can access the pooled quota for a fee. These programs have all supported the participation of younger fishermen and fishermen who did not receive initial allocations.

## STEP 4 IN ACTION

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### Define the Privilege

The ITQ Programs issue quota-based privileges that allocate secure shares for specific species. Shares are allocated with no expiration date, but can be revoked by the government with eight years' notice. Each year, the shares are converted into actual weights that fishermen can land based on the fishermen's holdings and the species-area catch limits.

Managers also formed a system of quota set-asides to promote specific social goals including access for small vessels and new entrants. For the coastal fishery, shares of the most important demersal species, sole and cod, were set aside for use by vessels under 17 meters. Vessels meeting this requirement can opt into the coastal fishery and will receive additional shares provided they stay in the coastal segment for three consecutive years at a time. In this period they may buy or lease quota shares from vessels outside the segment but are not allowed to sell any out of the segment. The quota set-aside is fixed, so the amount individual operators receive depends on the number of vessels that opt in.

Additionally, shares were set aside for a program called the Fishfund. These shares are allocated to fishermen to support new entrants, data collection and innovation, but have, to date, been mainly used to allocate quota to new entrants who make investments in vessels.

The Fishfund and the ability for the government to revoke shares with eight years' notice help ensure that fish are recognized as a public resource, while still providing fishermen with stability and security.

Both permanent and temporary transfers are allowed to support changes in industry structure, such as reduction in overcapitalization, and adjustments to variations within the quota year (Schou, 2010). Industry has developed a series of Fishpools, cooperatives that facilitate trading, especially annual leases within the season.

## STEP 5 IN ACTION

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### Assign the Privilege

Allocation is often the most contentious issue in the development of a catch share program, and this was no different in the case of the Danish fisheries. Industry was initially skeptical of ITQ management and thus a driving principle of the program was to ensure fishermen broadly accepted the initial allocation of shares as being fair and a true picture of their historic performance.

Allocation was based on weighted catch history from 2003, 2004 and 2005: Weights used were 20%, 30% and 50%, respectively. While this was fairly straightforward, fishermen were allowed to appeal allocations to accommodate

non-typical cases, such as those where the operator was unable to fish during the years used to determine catch history (e.g., due to sickness, damage to vessel, sale of vessel, etc.) (Eurofish, 2009). A thorough appeals process was fundamental to the system. Overall, fishermen seemed satisfied with allocation process and outcomes.

## STEP 6 IN ACTION

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### Develop Administrative Systems

The ITQ Programs have a number of interesting administrative systems, driven both by the government and by fishermen. Transparency is an important aspect of the system, so all allocations and trading are open to see for the public on the Danish Directorate of Fisheries' webpage.

The system allows both permanent and temporary transfers. Permanent transfers are handled by the government. Fishermen register and obtain approval for the transfer from the Danish Directorate of Fisheries. Within the quota year, extensive swapping and leasing takes place. This is done almost entirely through Fishpools, voluntary, privately-established groups of fishermen that promote cooperation and coordination between quota holders. Fishpools are managed by a "pool master," who must gain approval from the Danish Directorate of Fisheries, and each Fishpool is responsible for ensuring that aggregate member landings do not exceed total quota shares.

Eleven pools are currently in operation and around 80% of all quota has been brought into Fishpools (MRAG et al., 2009). Fishpools facilitate temporary transfers between members and nearly all leasing is done through Fishpools. A main feature of the Fishpools is that members are not allowed to discard fish due to lack of quota as long as the pool has quota for that species. Fishermen who exceed their quota can lease quota to cover their catch upon return to the harbor. The result has been a substantial reduction in discards (Schou, 2010).

Fishpools use an online system ([www.puljefiskeri.dk](http://www.puljefiskeri.dk)) to conduct trades. The government does not actively participate in the trading market, but the Fishpool system and private brokerages have combined to promote a well-functioning quota market. While fishermen are provided yearly allocations based on quota holds, participation in a Fishpool is one quota year plus one month. This is used to ensure that any overfishing can be accounted for in the following year.

The ITQ Programs require all landed fish to be deducted from participants' shares. Denmark has also conducted a pilot program on full accounting of all catch and landings, called Catch Quota Management (CQM). The 2008/2009 pilot program showed that fishermen will fish selectively to reduce discards and improve earnings rather than maximize profits by catching and then releasing lower value fish.

In 2010, Denmark, the U.K., Sweden, Holland and Germany have planned, and partially implemented, a CQM program for nearly 70 vessels. The CQM program requires all catches, including discards, to be registered by weight in an electronic logbook and counted against the vessel quota. In return, operators receive additional



quota to reflect the decrease in uncertainty surrounding catch. To participate in the program all catches including discards are monitored by cameras and sensor systems through an electronic monitoring system.

The British and Danish CQM trials in 2010 dictate a mixed fishery to stop when one species in a multi-species fishery is exhausted. The effect is that biological targets for the individual stock are not overshot—as may be the case in the quota basket and the weighted transfer models. The result has been that fishermen will plan, choose and innovate fishing methods to fish selectively to optimize catches on each species in the mixed fishery. To the extent they cannot decide on the precise catch composition, the flexible ITQ Programs will allow swapping or leasing of quota to cover their needs.

## STEP 7 IN ACTION

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### **Assess Performance and Innovate**

The ITQ Programs are designed to align economic investment with the available catch. The basic features of the system work well and no fundamental changes are expected. Future program innovations will continue to focus on accounting for all catch, landed and discarded, and providing incentives for fishermen to fish selectively and improve fishermen's management of their shares.

In addition, the Danish government supports the development of improved market access, especially among big retailers. As such, they are investing in fish traceability technology and full documentation of total catches through camera and sensor monitoring and establishing a database for anybody to extract required and well-documented data, e.g., for the purposes of certification or to supply retailers with all relevant and documented data.

Denmark is also focused on driving the 2012 revision of the EU common fisheries policy (CFP). Denmark's goals are to enhance output management of all catches, reduce effort-based regulations dictating fishing methods and move toward true catch-based management in which all caught and landed fish are deducted from quota holdings. Danish, German and U.K./Scottish ministers made a joint declaration in 2009 toward full accounting of catch and landings and implemented it on a limited scale in EU legislation in 2010.