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THE ICELANDIC FISHERIES MANAGEMENT SYSTEM: A MARKET-DRIVEN SUSTAINABLE FISHERIES REGIME

Submission by Iceland

I. INTRODUCTION

1. It is a common knowledge that the oceans are mankind's single most important source of protein and a crucial part of the earth's ecosystem. Their conservation and the sustainable use of the marine living resources is therefore a matter of crucial importance both for present and future generations. Enhanced sustainable yield from the oceans is required both to ensure future food security and the wellbeing of those that depend on the ocean for their livelihood.

2. Fisheries and fish processing are the most important economic activities in Iceland. In 1997 the total catch amounted to 2.2 billion tons. In that year the industry generated US$ 1.3 billion in export revenues out of a total export revenue of US$ 1.8 billion. The industry output amounts to 18 per cent of the GDP of Iceland, which was US$ 7.3 billion in 1997. More than 11 per cent of Iceland's workforce is employed in the fisheries and the fish processing sectors. Therefore, sustainable fisheries are of central concern to the Government of Iceland.

3. It has frequently been noted that fish stocks are being depleted in many areas of the world's oceans. That, however, does not characterize all regions. The experience from some areas demonstrates that sustainable fisheries are both possible and feasible. The experience of Iceland is a case in point. The fish stocks in the Icelandic Exclusive Economic Zone have been steadily growing while the economic return of the fisheries has steadily improved. The keys to this success are primarily two: firstly, Iceland has had the fortune to exert its sovereignty to manage its fish resources on the basis of its own experience and scientific knowledge. Secondly, the Government of Iceland has implemented a market-driven fisheries management system free from government subsidies; a system that encompasses both conservation of the resources and their sustainable use.

4. Even prior to the Second World War, marine scientists in Iceland were becoming alarmed over the possibility of overfishing in Icelandic waters and emphasized the need to introduce measures to conserve fish stocks. The initial measures of the Icelandic authorities were to limit the access of foreign fishing fleets by extending the fishing limit zone of Iceland. Since the Second World War, the zone has been extended four times: In 1952, it was extended from 3 to 4 nautical miles, in 1958 from 4 to 12 nautical miles, in 1972 from 12 to 50 miles, and in 1975 it was extended to comprise the 200 mile Exclusive Economic Zone.

5. During the mid-1970s, however, it became clear that if Iceland were to secure the continued harvesting of its living marine resources, measures with respect to the domestic fleet also had to be introduced. In particular, the state of cod stock was alarming. To reduce the catch, fishing effort restrictions were introduced and restrictions were placed on new investments in fishing vessels, making scrapping of an older vessel or vessels a prerequisite for adding new fishing capacity to the fleet. The regime stipulated limitations in days of fishing effort as well as restrictions on the

maximum amount of cod in fisheries for other species. The limitation on cod fishery inevitably led to mounting pressure on other species as an alternative catch, which in turn led to similar restrictions being introduced for these species.

6. During the early 1980s, the assessment of the cod stock showed that tighter conservation measures were needed. In response, a quota system was introduced. A Total Allowable Catch (TAC) was established for each species for each fishing year and all fishing vessels holding commercial fishing permits were allocated a fixed quota share of the species. The quota share for each vessel was calculated on the basis of the catch performance of that particular vessel for the species concerned during a specified number of years preceding the entry into force of the law. (The same applies to the quota share for new species to which the fisheries management system has been extended since the original introduction of the law.)

7. The system was reasonably successful. The establishment of TAC for each species was based on thorough scientific assessment, although the final decision on the actual TAC was a political one. Also, the system allowed for consultation with stakeholders -- the fishing companies and the fishermen alike. The system allowed for a trial period, which demonstrated that decisions on TAC had to follow the scientific advice given and the authorities and stakeholders learned to work together in conserving and improving the use of the resource. Yet there was always this bottom-up pressure from the industry to increase the TAC and to allow for more fishing capacity. It became evident that the system lacked the economic incentive to give industry and fishermen a more direct stake in the conservation and sustainable use of the stocks. The one factor standing in the way of generating this incentive was the overcapacity of the fleet. In other words, the fleet had to be rationalized. Towards this end, the Government of Iceland improved the fisheries management regime by introducing Individual Transferable Quotas (ITQ).

8. The fisheries management system in Iceland is based on three main objectives:

- to conserve the fish stocks in order to attain a maximum sustainable yield on a long-term basis;
- to harvest the marine resources on a scientific basis in the most efficient and cost-effective manner in order to maximize the national economic benefit; and
- to provide an incentive for better organization in the fisheries sector and better handling of the raw material in order to attain higher quality and added value in the fishing industry.

9. How the system is organized to attain these objectives will be described in the following paper. The presentation will be in three parts corresponding to the three pillars of sustainable development, notably environmental, economic and social objectives. The first part will deal with the scientific base of the system, for scientific assessment has become the predominant if not the ruling factor in decisions of TAC for each species. The second part will deal with the economic aspect of the system, notably how it encourages cost-effectiveness and maximum economic return from minimum resources. The third and the final part touches on the social foundation of the system, namely the consultation maintained with stakeholders, both industry and fishermen alike.

II. THE ENVIRONMENTAL PILLAR: TAC, CONSERVATION MEASURES AND ENFORCEMENT

10. To ensure sustainable fisheries and long-term conservation of fish stocks, decisions on yearly catches of each stock are based on rigid scientific assessment and prognosis. Various additional conservation and support measures are also applied including a rigid system of surveillance and enforcement.

A. TOTAL ALLOWABLE CATCH (TAC)

11. Every year a Total Allowable Catch (TAC) is established for the species that are fished on commercial basis. The Minister of Fisheries decides the TAC for individual species on the basis of scientific advice from the Icelandic Marine Research Institute. The advice is based on a sophisticated database and models including stock indexes, stock analyses, stock prognosis and virtual population analyses.

12. Assessments by the Marine Research Institute of the size and prognosis of individual species are based on comprehensive data obtained from a variety of sources. Some of this information is obtained by means of an annual trawler and net "rally", where the Institute leases fishing vessels and has them fish using their respective gear in the same predetermined areas year after year. In addition, the Institute makes use of information from the catch logbooks of fishing vessels, landing reports, various data on stocks and the marine environment gathered by the Institute's research vessels. The scientific data of the Institute is subsequently submitted to scientists of the International Council for the Exploration of the Sea (ICES). The final advice of the Institute is available around the end of May/beginning of June for the fishing year that commences the following 1st of September.

13. Where cod is concerned, a specific catch rule is applied which was formulated jointly by marine biologists and economists. According to this rule, the annual TAC for cod is set at 25 per cent of the mean fishing stock size for the last three years. Based on the precautionary approach to fisheries management, chances of stock collapse are less than one per cent. A special catch rule is also followed in deciding the TAC for capelin. For other stocks no formal catch rule has been formulated but the aim is to establish such rules for most commercial stocks.

B. OTHER CONSERVATION MEASURES

14. In addition to the stipulation of yearly TAC for the commercial fish species, other important conservation measures are applied. These include:

- Area closure including extensive long-term closure of nursery areas, closing of spawning areas of cod and haddock during the spawning in April and immediate temporary closure by the Marine Research Institute of areas with excess juveniles;
- 12 mile limit for large trawlers; and
- Fishing gear requirements, including selectivity measures such as 155 mm or equivalent mesh size and mandatory sorting grid to avoid by-catch of juvenile fish in shrimp fisheries.

C. ENFORCEMENT AND COMPLIANCE

15. The control of landings is not only extremely strict but also unique. A state of the art computer system links all the ports of landings to the Directorate of Fisheries and catch data is transmitted on a daily basis. Violations of fisheries regulations are subject to fine, expropriation of catch and withdrawal of fishing licenses.

16. The day to day administration of fisheries is entrusted to the Directorate of Fisheries. The Directorate is responsible for applying legislation on fisheries management, including supervision of processing and handling of fish products. It collects and publishes data and other fisheries statistics.

17. To fish or process fish in Iceland, a license is required from the Directorate of Fisheries. The Directorate supervises the transfer of quota shares between vessels and imposes penalties for illegal catches. It provides supervision on-board fishing vessels and in ports of landing. That involves inspection of the composition of catches, fishing equipment and handling methods. Inspectors review

all reports submitted to the authorities in order to verify the reported quantity and composition of catches.

18. The Directorate controls the reporting of data on the landings of individual vessels and monitors the weighing-in of catches. All landings are weighted on electronic scales that are directly linked to the Directorate. This information is compared to quota status of the ship, and should there occur a difference between trips when surveyors were on board, the status is checked specially. By law, any catch in excess of quotas is confiscated. This means that the vessel operator must pay the national treasury the value of the catch in excess of quota. The confiscation of illegal catch has decreased markedly in recent years and special efforts are made to monitor the fishing of vessels with limited harvest rights.

19. The Directorate of Fisheries cooperates with a number of other government institutions, i.e. the Icelandic Coast Guard, the Directorate of Customs and the Directorate of Shipping. Collaboration with the Harbour Authorities and the Association of Local Authorities permits daily recording of catches weighed-in throughout the country.

III. THE ECONOMIC PILLAR: INDIVIDUAL TRANSFERABLE QUOTAS (ITQ)

20. The economic objective of the fisheries management system is efficiency and flexibility. Fishing of most commercial stocks in waters of Icelandic jurisdiction is managed with individual transferable quotas (ITQs). This applies equally to demersal species, pelagic species (such as capelin and herring) and crustaceans (shrimp, scallops and nephrops). There are a total of 14 species covered by the quota system and the combined catch value of these species accounts for 95 per cent of the total catch value of stocks caught within Icelandic waters.

21. The essential elements of the ITQ system are the following:

- all fisheries are subject to vessel catch quota;
- the quota year is September 1 to August 31;
- the quotas are shares of the yearly TAC for the species;
- the quotas are permanent, perfectly divisible and transferable;
- some roll-over between years is allowed;
- quota loss if less than 50 per cent is used in 2 years; and
- the quotas are subject to a small fee (less than 0.4 per cent) to cover enforcement costs.

22. At the beginning of each fishing year, the TAC for individual species is divided between all the fishing vessels which hold a quota share for the species concerned. The combined quota share for all vessels amounts to 100 per cent of each species. The quota share is multiplied by the TAC to give the quantity which each vessel is authorized to catch of the species concerned during the fishing year in question. This is referred to as the vessel's catch quota for the species in question.

23. A vessel's catch quota can change for a number of reasons:

- if the TAC is increased or reduced;
- by transfer of catch quota for a single fishing year (rental quota);
- by transfer of quota share (permanent quota);
- by taking advantage of the option of moving catch quota from one fishing year to another;
- by taking advantage of a limited option to exchange one species for another.

24. As indicated earlier, both quota shares and catch quotas may be transferred between vessels. Although the transfer of harvest rights between fishing vessels is not valid until it has received the

confirmation of the Directorate of Fisheries, there are in fact few limitations on transfers of either quota shares or catch quotas between fishing vessels. There is an active market for harvest rights and their price is determined by current supply and demand.

25. The ideology behind the Icelandic quota system is simple. The aim of dividing up TACs among individual fishing vessels was to prevent the wasted effort involved in competing for limited catch. In order that the introduction of the system would cause a minimum disruption when it began, harvest rights were allocated to fishing vessels on the basis of the past catch performance of each vessel. The decision to have quotas that were transferable from one vessel to another was intended to increase the cost-effectiveness of fishing and allow vessel operators flexibility. This applies to both catch quotas and fixed quota shares.

A. FLEXIBILITY

26. Fisheries management with individual transferable quotas creates flexibility for vessel operators. At the same time, transfers reduce the need for centralized decisions by the authorities. This is because individual vessel operators can increase or reduce their harvest rights and change their composition in accordance with what they feel is cost-effective. This is possible without infringing on the rights of others, since full payment is made.

27. Payment for harvest rights is either made in monetary form or by exchanging rights. Trading in catch quotas takes place through a public auction market -- the Quota Exchange. Anyone wishing to buy or sell catch quotas must register a bid or offer with the Exchange and trading in each individual species takes place at the same trading price for a single day. The Act on the Quota Exchange came into effect on 1 September 1998, and the principal reason for the legislation can be traced back to disputes between fishermen and vessel operators on the participation of the former in quota purchases. When the decision was taken some years ago to reduce cod quotas substantially, some vessel operators decided to exchange their limited cod quotas for other species, especially deepwater shrimp. This action resulted in a decrease in the number of cod-fishing vessels and more fishing specialization.

B. OWNERSHIP OF ENTERPRISES IN FISHERIES

28. The cost-effectiveness of fishing in Iceland has increased substantially due to the quota system. Many enterprises have merged to allow increased efficiency in fishing and processing and also to spread operating risks. Enterprises, for instance, holding only rights to demersal species have merged with others holding harvest rights for herring, capelin and shrimp. Both management and ownership of enterprises have changed drastically in recent years and presently most of the country's larger fishery enterprises are listed on the stock market.

29. Previously, fishery enterprises were often family businesses, whereas now numerous individuals, pension funds and companies have holdings in these enterprises. It has been estimated that those enterprises now listed on the stock market control some 50 per cent of the harvest rights and it is clear that the number of companies listed on the stock market will increase in coming years. Interest in investing in equities of enterprises in fisheries has increased substantially in recent years. Share prices of enterprises in fisheries increased up until the middle of 1997, but have decreased somewhat since that time, which roughly accords with the general trend on the Icelandic Stock Exchange. Increased interest among the general public in purchasing shares in enterprises in fisheries can definitely be traced to the increased profitability achieved as a result of the fisheries management system.

30. In the spring of 1998, a law took effect which was intended to ensure that no single enterprise could achieve a dominant position in controlling harvest rights. The law provides for a ceiling on the

quota share of individual enterprises for the eight most important species. The limit is 10 per cent for cod and haddock and 25 per cent for other species. Furthermore, no fishing enterprise may control more than the equivalent of 10 per cent of the combined value of all harvest rights.

IV. THE SOCIAL PILLAR: COOPERATION WITH STAKEHOLDERS

31. Consultation is a key to awareness raising and for actively involving stakeholders in ensuring sustainable fisheries. In Iceland there is a long tradition of consultation between the authorities and interest groups in fisheries before important decisions are taken. To mention a few examples, a special consultation committee, comprised of representatives of the Ministry of Fisheries, fishermen and vessel operators, was established to discuss various issues of contention that arose following the introduction of the present quota system. Also, stakeholders have been involved to further improve the means to diminish discards through a special working group, including representatives from public authorities, vessel operators and fishermen. The role of the working group is to discuss actions to improve the treatment of the ocean's resources. Various proposals of the working group have been adopted as legislation. Among them is a rule that no fishing vessel may set sail unless it has harvest rights which can be expected to be sufficient for the entire catch of its fishing voyage. This is done to reduce the likelihood of catch being discarded. On the recommendation of the working group, all the information on catch, harvest rights and their transfers is made available to the public.

32. The committee has also discussed the outfitting and use of fishing gear. It has recently inspected separators to allow juvenile fish to escape from trawls and fishing in specific areas has been, in accordance with its proposals, restricted to gear so outfitted. Rules have also been set to prevent gear from being left at sea for too long. This is, in fact, in accordance with the developments that have occurred ever since the quota system was introduced, that fishermen and vessel operators have been reducing the amount of gear at sea; to a growing degree, nets are hauled in over weekends and whenever storms are expected.

33. Transparent and effective dissemination of information is also of crucial importance to maintaining confidence in the fisheries management system. In Iceland, special emphasis is placed on making information on the allocation of harvest rights and their transfers and on catch accessible to everyone. Anybody can request the information from the relevant public authorities and the information is available for each individual fishing vessel on the Internet. In this manner, anyone wishing to do so can follow the fishing of individual vessels closely and see how they are utilising their harvest rights. It is clear that this open access to information on catches and harvest rights of individual fishing vessels has eliminated suspicion and encouraged indirect supervision of fishing.

V. CONCLUDING REMARKS

34. The fisheries management system in Iceland is still under development. Yet, working methods and practices in Icelandic fisheries today are already without doubt more disciplined than before the advent of the quota system. Discussion concerning the handling of catch is more critical than before and general treatment of the resource has improved. Indeed, the results of the system have been in line with the general positive experience from application of ITQs in fisheries in other countries.[1] Notably,

- there has been a general, and sometimes drastic decline in fishing efforts;
- the growth of the fishing fleet has stopped and in some cases contracted significantly;
- fish stocks have recovered and the quality of landed catch has increased;

[1] Ragnar Árnason, "Rational Sustainable Exploitation of Marine Resources", Paper Presented at a meeting of European Council Committee on Agriculture and Rural Development, (Paris: February 27, 1998), pp. 6, 11-12.

– profitability has increased greatly; and
– total employment in the industry has not contracted significantly owing to the increased emphasis on product value and quality.

35. The emphasis placed on sustainable fisheries in Iceland is understandable in light of the fact that seafood represents 50 per cent of the total export value of goods and services and more than 70 per cent of the export value of goods. Cod products alone represent 30 per cent of seafood export value. In larger economies where fisheries represent a smaller share of the national economy, similar methods could be applied to promote sustainable fisheries.

36. Overcapacity of the global fishing fleet is the predominant cause of the depletion of fish stocks in many regions. According to FAO statistics, the overcapacity of the global fishing fleet was 30 per cent in 1989.[2] Others estimate that this figure is an underestimation and assess the current overcapacity at 150 per cent.[3] What causes this overcapacity is primarily two conditions: lack of rigid fisheries management systems and government subsidies.[4] As concerns the latter, a recent study published by the World Bank estimates that a total of US$ 14 to 20 billion of environmentally harmful subsidies are being granted to the global fisheries sector, which amounts to 20 to 25 per cent of world fisheries first-sale revenues. According to the study, the OECD countries and China are responsible for probably as much as 75 per cent of these subsidies.[5]

37. The sovereign right of countries to manage their own natural resources must be respected. Yet the global community must cooperate in ensuring the conservation and sustainable use of marine living resources. No one single action could bring about such positive results towards achieving sustainable development in fisheries as would the elimination of government subsidies.

[2] Matteo Milazzo, *Subsidies in World Fisheries: A reexamination*, World Bank Technical Paper No. 406, Fisheries Series, (Washington D.C.: World Bank, 1998), p. 5.

[3] Gareth Porter, "Too Much Fishing Fleet, Too Few Fish. A Proposal for Eliminating Global Fishing Overcapacity", (Washington: World Wildlife Fund, 1998), pp. 8 and 12.

[4] *Ibid.*, p. 13.

[5] Matteo Milazzo, *op. cit*,. pp. 73-74, 77.