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Regulations Control and Enforcement: The West-Nordic Countries

Abraham Hallenstvedt
Norwegian College of Fishery Science
University of Tromsø
9037 Tromsø
NORWAY

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Abraham Hallenstvedt
Norwegian College of Fishery Science
University of Tromsø
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ABSTRACT

The paper will give an overview of the regulations and enforcement principles in the West-Nordic countries e.g. Faroe Islands , Greenland, Iceland and Norway.
It will be illustrated how the different structures of the fisheries is reflected in the management regimes and also in the systems of control and enforcement. The organization of the enforcement system will be presented, including the main bodies and their responsibilities. The purpose of the enforcement systems and the means and resources applied, will be discussed. The combined expenses of management and enforcement of modern fisheries are substantial and has to be related to its achievements. Over the years the focus of control and enforcement has gradually shifted from concentrating on technicalities like mesh size and over to a focus on measures like closure of areas and discard ban. The reasoning behind this change of focus will be outlined. The role of sanctions against violations of the rules is an important question that will be treated in the paper.

The enforcement and control systems should also be seen from the fishermen's point of view. What role, if any should be given to the fishermen in control and enforcement matters? Is there a role for the fishermen's organizations in control matters? These questions will be answered in the paper.

Finally, by comparing the Nordic countries the paper presents some general conclusions and policy recommendations.

Background:
The responsibilities of the coastal states.

The 1982 Law of the Sea Convention made major changes to the international fisheries regime. Each coastal states were given rights and duties for the utilization and conservation of living resources within its area of jurisdiction. It is the coastal states responsibility to determine the allowable catch, and ensuring that the resources is not endangered by over exploitation , trough adoption of proper conservation and management measures. That responsibility made the coastal states larger, and the governments sphere of competence wider. Governments have become major actors at sea. Fisheries policy has changed arena from industrial matters and economic development to resource management over a period of a decade or two. In that process , new institutions have been established and old institutions had to adapt to the changing situation. They were supposed to handle complicated management processes integrating scientific knowledge and conflicting interests. One should not be surprised that the new management regimes are somewhat less than perfect.
All management includes enforcement and not the least in fisheries . It is however , a number of different ways to manage the fish resources and enforcement is a variable partly dependent on the management system itself. The West-Nordic countries have different management regimes , partly due to different structures of the fishery and also due to the differences in industrial and organizational structures.

1. The structure of fisheries in the West-Nordic Countries

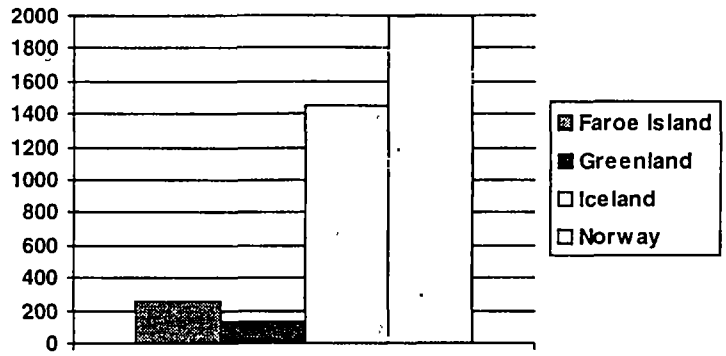
1.1. Resource availability.

As a result of the new international regime for management of the fish resources it has become more and more predictable what will be the resources available for any nations fishing fleet. Even if the 200 mile EEZ left important migrating stocks open to unregulated competition in international waters, it is only a question of time before the global fish resources are regulated. At that time it will be more manageable to keep the catching capacity at the level of resource availability. Still of course it will be stock variations to handle, creating a need for flexible adaptation, but that is a minor problem compared to the international over- capacity produced by the open for all situation of major fish resources around the globe.
It should be remembered that a large part of the fishing fleet is a result of investment decisions made ten , fifteen or twenty years ago partly based on the premises that fish resources somehow will be available , either open for all or by negotiated trade. Few investors have reasons to believe that any more, and that is promising seen from a management perspective.

In the international waters adjacent to the EEZ of the West-Nordic countries (and Russia) there are still some areas with the unlucky combination of (bilaterally) regulated stocks migrating to international waters producing unregulated and uncontrolled fishery. Within few years a management regime will be established to handle such problems, the sad thing is that in the meantime it will attract (or keep alive) fishing capacity that will add to the over-capacity already present in the area.

Using the average catches over a five year period will give an indication of the relative size of the fishery in the West - Nordic area.

Fig 1. Total catch 1989 -1993 (Thousand tons)

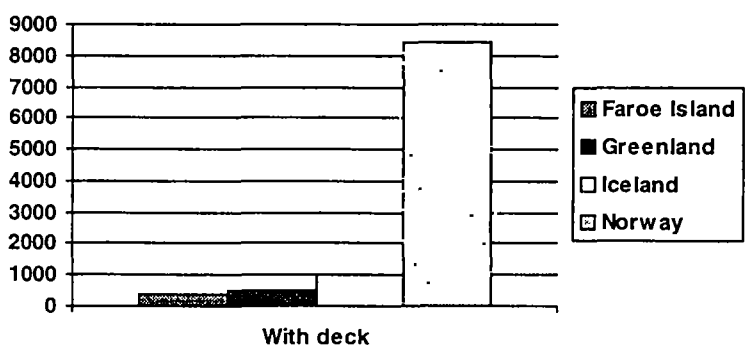


Comparing the average yearly catches tell us that Iceland and Norway are the larger fishery nations, nothing said about the composition of the catches.

1.2. Number of fishing vessels.

Other factors equal, the number of vessels is an important variable to be considered for the enforcement model implemented and the resources needed. Classifying the countries according to the number of vessels put Norway in one category with a very large number , and the rest in another category with moderate numbers.

Fig. 2 Fishing vessels 1993



Iceland are using one thousand fishing vessels to catch some 1.5 million tons and Norway are using eight times that number to catch a quantity in the area of 2 million tons. The

average catches for each Icelandic fishing vessel is 1500 tons while the average for the Norwegian vessels is only 240 tons.
The one thousand fishing vessels in Iceland are landing their catches in some fifty fishing harbors, while the Norwegian vessels are landing in hundreds of landing sites along a coastline two thousand miles long. It is reasonable to postulate that the complexity of enforcement will increase with the number of vessels and the number of landing choices available for each vessel. Accordingly, the questions of enforcement should not be expected to have the same answers in the two countries. I will return to the argument that it is a limit to the value of discussing enforcement matters at a very general level, it is hard to find one solution that will be the right one for all kind of fisheries in all kinds of social, cultural and political settings.

2 . Management and regulation under different conditions.

Fishery is important to all the West-Nordic countries, but it is *Faroe Islands*, *Greenland* and Iceland who are totally dependent on fishery. Even if the fisheries are all important for certain parts of *Norway* , it is a moderate part of the national economy. *Iceland* and *Norway* are the larger fishery nations. There are however, important differences between the two. The shape of the coastline and the locations of fishing grounds are different, the number of landing cites are different and so are the number of fishing vessels and number of fishermen. In short; the structure are very much different, and create different platforms for management and control.
The structural heterogeneity is also reflected in the way the fisheries are organized. Partly as a result of the heterogeneity in structure we will also find variations in organizations and institutions within the industry and in the institutions involved in resource management.

Even if the structures are different, the Nordic countries share the fundamental and international problem of keeping the fishing capacity in balance with the sustainability of the resources. The higher the capacity relative to the resources available, the larger are the incentives to overshoot the quotas, and the greater are the need for control and enforcement of the regulations.

Enforcement includes monitoring activities to identify rule breakers and prosecution activities including the issuing of penalties. Enforcement are directed to the behavior of fishermen in relations to the rules, while catch control are directed to the catch pattern and the catch level. A complete description of the enforcement and control systems will not be presented. It will be
a presentation of the most salient traits of each of the countries.

2.1. Regulation systems, limiting efforts and catches.

All the West-Nordic countries have decided to stay outside the European Union (EU), and part of the reason for that can be found in the dependency of the fish resources and a deep skepticism to the common fisheries policy of the union. *Faroe Islands* and *Greenland* are self-governing societies within the Danish kingdom, and since Denmark is a member of EU , some

of the EU principles for management is also indirectly of relevance for Faroe Islands and Greenland. As fishery are a major industry in all the countries, it also play an important part in policy matters at the government level. In contrast to most countries where fishery matters are a sub sector of agriculture and / or forestry and wildlife, the responsibilities for the fisheries are located to ministers of fisheries / directors of fisheries at the government level.

Fareo Islands is most remarkable for two reasons. First, until 1986 it was free entry to the fisheries. Economic incentives was until 1986 the bases for regulation of the catching capacity. By subsidizing catches for underutilized species it was tried to control the fishing pattern, but that scheme proved not to be able to prevent over-investment.
Second, until 1994 there has been no total quota or vessel quota on the most important species (cod, haddock saithe). Indirect regulations by technical and biological means was preferred e.g. minimum size, gear restrictions and closed areas.

In 1986 the first limited entry regulation was introduced, requiring license for all seagoing fishing vessels , specified on area, species and gear. During the eighties the catch capacity increased with some fifty per cent while the catches has been reduced by one third since 1989. The serious crises in the fareo fisheries in the nineties have triggered off a debate on the regulatory system. (Toftum 1993). From September first 1994 , more strict conservation efforts was made operational especially to protect juvenile fish. Vessel quotas has been introduced for the first time , and only after strong protests from the fishermen the Danish government had to cancel its plan for introduction of ITQ.

As a consequence of the priority given to indirect financial control of the fishing capacity, the question of enforcement was a relatively simple one. It involved the traditional control of mesh size and fish size. This was especially the case since there was no control of the landing of catches. With the change of management towards more strict conservation measures and introduction of quota systems, there will also be a need for increased enforcement efforts.

Greenland got their home rule in 1979, and part of the responsibilities for fisheries management and development was transferred to Greenland in 1985. On important issues of relevance for the fishing industry, the law making body are still located in Copenhagen (Folketinget). This is especially of relevance for matters related to enforcement's and sanctions against violators of management rules, as Greenland is a part of the Danish judicial system.

In the Law of fisheries of 1990 decided by Landstinget in Greenland , the shrimp fishery are given a special status by making licenses mandatory, permanent and transferable. For all other species the licenses are given for one year, and are not transferable. These regulation do not apply to the coastal fleet. Vessels with licenses are obliged to accept inspectors staying on board for surveillance of the fishing operations. (Lage/Rasmussen 1993).
For Greenland the shrimp fishery with a total export value of some half a billion US dollar, is the one of major importance. No wonder that the main focus for enforcement are the shrimp fishery, as it also will be reflected in this presentation.

Both for *Greenland* and *Faroe Islands* it is of importance that they are not only coping with the relatively new challenge of management and enforcement, but also at the same time establish workable institution to handle the whole range of questions related to fisheries policy and administration.

Iceland
When Iceland acted as an international front-runner extending the fishery zones to 12, 50 and 200 n.miles it was based on a law for scientific conservation of the fishing banks on the continental shelf, from 1948 (Law nr.44. April 5th 1948). Following the extension of the 200 n.miles zone, a law of 1976 authorized the use of technical measures like gear restrictions and mesh sizes, and also other rules for fishing operation in the exclusive economic zone of Iceland. (Law nr.81 May 31. 1976). The quota system and the rules for control and enforcement's are based on a law for regulation of the fisheries of 1990. (Law nr. 38 May 15th 1990). In the eighties, Iceland was regarded the prime example of successful management. As one of the first countries in the world introducing ITQ in 1984, it took place in a period where the catch of cod was between 350 thousand and 390 thousand tons. Ten years later the quota is down to 155 thousand tons, and Iceland is not regarded as the hero of management any more.

Iceland are giving priority to catch control by weights of all landings and direct electronic transmission for aggregation as input in the quota control. Surveillance of closed areas or other restrictions of fishing operations, are the main activities of 3 coast guard vessels. A total of 252 inspections in 1992 of a total number of fishing vessels of one thousand, means that one vessel out of four can expect inspection once a year.
(Palmason 1993)

Government regulations in the **Norwegian** fisheries has a long history of using technical measures and behavioral rules intended to secure law and order at the fishing grounds, to regulate the use and amount of gear. These measure were first introduced as solutions to the problems of crowding , to put limits on the type and amount of gear rather than on the number of participants. (Hoel, Jentoft, Mikalsen 1991).

As both the fishing- capacity of the single vessel and the fishing fleet increased above all limits the capacity had to be brought under control. That proved to be difficult in Norway as elsewhere. One important reason for that was a competition between nations to get "their"

share of the resources in international waters. With the depletion of Atlanto-Scandic herring the Limited Entry Act of 1972 authorized the government to introduce limited entry on a broad scale. Together with the Salt Water Fishing Act of 1983, it constitutes the legal foundation of regulations, including enforcement . Trawlers and all other vessels above 50 feet are licensed.

2.2. From input control to output regulations

The main result in bio-economic theory is that the fishing effort should be limited in relation to what it would have been in an unregulated fishery. (Flaaten 1986). The practical result of that theory is that licenses now has become the rule and the unlicensed fishery the exceptions. In **Iceland** license is required for all kinds of commercial fishing, while the other countries have license system for larger vessels. Licenses are given for one year at a time.
Until 1986 **Faeroe Island** had free entry , when it was introduced licenses for vessels larger than 20 tons gross weight. Also **Greenland** have licenses for larger vessels.

Comparing the time schedule for introduction of laws and regulations follow by and large the same pattern. In the 25 years after the second world war, the laws was aiming at keeping the international trawler fleet way from the coastal areas. A period concluded in 1976 when the countries established the 200 miles EEZ. Then followed a period of adaptation to the new regime concluded by the Law of the Sea Convention 1982. The third period involving the national implementation of the new regime , still evolving and struggling to master the combined unpredictabilty of nature and the over-investment made by man.

The effectiveness of the limited entry measures, determine the need for direct limitation of catches. As limited entry has proved not to effective, quota systems has been introduced in a number of fisheries, gradually increasing the complexity of enforcement . It is a direct relationship between the systems of regulation and control needs.

2.2. The purpose of control and enforcement

Each coastal state are given by the international community , the responsibility to manage the fish stocks on their behalf. According to article 61 in The Law of the Sea Convention the coastal state shall ensure through proper conservation and management measures that the maintenance of the living resources is not endangered by over-exploitation. An integrated part of "proper conservation and management measures" are resource control and enforcement.
As most management and enforcement measures are introduced to solve partial and often acute problems, it is important to view them in totality, an to discuss both the theoretical and practical possibility of enforcing the management introduced.

At the very general level the object of enforcement is to get the actors to follow the regulations intended for the optimal utilization of the fish resources. It should not pay to avoid the rules unless you want many to follow and endanger the management and regulations intended for conservation of the resources. Enforcement and control is however, not only a question of protecting the fish , it is also a question of protecting the fishermen, it is a question of equity. Especially when boat quotas are introduced to a fishery, it becomes a question of fair competition. When fishermen discuss conservation and enforcement , **fairness** is an important part of the discussions. To get standardized systems of regulations and enforcement across nations is regarded important, not only by fishermen but also by government officials and conservationists. An illustration of this point is the controversy about the dolphin safe nets in tuna fisheries.

It also should be said that most enforcement systems has a symbolic function intended to tell the world that "something is done", and the responsibility for regulations are handled with determination. Enforcement in fisheries is no exception to this. A change of focus will take place dependent on the situation in the regulated area. If the resource situation is satisfactory the regulation will be pointed as the explanation , but as the situation deteriorate enforcement and surveillance will come into the forefront. Especially when there is a crises coming up , it is a need to save the face of the management system and the enforcement will often be targeted both as explanation and salvation.

3. The organization of resource control and enforcement.

In all the West-Nordic countries the Directory of Fisheries are the central body responsible for control and enforcement. Closely coordinated to the responsible body are the coast guard, under military command in all countries, and / or units for surveillance and rescue operations under command of the directory , as in Fareo Islands. Faroe Islands and Greenland are disposing one large vessel , Iceland three vessels and Norway five larger vessels (three with helicopter). In addition are the control units disposing smaller vessels (Fareo Islands and Greenland three, Norway fourteen), and are either disposing airplanes (Norway two) or renting airplanes. The capacity for inspection at sea are a mixed result of what you wish to do, and what you have resources to do. Norway are a special case by the role played in control of landings and of vessel quota control by the fishermen's mandated sales organizations.

Norway are the only of the countries where the total size of the fishery, the size of the total economy and the infrastructure and institutional network , make it possible to implement control and enforcement measures at all levels, from the catching operations at sea to landings, and also to production and export. For the lesser economies and/ or the smaller fisheries it is a question of choosing one or a few measures that has a level of expenses that the total output from the fishery can defend.

3.1. The instruments.

3.2. Monitoring at sea or dockside.

Monitoring and surveillance at sea are the more expensive but have the advantage of taking place at the scene of the fishing operations. The more remote locations from the fishing operations is a disadvantage attached to dockside inspections even if it is relatively less expensive. To choose between them is not only a question of comparing the costs.
It has to be related to the main objectives of the management system, and the objectives of the different parts of the larger system. As an example, when the European Union has the rule that all undersized fish or bycatch should be brought back to the sea, does not require the same control effort as for Iceland or Norway who has decided that all fish has to be landed.

3.3. Control documents

The **logbooks** are an important element in surveillance of the catching operations at sea by coast guards and other control bodies. The logbooks are tools both for monitoring the vessels fishing operations and for providing statistical data for marine science. As a general rule all licensed vessels and other larger vessels (above 100 tons gross weight for Faroe Islands, above 10 meters for Norway), are obliged to keep record of the catch. In Norway there is a database in the Directory of Fisheries for logbook information.

Landing declarations are the central part of the quota control and catch statistics in Norway. The landing declarations has to be signed both by the skipper and the buyer and are collected and aggregated by the mandated sales organizations and then delivered to the Directory of Fisheries. The sales organizations are using the landing declarations for control of vessel quota, all value above quota is withdrawn. The landing declarations are also input for the quota control in the Directory of Fisheries. Because of the importance of the landing documents, it is crucial that the recordings are correct and large enforcement efforts are therefore applied to the control of the landing declarations.

3.4. Inspectors on board

Greenland have decided to cover 100 % of the deep sea fishing fleet operating in their EEZ with inspectors on board the vessels, regardless of their flag. About two third of a fleet of roughly one hundred vessels are foreign, mainly shrimp trawlers. It is set a goal of one hundred inspectors and as it is found to be necessary with two inspectors on board , there will not be full coverage if all vessels are fishing all the time. Since in fact not all vessels are fishing all the time, most vessels will be under inspection most of the time. The inspection are rather extensive. Gear and documents are controlled and so are the fishing operations itself. It is executed with use of cameras and video. Reports of violations are communicated immediately, and sanctions can be implemented as soon as the vessel are docking. Normally it is issued a fine graded in accordance with the offense.

In most cases it is a question of a thousand dollar, but in more severe cases it can be tens of thousands. A handful cases each year will be handed over to the police. The intention of using inspectors on bard is to prevent the fishing operations from violating the rules and regulations. Control of the coastal fleet are limited.

A system with 1-2 inspectors staying on board one ship supposed to be representative for the whole mackerel-fleet, has been tested out in **Norway.** The idea was to control the catch composition on the control ship and comparing the result with vessels without inspectors on board. The evaluation of this experiment is somewhat mixed. The advantage of such a control system would be the low cost, but the criteria for representativity could not be established with any certainty. A control vessel can choose to operate " consciously unrepresentative," by avoiding the general fishing pattern, changing fishing ground etc. The experiment illustrates the general point that most control systems are dependent on the full cooperation from the vessel, and this system was met with skepticism from the mackerel fleet. As an alternative to keep one or two inspectors on board one vessel for a long period, it was then decided to try accidental one - trip inspections.

3.5. Weight of landings

A promising method for control of landings are introduced in **Iceland**. All landings in harbors will be weighed , and the operations are under surveillance of official inspectors.
The weight are directly transferred by electronic means as input in the quota control.
If all fish landed where handled this way it would be a very effective system. In principle, all fish are supposed to be weighed, but for a number of practical and also economic reasons it is not. The large processing plants are getting frozen fish directly landed, also from their own boats . They are given permission to weigh one unit and the multiply with number of units of the same kind. A large part of the catches are handled this way. The production on factory ship pose the same problem on Iceland as in other countries. Since you only can measure the finished product (either you use counting or weighing), the all important question is the conversion factor used. Even if the system with weight of landings are not perfect, it offer the possibility of immediate quota control and efforts should be made to include all landings, otherwise more and more landings could be deliberately channeled outside the system.

From august 1995, all landings in Norway of herring and mackerel will be weighed, a system argued by the fishermen themselves. Behind the argument for weight of all landings is a declared self interest; the existence of a black market enjoyed by some are reducing the price level for all.

3. 5. Regulations by technical means alone.

For a long period the most common tools applied in fishery management (conservation) was technical measures like mesh size and other restrictions on the gear. At that time the enforcement system was rather simple. The surveillance question was a question of controlling the gear and the mesh size. But if the control system was simple in principle, it was not simple to execute and it was not found to be effective.

Even if mesh - size is still used for conservation purposes, it is a part of a whole battery of measures intended to regulate the **level** of catch and also the catch -**pattern.**

Most of the rules concerning fishing gears and protection of juveniles etc. are introduced for biological reasons, but have important impacts also for the fishermen and the fishing industry. The vessels and the gear become standardized and when the rules are followed the fishermen are competing on equal grounds.

4. The problem with undersized fish

The classical management measure is to protect juvenile fish. The undersized fish is a management problem and it is a problem of enforcement and control. The story of how Iceland has tried to find sensible solution to the problem of undersized fish illustrates the difficulties involved. Before 1984 all catches should be landed regardless of size, BUT the part of the catch that was undersized had to be included in the quota , but not paid for. As this was an incentive to discard, the rules underwent changes. The undersized fish was paid for, but not counted in the quota. As quotas became smaller, the incentives to target fish juveniles outside quotas made some vessels to do exactly that. The rules had to be changed again. From 1987 all undersized fish had again to be included in the quota and the landings of small fish was reduced rather dramatically. It was again faired that discard was the reason. What could and should be done? It was then introduced rules that stimulated to land undersized fish without making it profitable to deliberately catch it. Only one third of the undersized fish is now included in the quota if it is not exceeding 10 % of the catch. Most important however, is the introduction of ways to reduce the catches of undersized fish, and ways to reduce the problem of by-catch.

4.1. Flexible closure of fishing grounds.

An alternative to rules on what to do after the juvenile fish actually have been catched, is to take precautionary action intended to avoid fishing juveniles. Closed areas and "boxes" closed for fishing is a conservation measure used in several countries. The main purpose is to protect juvenile fish, and has the positive side effect of preventing the fishermen from braking
the rules. Such preventive measures are sensible also from an enforcement perspective. Surveillance of areas is relatively easy compared to control of catch composition on individual vessels. As technology for automatic positioning will be introduced, the cost of surveillance of areas will be only marginal. For that reason only , closed areas can be expected to be a popular conservation method. The area of the "boxes" can be defined permanent and it can be closed permanent or by fixed dates. In most cases however, the problem with juvenile fish or bycatch are not following fixed dates and they are not following fixed borders either. A solution to this would be flexible closure of fishing grounds.

It might be a number of reasons for the recovery of the Arctic Cod in the Barents Sea from 1990- 1995, but the conservation regime is regarded as a major reason. Part of that regime was the introduction of a system of flexible closure of fishing grounds. Management of the Arctic Cod is shared by Norway and Russia, and this regulation has been an essential part of the conservation regime in both countries. The operation of a system of flexible closure required a whole range of management tools. It has to be a monitoring scheme providing information about the spatial distribution of juveniles , and it has to be a decision making system able to close and open areas without time lag. That require a number of institutions to operate in cooperation and without delay in the decision making process. The figure is an example of one way of organizing a system for flexible closure.

Fig. 3 The Norwegian decision making system for flexible closure.

Greenland are also discussing ways to introduce closed areas when by-catches are unacceptable. With the limited capacity for inspection at sea such arrangements will be difficult to control. It might however, be possible to achieve with the introduction of an automatic electronic positioning system(Lage /Rasmussen 1993). The closed areas are based on the reasoning that it is better to avoid infringements rather than making arrests after infringements.

Also in Iceland closed areas are a widely used conservation method, as the map illustrates (Palmason 1993). Fig. 4.

4.2. Discard .

An essential part of the Icelandic and Norwegian conservation principles are the ban on discard. The ban on discard is introduced for two reasons. Firstly , given the evidence that large portions of the fish discarded will not survive, it is a waste of food-resources that should be avoided. Consequently, all fish which there are a market for should be landed. Secondly, every catch of any species should be registered and counted against the quota for management reasons. The discard ban dates only a few years back , but is today supported by all groups involved ;scientists as well as administrators and fishermen. As Norway share several important fish stocks with Russia in the Barents Sea, it is important that Russia also support the ban on discard. While Iceland , Norway and Russia require all fish to be landed , Greenland following the European Union and keeps to the NEAFC - principle on discard, forbidding the
unavoidable. Catches that are defined as illegal should immediately be thrown back to the sea. Also in Faroe Islands it has been illegal to land under-sized fish.

5. Enforcement in international waters

Even if the old NEAFC (North East Atlantic Fisheries Commission) was not successful when it come to management of the stocks within its jurisdiction, one of the notable achievements was the scheme of joint enforcement and control which was established by the early 1970s. (Sætersdal 1984)

The Law of the Sea has created an unintended incentive to expand certain type of fisheries in international waters by excluding the distant-water fishing fleets from the exclusive economic zones of many states. The increased competition of the fish resources in international waters pose the most immediate problem to sound management of straddling stocks and will also be a threat to the management within national zones if it is not solved within the near future.

5.1 Enforcement beyond 200 miles EEZ.

Two of the West-Nordic countries , Iceland and Norway , are involved in a dispute over an area of international water in the Barents sea called the Loophole. The North-East arctic cod in the Barents Sea are managed by Russia and Norway in the Joint Fisheries Commission. At annual meetings agreements are made regarding total quotas , distribution of quotas between the two countries, and the share to be allocated to third parties. Also the conduct of fishing operations , mesh size , minimum fish size, closed seasons are recommended. (Stokke 1995). The legal bases for unilateral enforcement measures beyond 200 miles is not strong, as the flag state enforcement principle is regarded customary international law regarding operations at high seas.

5.2 Unilateral actions.

Norway introduced in 1993 a law that prohibit landings of catches caught in conflict with sound and accepted management principles .e.g. vessels operating in international waters fishing on a regulated stock without quota or also over-fishing a stock with quota. If everybody else did the same, it would be a powerful tool of management. As those nations who are fishing in conflict with what is regarded sound management principles welcomes landings, or the vessels have other countries they can go to, it is not a very helpful measure.

5.3 The Atlanto-Scandic herring in troubled water.

For 25 years the Norwegian fishermen have been asked to accept very strict regulations of the Atlanto-Scandic herring with the purpose of bringing the herring stock back again to its full potential. It is now recovered to the extent that it start moving outside the 200 mile limit to an international water called "loopsea" looking for food, and also following the old path of the herring stock to the Faeroe Island and Iceland. For 1995 the quota to Norway was decided to be 550 thousand tons and 100 thousand tons to Russia. Negotiation on the quota to Iceland and Fareo Icelands ended without agreement, and Fareo Islands and Iceland decided a quota of 250 thousand tons. As these paper is written , the conflict over the unregulated fishery of herring is escalating, involving not only vessels from the parties negotiating. In a situation like this it is not a simple matter to ask fishermen to follow strict to regulations, when at the same time is going on an unregulated , uncontrolled fishery on the same stock in international water. In an attempt to stop the unregulated fishery in the "loopsea", Norway decided (tenth of May) to prohibit landings of catches from that area. At best that can stop Norwegian vessels from participating.

6. Non-Compliance and Sanctions

Fishermen can be expected to respond to a number of factors in their compliance behavior. The regulatory system , obligations, social pressure, inducements, level of sanctions and the economic situation are all factors that will influence decisions to comply or not to comply. (Sutinen/Rieser/Gauvin 1990). A combination of poor stock conditions, small boat quotas, and large number of buyers under-supplied with fish can break down any management and enforcement system. When the profit avoiding the rules are high and the probability of being caught are small, some might be tempted to overshoot the boat quota , and under the worst of conditions many will follow. In such circumstances the self-discipline of "quasi-voluntary behavior " might easily break down. (Ostrom 1990.p.94/95). As long as the fishermen are confident that others cooperate and the ruler provides joint benefits, they will tend to comply with the regulations. If the fishermen have the feeling they are paying a high price saving the resources, they will not tolerate others to profit on the difficult situation. They will ask for control measures making it unprofitable not to comply. Stories of those who are avoiding the rules might easily multiply out of proportions. Such were the situation in the Norwegian cod fishery in the early nineties, when very strict vessel quotas was introduced in the coastal fishermen. Rumors of law avoiding behavior dominated the private talks in fishing communities, entered the newspaper with horror stories of black markets and culminated with talk shows on television, creating a portrait of an industry of half criminals. The most obvious result of the situation was increased enforcement efforts.

6.1 Honest mistakes and calculated non-compliance.

As outlined by Ostrom , graduated sanctions is an important part of a workable management system (Ostrom 1990). It is good reason to stress the importance of differentiation between honest mistakes and calculated and repeated violations of the regulations. A consequence of the increasingly more complicated rules of regulations and also the extensive formulas that has to be filled in with accuracy, with correct data and signed at the correct time etc., is a number of minor mistakes and sloppy practices. (Anderson 1989) Such minor deviations from the rules should be handled for what it is. These minor incidents pose no problem to the resources and are certainly not any moral problem. Advice and information should be the reactions to the honest mistakes. Such advisory and communicative culture among inspectors based on professional competence and respect for those controlled, tend to create mutual respect and accept for the rules. (Hønneland 1993).

Equally important as handling innocent mistakes with common sense, is it to react strongly against the calculated and severe violations. In most cases charges need not to be brought before the court, because the fine is usually accepted, but a few severe cases ends up in the court room. Unfortunately the court room has not been an arena functioning as homeground for the prosecution of such cases. All the West-Nordic countries have brought some incidents that has been regarded as extreme cases of deliberate and repeating law-avoiding behavior to the courts. For the most prominent of this cases with distressing results. To explain why the legal system is not acting in accordance with expectations one has to consider several factors. For obvious reasons there is not any tradition established neither in the court- room or outside, to handle this specific type of violations of laws and regulations. Observations made at sea that inspectors regard as evidence good enough, are in the court room made to unfounded accusations by the defense. Greenland have decided that it is no use bringing the cases to the court and are instead discussing alternative sanctions. A register over law avoiding behavior has been established in order to single out those who are repeatedly braking the rules. In licensed fishery the most obvious sanction is withdrawal of the license.

In Norway a governmental committee have this year made a report suggesting that the sanctions should be leveled with the potential profit, and also that most serious or frequent violations should result in withdrawal of licenses.

6. 2 Precautionary principles and the legal system.

The precautionary principle adopted by the Rio conference, is a consequence of uncertainty and has been developed to prevent pollution. It requires states to take action even in the absence of sufficient scientific evidence of linkage between suspected cause and observed effects. If applied to fisheries it would be required that actions were taken to prohibit use of technology suspected to have an adverse effect on target and non-target species. The same would apply to the introduction of new technology. Those who want to introduce a new technology would have the onus to demonstrate that it would not have unacceptable impacts. This principle , if applied, would change fundamentally the relationship between science and decision making in fisheries , locating the burden of proof on the industry. (Garcia 1992).

This might be seen unlikely to be implemented. It would also change the relationship between the parties in the court room. If taken seriously the worst case principle has to relocate the burden of proof from the prosecutor to the suspected violator. It is a conflict between highly valued principles in the judicial system and the upcoming principles in the resource management systems. Governments can not be responsible for a worst case principle to the world community while the individual actors enjoy the benefit of the doubts.

7. Enforcement costs.

It is not difficult to accept that the best system of enforcement would be if it were perfect and costless. (Sutinen & Andersen 1985). Unfortunately we are in a situation where we have to accept enforcement less than perfect and more than costless. Discussions of control and enforcement's costs are facing two major problems. First, it is relatively simple to count the money expenses on the input side. More difficult is it to establish with any certainty the social cost of enforcement, and its consequences on the money side in the longer run. As the fishermen increasingly is regarded as a potential criminal it might be that the behavioral pattern will change. Second, even if the input costs could be established, how can the profit be measured? The tricky question is the result on the stock.

The best alternative for fisheries management would be that all fishermen complied with the regulatory system and followed the rules. To what extent the fishermen comply with laws and regulations are partly a function of the management system itself. Total cost of enforcement will vary with the type of regulatory instruments applied. It will involve control costs and enforcement costs both on the Government side and the industry side. The more the management system is regarded as legitimate, the greater are the chances that the fishermen will comply. In consequence, the enforcement costs is inversely related to legitimacy. As the question of legitimacy will be discussed in other papers (Sagdahl) , it will not be outlined in this paper.

7.1 Management and enforcement. Is it worthwhile?

The Norwegian Arcto cod stock has recovered remarkably over the years 1990- 1994, resulting in increased catches of 200 000 tons representing a first hand value of some 300 million US $. It is reason to believe that an integrated management scheme should be given credit for that recovery. A central part of that scheme included protection of juvenile fish by flexible closure of areas and strict enforcement. It might be discussed if that recovery is a result of management or natural changes outside the control of management, but if there is uncertainty about it , what is then the rational choice? If sensible management would be an investment to avoid depletion of stocks, and control and enforcement is a part of rational management, money spent would be money saved. The economic and social cost of a depleted stocks can be illustrated by Canada, already allocated 600 million $ to easing the pain of Atlantic fishermen struggling to cope with the acute resource crises.

8. Control seen from the fishermen's standpoint.

In the beginning there were fishermen, then came the governments followed by the world community represented by environmentalists. Increasingly are the fishermen regarded as the "problem" when it comes to management of the fish resources. To many fishermen it is an insult when it is implied that they do not understand the need for conservation and regulatory measures. A case in point is the fisherman and whaler from Greenland in a televised discussion on conservation who asked ; with what right do people come from the industrial centers of the world to Greenland, telling Greenlanders that they are dependent of the natural resources in order to survive.

Fishery used to be an occupation of the free man, and in less than a generation he is surrounded by rules and regulations, marine biologists and inspectors telling him what to do and especially what not to do. From the fishermen's point of view, he has lost his rights and the freedom of choice he once could enjoy. When an enforcement and control system are introduced, there will be a tendency also to regard fishermen as a counterpart and as a client. The generalized fisherman will be created and encompass everything from the local angler to the factory ship, and they are all not to be trusted. Some of the more enthusiastic conservationists seems to regard fishermen as the only "predator" that should not be allowed to catch.

Law enforcement in fisheries and compliance with fisheries regulations are highly dependent on their acceptability to the different groups of fishermen. Fishermen's behavior can also be expected to be a result of the way they are treated. It is possible to create responsible behavior by giving people responsibility. (Jentoft 1989). Where fishermen are not disposed to comply, most regulations are difficult to enforce. (Derham 1987). Participants can be supposed to adopt strategies to cooperate so long as everyone else co-operates. If anyone deviates, others will deviate to.

9. A role for fishermen's organizations in control matters?

In the West-Nordic countries the fishermen are better organized and are given a more prominent status in the society than is normally the case in other countries. One of the reason for that is the importance of the fishing industry to the national economy. Another reason is the system of interest group participation in public policy, characterizing the Nordic countries. Not only are the fishermen's organizations listened to by government, they are also delegated administrative functions on behalf of the government. Accordingly , there is a tradition of co-operation and a high degree of mutual thrust in the relations between government and organizations.

The effectiveness of any enforcement system is dependent on the organizations involved and the way they operate, especially their relations to the fishermen. In Norway the mandated sales organizations are given key -roles , especially in the quota control. The fishermen's sales

checking in detail that the vessel quotas are not over fished, and are obliged by law to confiscate the value of the catch in excess of each individual quota. A confiscation made effective down to less than ten kilo of the seasonal quota. Consequently, there will be no economic incentive to overshoot the quota - as long as you operate at the legal market.

Several advantages follows the system making fishermen's sales organizations part of the control. By using existing organizations , their infrastructure and capacity to interact with fishermen , considerable cost of establishing new organizations are saved. If the government alone should be responsible for the quota control, it would have to be organized at higher costs. Another advantage is that when fishermen are controlled by their own organization it can be expected to influence the fishermen's decision whether to comply or not. Strong arguments speaks in favor of a role for the fishermen and their organizations not only in enforcement and control, but also in other parts of regulation and management. Most fishermen are responsible people and should be supported in their strive for creating organizations that institutionalize that responsibility. Generally there is a tendency a priory to underestimate the fishermen's capacity for self-management. An example of fishermen's own capacity for self-regulation is the Lofoten cod fishery in Norway. (Jentoft & Kristoffersen 1989). The Lofoten fishery is a seasonal fishery attracting thousands of fishermen operating at a small area with a high potential for conflicts, particularly between fishermen using different kinds of gear. In 1897 the government delegated responsibility for the regulation of the fishery to the fishermen themselves. The Lofoten Law contained few rules for the execution of the fishery itself, but established instead a decision making system where fishermen could settle the rules for the fishery.

Also in Iceland regulations laid down by common agreement among fishermen to prevent chaos at the fishing grounds. This regulation had proved to be working when it was ratified by law in 1945. (Palsson 1983). The most prominent example of formal, legally protected territorial use rights is the Japanese coastal fishery, where local fishermen's associations have sole rights to fish in the inshore area. (Hanneson 1988). Unfortunately the role of fishermen in management is focusing on a limited aspects of the total system of management, regulation and enforcement. It is not a question whether there is a role or not. It is a question of finding the trade- off between government and fishermen. (Kurien 1988).

10. Management and enforcement as a learning process

When shortcomings of management and enforcement- regimes is shown to be present , all to often the conclusion is that the whole system should be abandoned and replaced with a new and often simplistic mechanism that are supposed to take care of all problems involved. To turn common property in to private property is seen by many as the salvation, proved to be effective for land-resources. Individual transferable quota (ITQ) is advocated as the way to make the marine resources privatized. To build new workable institutions to handle complicated and conflicting processes of exploitation of natural resources should be expected

to take time. It involves conflict over how scientific knowledge should be treated compared to economic interests and environmental considerations. The discussion on whaling is exactly that. If management is not to be based on "best scientific knowledge," what should the be the bases for management? It should be understood that to build workable institutions that are regarded legitimate involves time. It is a learning process. As concluded by McCay on the Regional Management Council System in the US: "We have learned that participation of fishermen in management is fraught with perils that add to the inherent difficulties of managing fisheries but also rich with possibilities, many still untried, that can add to the effectiveness and fairness of fisheries management". (McCay1989.) It is a learning process at the local, national and international level, among all the groups involved in exploitation of the fish resources and involved in management of that resources.

11. Conclusion

The challenge to the management and enforcement systems:
to make it profitable to fish legally.

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