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Responsible Governing of Coastal Common Resources in the North

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Summary:

This paper synthesizes the major findings from two international comparative research programs under the auspices of the European Union. One of these projects, the COASTMAN project, has analyzed the institutional foundations of Northern Coastal Commons and the experiences with newly crafted institutions for Integrated Coastal Zone Management. The other project, the ELSA-PECHE project, has analyzed the attitudes to ecosystem responsibility and other ethical questions in Norway, Iceland and Denmark.

By bringing together an institutional analysis approach and a normative analysis of prevailing ethical attitudes, the paper will attempt to penetrate deeper into the constitutional basis for both the coastal management regimes and the fisheries management regimes of Northern Waters. The forces of change are quite similar in the two regimes, and akin to the overall modernization processes in the rest of society. In fisheries this has resulted in individualized quota systems that tend to break down the fishing communities and the moral collectivity of fishermen. But coastal fisheries are also influenced by developments in other kinds of coastal resource utilization, especially a slow transfer from specie/population management models to more territorially based modern sea-tenure system. This often lands them into a squeeze between a drive for further rationalization and increased restrictions on their mobility and freedom to use sea areas. On the other hand, territorially based modernization forces are found in the logic of aquaculture growth and growth in sea ranching and the growing of shellfish and mussels on the seabed. While the traditional institutions of the Coastal Commons withered away under the heavy influence of sectoral rationality, new institutions for a more integrated kind of "Ecosystem Commons" have to be crafted as the growth of area consuming marine resource transformation increase in total occupancy and in economic importance to coastal communities. In addition, a development of bio-ethics and principles of ecosystem responsibility takes place parallel to the technological shifts in marine resource utilization. These can be either lagging behind or advancing ahead of the development of new forms of production. The paper analyses these shifts in normative basis for the changing institutions and outline the need for a new normative basis for crafting new kinds of institutions for governing Coastal and Marine common resources in the North.

Introduction:

Institutional analysis based on the IAD framework ((Institutional Analysis and Development, Ostrom, Gardener and Walker 1994), has through the last decade been quite successful in explaining human use of natural resources. In looking for "sustainable" ways to manage fish resources, forest resources and pasture resources, this framework has managed to explain both resource use tragedies and success stories around the world. Building from the repeated actions of individuals, resource governance can be analyzed as maintained institutional arrangements that can be labeled as markets, hierarchies or collective action. Especially resources that are utilized by collective efforts; i.e. common property resources or common pool resources, have received

renewed attention 100 years after the great European enclosure movement. Thus several thousand resource governing systems around the world are documented in a short time span.

Within this framework, the fundamental problem in all resource governance has been the “nature of the goods”. Public property resources with a public goods character are usually easy to manage as exclusion of benefactors are not an issue and the consumption of one resource unit does not mean fewer units for others. Private property resources with private goods character are also relatively easy to manage, as the owner has the privilege to exclude other benefactors and the owner’s subtraction off one resource unit means fewer units for the owner alone. The problem arises with common property resources which have both a public goods character and a private goods character: Potential benefactors are difficult to exclude at the same time as a resource unit consumed means fewer units for others who have gained access to the resource (Ostrom 1994). Most harvestable natural resources have this troublesome collective action character which is the basis both for devastating resource tragedies and splendid examples of complex institutional design for long enduring resource governing institutions. But if learning from failures works, or if institutional successes are prolonged, we believe that we can achieve the objective which through the last two decades have been labeled «sustainable resource management». In its simplistic version it implies that that we have got the institutions right when the grandchildren are secured the same amount of «goods» from a given resource as the present generation.

The limitations of this piecemeal institutional approach did early become visible in North Atlantic Marine resource management. The stocks of cod, haddock, herring, capelin etc. did not each yield a steady flow of resource units, but were closely interconnected, so that the human subtraction of one ton of capelin had effects not only on other capelin fishers, but also on the cod as a predator and on herring as alternative prey for cod. The terrestrial analogy is when the increase in stock by one sheep owner in a common mountain pasture does not only mean inferior pasture for the livestock of other owners, as in Hardin’s classic case. But when intensified grazing also means the increased production of anti-foraging chemicals in pasture plants, which especially hits the mountain grouse and its harvesters, the hunters. Thus institutions for common property resources might be perfectly designed, still they do not manage to deal with numerous kinds of ecological and social interactions. Attempts at multispecies management for sustainable harvesting (really combined maximum sustainable yields) of e.g. cod, capelin and herring have largely been politically impossible and ecologically unsuccessful. The management techniques that for many years worked well with moose and human hunters, was not easily transferable to the coastal and marine environment. The management of marine resources has therefore in practice remained a single species institutional approach, with a combination of harvest quotas for all human harvest and attempts to apply the «precautionary principle» to allow for the unknown inter-species harvesting.

Thus there is a scope within the field of institutional analysis to address the question of ecological and social interactions. One modest requirement is that resource management institutions should be able to handle the spill-over of such interactions from one institutional system to other institutional systems. But this also means an enlargement of human action, from simple considerations of future harvestability - to complex considerations of the total preconditions for maintaining the flow of resource units from a given resource. That raises moral issues for which past ethics - or theories based on the «nature of the goods» does not provide sufficient answers. Such an expansion of the theory of Institutional Analysis and Development therefore involves a

normative inquiry into the fundamentals of the production systems for the resource units we appreciate - and the social construction of them. One such fundamental theorem, now elevated to almost an ethical norm, has been the introduction of the principle of biodiversity: Basically this is the idea that a multitude of species and a complex multitude of ecocycles is more valuable because it gives a higher level of environmental robustness - or ability to withstand - or recover from - external shocks. But to design management institutions according to the biodiversity principle has proved very difficult, as most ideas of a harvestable surplus, and notably those connected to a culture of cultivation for surplus, is based on reducing biodiversity and on simplification of ecologies (Sandberg 1999). In an attempt to achieve feasible institutions without giving up the biodiversity principle itself, the parties to the Convention of Biological Diversity (CBD) has therefore adopted the “Malawi principles of the integrated ecosystem approach to biodiversity management” (UNEP/CBD/COP/4/Inf.9). These 11 principles tries to operationalize the normative concept as far as possible:

- Management objectives are a matter of societal choice.
- Management should be decentralized to the lowest appropriate level.
- Ecosystem mangers should consider the effects of their activities on adjacent and other ecosystems.
- Recognizing potential gains from management, there is a need to understand the ecosystem in an economic context, considering e.g., mitigating market distortions, aligning incentives to promote sustainable use, and internalizing costs and benefits.
- A key feature of the ecosystem approach includes conservation of ecosystem structure and functioning.
- Ecosystems must be managed within the limits to their functioning.
- The ecosystem approach should be undertaken at the appropriate scale.
- Recognizing the varying temporal scales and lag effects which characterize ecosystem processes, objectives for ecosystem management should be set for the long term.
- Management must recognize that change is inevitable.
- The ecosystem approach should seek the appropriate balance between conservation and use of biodiversity.
- The ecosystem approach should involve all relevant sectors of society and scientific disciplines

These principles will in the coming decade be implemented by the parties to the convention, although slowly and against opposition from both professionals and organized interests. Especially the entrenched management structures of the specialized sectors will feel the increased emphasis on integrated ecosystem management as a direct threat, and will either combat it actively or try to make it their own trademark (DN 1999). This is the situation in most coastal areas in the Atlantic Area, where each coastal resource is managed by a specialized sector agency. But in addition to the challenges these new management principles pose to the theory of institutional design (e.g Goodin 1996), their adoption therefore also raises new ethical questions. Two of the most recent ethical dilemmas which require the attention of institutional analysts in the coming years are the following:

One is the element of societal choice – often a the lowest appropriate level, of the desired level of biological diversity. This now becomes the object of political decisions, often called “Political

Ecology”. This follows from the acknowledgment of humans as an integral part of most ecosystems, and the right of humans to influence on ecosystems as long as this takes place within the ecosystem tolerance levels and does not disrupt crucial ecosystem functions. This responsibility towards the ecosystem itself as such – or “ecosystem responsibility” - is a new ethical dimension which in most countries still has to be translated into an institutional reality.

The other dilemma is the increase in responsibility to humankind itself - in face of the developments in modern technology and the lengthened reach of our deeds. This is spurred by an increased consciousness of the consequences of the increased human power combined with the heuristics of fear and hope (Jonas 1984). The notion of a “risk society” means increased responsibility towards nature as one of man’s duties to himself, along with the overtaxing of nature, the crossing of crucial thresholds and the danger of irreversible, runaway processes. As increasing portions of the plentitude of terrestrial and marine life come under human domination, this responsibility towards humankind itself becomes all the more important for the survival of man’s life supporting systems. In this way of reasoning it is no longer the “nature of the goods” or the risk of “free riders” which are the dominant questions, but the ontological quality of the political decisions made in relation to a desired ecology. By using the complex coastal resources as an example, we shall in the following demonstrate how some of these questions can be treated in future institutional and normative analysis.

Technological advances, responsible scenarios and the need for an ethical approach.

One fundamental problem in institutional analysis is the rapid rate of technological advance and the institutional delay in incorporating these into operational institutional designs. Related to the «institutional lag», there is also an «ethical lag», where a number of innovations are introduced without any debate about their desirability or their contribution to sustainability or biodiversity. Thus the ethical and normative gate-keepers are often taken by surprise and start post-innovation debates which often delay the institutional adaptations further. To measure the level of ethical awareness among various actors in North Atlantic fisheries and marine resource management, the ELSA project has conducted an in-depth study of attitudes towards ecosystem responsibility towards the resource base. These attitudes have to be seen against the processes of modernization going on in both coastal fisheries and in the young industries of cultivating the seas. But as a backscreen for understanding the attitudes among different groups of actors, it will be useful to look briefly at some possible future scenarios for how technology and organizational change is going to affect the relations of coastal harvesters and coastal cultivators to the coastal resources. These scenarios are borrowed from a Norwegian study of «Values in Norwegian fisheries towards 2020» (NENT, 1999). This study was conducted by the national committee of ethics in natural science and technology in close co-operation with The Norwegian Fishermen’s Association. The project was based on an «ethical scenario technique» which combined scenario analysis with participatory workshops with stakeholders aimed at establishing a kind of consensus by means of «communicative rationality».

The project was a survey of values attached to different possible lines of technology development in the fisheries sector, within a framework of sustainable management of resources and within the confines of a freely accessible world market for marine products. Guiding values for the construction of scenarios were the importance of a clean environment and democratic decision making. From this the project took as its starting point four scenarios developed for the energy balance in Norway towards 2020. These scenarios depict different possible situations within the framework of two major dimensions. The first is the nature of different innovation and technology development. The second is the impact of different types of international environmental agreements. Different combinations of these factors give different conditions for a more general choice of technologies. By uncovering the ethical profiles of the four scenarios, it became possible to initiate a more value oriented strategic debate with and within the Fishermen's Association. The four scenarios were called (a) "Continue with known maps", (b) "Progress Without limits", (c) "Greening of the coast" and (d) «Green innovation» (NENT, 1999).

The (a) «Known Maps» scenario was based on weak environmental values with an absence of enforceable international agreements and recurrent conflicts that paralyses policy-making in distributive questions. A desire for stability in the social structure prolongs the existing fisheries regulations and the present laws for participation and market organization towards the year 2020. In the period we will witness a gradual elimination of the least profitable fishing vessels and fishing units. These are bought up and slowly the fishery structure will be based on large vessels and fishing companies, with a harder competition over limited quotas

The (b) «Without Limits» scenario is characterized by rapid changes in the Norwegian market and industry combined with a more active adaptation to international market structures. These changes weaken the effect of national regulations and laws. From around the year 2008 individual transferable quotas will have a deep impact on the capacity of the fishing fleet. But because of new technologies and the weak enforceability of international agreements, we will still have pressure on the fishing stocks. At the same time the new technology will increase the efficiency and make profit possible for those who are willing to be more efficient. This will also result in fewer artisan or non-profitable vessels in the fishing fleet.

«Green Innovation» as a scenario (d) describes a global scarcity of protein and focus on marine products as environmentally friendly food. This will increase the market value of wild fish. The strengthening of environmental values will act as a contribution towards strengthened enforcement of international agreements about long term resource management and the measures to improve the world climate (including CO₂ – taxes) by 2020. These tendencies combined with a high degree of innovative capabilities in the fisheries business and a high degree of market orientation towards more conscious consumers represents a pressure for technological changes and development of a number of new products for market niches.

The scenario described as «Green Coast» (c) is based on stronger environmental values. The green values contribute to internationally synchronized agreements about long term marine resource management and increased climatic taxes before 2010. In order to achieve social stability and a best possible exploitation of marine resources for export of highly priced products for market niches combined with maintenance of a dispersed coastal settlement pattern, there has to be political acceptance for increased financial support to coastal fisheries. The pressure to

adjust to increased climatic tax and resource fees will in the short term be softened by subsidies. The present regulations and laws of participation rights and market organization will still remain until 2020, this also represents a political will to maintain a decentralized settlement, based on decentralized harvesting, production and processing of the fish (NENT, 1999).

Towards the end of the project there an extended value workshop was arranged where representatives from the Fishermen's Association, the fishery science, public administration, environmental organisations etc. used the scenarios to discuss comprehensive strategies for the fishery sector in Norway. The conclusions from both the scenario analysis and the value workshop shows that the «Green innovation» scenario was the closest to the values that were given priority by the workshop. The «Known Map» scenario drew attention towards consumers, grandchildren (next generation) and the biosphere, but the fishermen were not in focus. This scenario was not considered particularly valuable and could result in a total failure Norwegian fisheries. In the «Without Limits» scenario the fishing industry and the world's consumers were considered to reap a positive outcome, but the coastal societies might lose in the long run. The consequences from this scenario were difficult to foresee, this may therefore be the reason that the workshops had difficulties with it. The «Green Innovation» is a scenario where both both fishers and consumers take ecological responsibility and are enabled to think in long terms. It was considered a good scenario both for the fishermen and for coastal societies. The «Green Coast» scenario was considered positive in relation to the value principles that were applied, but the fishermen and the fishing industry were considered the losers in this scenario. The reintroduction of subsidies did not change this evaluation. And despite the «green» values in the scenario, it was not considered very positive neither for the environment nor the next generation (NENT, 1999).

In conclusion, the «Green innovation» scenario was the winner of this ethical scenario technique, while the «Known maps» was the loser. The «scenario «Without Limits» scored high on more values than the «Green Coast» scenario, but it also violated other values more severely. The principle of justice is the loser in the «Known Maps» and «Without Limits» scenarios. The reason is that there in both these scenarios is less governance. Overall the principle of justice is not a leading value in either of the scenarios. A main difference between the «Green Innovation» and «Green Coast» scenarios on the one side and the «Known Maps» and «Without Limits» scenarios on the other side is that dignity is a central value in the first group. The workshops considered the violation of dignity as particularly pronounced in the «Known Maps» scenario. The opportunity to be responsible is central for the strengthening of human dignity. Tendencies to be pacified as a result of too much control is considered as very negative by the workshops. Another striking tendency that came out of these workshops was the weak evaluation of welfare-values. These values were among others, social and economic safety for the fishermen, safe food for consumers and the care towards individual fish and animals. The question is whether Norwegian fishermen take these values for granted or whether these values are not really so highly valued as most people believe.

The conclusion from the fishermen's own evaluation of values one should adopt policies that would realize a future that looks like the «Green innovation» scenario. This means that institutional developments in fisheries should work towards goals like:

- Globalization and international co-operation in environmental matters
- Pro-innovative management

- Long term resource management
- Enforceable international agreements on environment and TAC
- Improved surveillance and control systems to prevent cheating and free-riding
- Increased climatic taxes (e.g. CO₂-tax)
- Maintained profitability in coastal businesses without state subsidies
- Increased consumer consciousness towards ecological properties of products or producing systems
- Increased cooperation in value-chains in food producing systems.

But in the further analysis of ethics and fisheries management it is also necessary to see the environmental reasoning related to the established ethical theories.

Traditionally, applied ethics, that is, ethics developed from the 16th century forward, have generally taken a "top-down" approach that is considered self-evident (i.e., capable of no further proof) and then try to grind out answers to more specific problems from such a foundation. Such thinking generally separates values and principles from facts, and builds ethics upon a founding value statement, taking that statement as the point of departure. The two main theories of this kind which arose from the period known as the Enlightenment, are «deontology» and «utilitarianism». We will here give a brief look at these two and present a third and more modern one.

Utilitarianism claims that what is moral is what leads to happiness or pleasure; The principle of utility is sometimes summarized as "the greatest good for the greatest number (Bentham 1798, Mill 1859). This is also misleadingly called "hedonism" because of the identification of the good with "pleasure". Welfare is today a more common way to understand the notion of "good". What is called consequential ethics is also related to this tradition.

Deontology: is related to "Deon" which is the Greek word for "duty." Deontology takes it as self-evident that what is right is doing one's duties, fulfilling one's obligations. Of course, deontology must give us some formula to help determine what one's duties are. Perhaps the oldest version of this approach might be the Golden Rule ethics, i.e. "Do unto others as you would have others do unto you." Immanuel Kant developed the Categorical Imperative to serve as such a formula (Kant 1788). In one version, the Categorical Imperative commands us to "Act only on that maxim which you at the same time want to become a universal law or a universal law of nature." Another well known formulation compels us to "Act so as to treat humanity, whether in your own person or in that of any other, never solely as a means, but always also as an end." In this formulation, deontology is a kind of "what if everybody did that?" ethics (Rawls 1971). What is called discursive ethics are also related to this tradition.

The main problem with these fundamental principles is that they are so general and abstract that they are difficult to apply to concrete cases like coastal management. When this is attempted, it is usually possible to substantiate the intuitively correct response with either theory or to argue at both sides of an issue with the same theory. As a result, there is a desire to move to a lower level of discourse in order to achieve more specificity.

A more modern ethical theory is called "the ethics of the other" This theory tries to make up for the critics toward utilitarianism and deontology. It is a situation-oriented ethic that states the

more face-to-face morality. Levinas underline the more spontaneous moral response in meeting another person that suffers or are in need of your help (Levinas 1985). Løgstrup stresses the Christian ethic about an absolute and non-consequential duty to give another human the care and help he or she needs (Løgstrup 1991).

Analyzing these three theories in relation to the different arguments used in resource management, we find both different and similar answers using the various theories.

The use of utilitarian or consequence oriented theory to reason for a continued food supply for this and the next generation is one obvious application of an ethical principle. But you can also use utilitarian ethics to argue for biodiversity because a multi-specie -system gives a more robust eco-system that can withstand, or recover faster, from external eco-shocks.

The deontological reasoning for environmental management of the sea is based on a position that duties, rights and norms have value in itself. Here we find well-known arguments like «we have a duty to take care of the eco-system» and «all species have a right to exist». The «precautionary – principle» for natural resource management is a deontological principle because as long as the consequence of an action is unknown or uncertain, we have a duty to act with caution.

The ethics of the other is not usually related to nature or to animals or other creatures. But in some environmental debates we can identify similar arguments related to higher species, especially mammals like primates, whales and tigers. Whales and seals are often met with this kind of empathic attitude towards an individual animal, but we also find these extended to oil-damaged sea-birds.

Forces of change in coastal fisheries and the ethical challenge.

During the last fifty years there has been a steady growth in harvesting capacity and fishing efficiency while the resource system has become impoverished and stressed. The situation has been met by controls of fishing efforts through the introduction of licenses and quotas. The concept of sustainable management has been introduced and stated as a guiding principle for management of the coastal zone by international law. The UN has followed up this in the Convention on Bio-diversity, in Agenda 21 and by applying the precautionary principle. Through international treaties there thus exist a formal responsibility for coastal states to care for the health of the coastal and marine ecosystems. This has therefore brought an ethical dimension into public fishery management. According to this a number of new questions can be raised in relation to modern fishing practices, like the lack of responsibility in discarding, high grading, biomass-fishing etc. The question can also be raised whether each species has a right of its own not to be extinct, regardless of whether it is commercially exploited or not. The ecosystem approach includes human exploitation as man is also a part of the system, but in a balanced and sustainable way. Ethical questions can therefore also be raised in relation to the treatment of fishermen and fishing communities. To reach the objective of sustainable resource management, this therefore has to be based on the advice from a number of different sciences. The first empirical question now is however to what degree these guiding principles for management are transformed into practical policies when confronted with strong societal interests? And to what degree fishermen who harvest in a responsible way are treated by national authorities when a former coastal commons becomes restricted and partly privatized?

Regulations of access and catches implies processes of allocation of rights. Opinions on who are entitled and who are not enters the agenda. With a variety of fishery adaptations there will also be different opinions on the causes behind an existing situation and the fairness of a certain allocation of restrictions. Should not those who have caused a grave resource situation also be the ones to carry the burdens of regulations? Fishery regulations therefore activate structural and technological conflicts within the fisheries, as well as conflicting opinions on justice, ethics, fishing means and normative behavior.

Most of the exploited fish stocks in the Norwegian fisheries are stocks shared with neighboring countries. They are managed following the advice from The International Commission for the Exploration of the Sea (ICES). With the broad range of resources and management within the Norwegian fisheries, we cannot fully go into the variety of regulations. We choose rather to focus at the most important economic fishery, the cod fisheries of the north which is co-managed with Russia. This resource has been subject to quota management since 1975, but the allocation conflicts was not noticeable until 1979-1980. While the quota of total allowable catch (TAC) was set to 810 000 tons yearly in 1975-78, it was reduced to 740 000 tons in 1979 and to 350 000 tons in 1980. The dramatic decline for 1980 was met with immediate protests from the coastal fishermen. They argued that those who had caused the resource tragedy, the trawler fleet, were the one who should be subject to regulations and not the coastal fishermen. Since then, an almost continuous struggle over the allocation of cod has taken place, especially intense in years of low TAC. The coastal fishermen has fought against the demands from the trawler fleet, increasing the tensions within the industry as well as within the Fishermen's Union.

The regulative regime in the cod fisheries during the 1980s was by and large marked by an increase in the quota recommendations by ICES, an even higher negotiated TAC, as well as over-fishing of this TAC for the first half of the decade by the coastal fishermen. For the remaining years the coastal fleet's quota was not reached and the remains were transferred to the trawler fleet. The seasonal fishery of cod at the Lofoten Islands failed repeatedly, either the cod did not approach the coast in the usual manner or it was reported to be ill-nourished and generally in a bad state. The national marine biologists recommendations became disputed among the coastal fishermen. They expected the situation to be worse than stated by ICES. In the spring of 1988 the experts admitted to have been mistaken. The situation for the cod stock was regarded as critical and this demanded strict regulations. While the decade had started with the historic lowest quota (350 000 TAC), it ended with even a lower one (260 000 TAC). Ten years of regulations had not had the calculated effect of stock improvement.

While the coastal fisheries remained rather unregulated throughout the 70s, they had now become subject to increasing regulations during the 1980s by gear restrictions, periodic time restrictions and bans on fishing. But an exception had been negotiated with the Soviet Union; the coastal fishing with passive gear-types could go on even after the total quota was reached. During the latter part of the 80s this right gave no pay-off in practice. And due to the alarming situation of the cod stock, it was removed in 1989. Outside pressure had at that time resulted in an almost total upheaval of former fishery subsidies. Thus a new allocation situation had started. From now on the situation was a "zero sum game" of allocations. What one party gained, was the loss of the others. From now on the coastal fishermen in the northern part of the country had no negotiated escapes. Increased regulations were imposed and the level of conflict arose. Protests meeting

were held and the public debate was heated. The cod crises became not only an issue for the fishermen, but for the coastal communities in general.

Therefore the regulations of the cod fisheries in the 1990s started as crisis measures akin to the upstart of the 1980s. It justified comprehensive regulations to be implemented, comprising the whole fishing fleet. Vessel quotas, formerly used for the deep sea fleet, were now introduced on a broader scale. The right to a quota was dependent of the amount of cod caught in the last three years. The size of the quota became dependent on the length of the vessel. In practice this system implied increased access regulation, favoring those who had been active in cod fishing the last years. It was meant as a temporary regulation, and was for that reason backed by the Fishermen Union. But it soon turned out to have become a regulative measure which the Ministry of the Fisheries was unwilling to remove. This policy became gradually adopted by the Fishermen Union. The union was at first fending for the rights for those not given quotas and excluded from coastal fisheries. After only 4 years it started to argue for the need of operational stability for the vessels with allotted quotas. The change has been explained by a corresponding change of influence within the organisation; Owners of bigger boats had increased their influence in the union and those with the “vested quota interest” became unwilling to return to the former practise of an “open commons”. Another explanation is that quotas - as semi-property rights - have a sticky character, once they are handed out, they are almost impossible to hand in. But the acceptance of quotas was also lubricated by the introduction of a temporary system for dividing the overall quota between the coastal and the trawler fleet, suggested by the Fishermen Union after considerable internal difficulties, implied benefits for the coastal fleet in periods of low TACs. In periods of high TACs, a higher proportion of the quotas should be allocated to the trawlers. This so-called “*trawl-ladder*”, once introduced, reduced the conflict level in the allocation process, although it continued to be disputed. In 1993 the cod crisis period ended, but the detailed regulations of the former crises ridden years were continued. A strict and detailed regulatory system had now changed the character of the coastal fisheries completely, from a more or less open to a closed and partly privatized common (Sagdahl 1992).

The regulatory measures that have constituted the frame for fishery adoptions throughout the 1990s, were *group quotas*, *maximum quotas* and *individual vessel quotas*. Quota rights became a necessity for the fishermen, and most vessels except the smallest, managed to obtain vessel quotas. In addition there were technical rules and use of fishing periods. Discard of caught fish was illegal and the level of undersized fish was sought minimized by active closure of areas and the enforcement of rules on gear types and size of net masks.

The level of the different type of quotas became adjusted to the yearly negotiated TAC. After some critical years, 1990-92, the TAC reached a more «normal» level and was set rather high towards the end of the decade. The «*trawl ladder*» was kept as a regulative measure, deciding the allocation of the Norwegian quota between the trawler and the coastal fleet. However, while the decade started with a crises and the lowest quota ever set, the decade also ended with a similar crises.

Tab. 1

Recommended (ICES) and negotiated quotas (TAC) of Norwegian-Arctic Cod 1990-2000.(in 1000 tons, exclusive of a yearly quota of 40 000 tons Norwegian coastal cod)

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
ICES	172	215	250	385	649	681	746	993	514	360	110
TAC	160	215	300	500	700	700	700	850	654	480	415
Deviation	-12	0	50	115	51	19	-46	-83	140	120	305

During the 1990s we find the same pattern of development as in the 1980s. The TAC was for most of the years set higher than recommended by marine biologists. Especially at the end of the decade the policy of adding a “political quota” to the one recommended by ICES, represented a compromise of economics, politics and ecology that could easily hit back on the industry. The cod stock was again in a bad state and very strict regulations were recommended by marine biologists. For 1990 a drastic cut was suggested, but the negotiated result ended with a substantial deviation from the one recommended by ICES. The last three years of the century, after 25 years of attempts to make regulation of the cod fisheries more ecologically rational, showed “political quotas” bigger than ever. The short termed economic needs outweighed the long termed biological considerations.

What are then the ethical challenges and the value implications of these resource management policies and the conflicts attached to its development?

In retrospect, since the introduction of regulations on cod fishing in 1975, we can trace a line of incremental regulative policy caused by the need for gradual learning and the avoidance of political costs when the political authorities were confronted with ethical dilemmas. Still the political costs were considerable and reached a top at the turn of the 1980s, when the individual vessel quota system was introduced in the 1000 year old free cod-fisheries. Grass root campaigns were launched to favor the inshore fisheries and a fraction of the Fishermen's Union broke away to form an organization of its own, advocating the interests of the artisan and inshore fishermen. The split in the umbrella organization took place for a number of reasons, but it was hardly accidentally that it coincided in time with the political fight over allotting reduced quotas in the important cod fishery. But it should also be mentioned that the severity of the resource crisis in some respects lowered the political costs of this dramatic measure, crisis psychology tolerate more dramatic measures.

In the process of outlining a regulatory policy, the consideration for long termed sustainability and the responsibility towards the ecosystem as such, seem to have played a rather minor role. The problems of allocation and the short termed economic interests have dominated the agenda. The considerable “political quotas” during the 80s and the 90s substantiate this finding. An ecosystem approach through the use of a multi-species management model has never been taken into use, partly because of political pressure from specialized fisheries and partly because of lack of proper knowledge and workable models. Thus the precautionary principle easily tend to loose its guiding role in real life situations.

But it should be noted that regional units of the Fishermen Union have advocated lower quotas both in critical periods for the cod stock and in periods when the ICES recommendations were high. Their arguments have partly been based on ecosystem responsibility. Such situations have also refreshed old debates on the use of technology favoring or harming the resource system. Thus the old debate on the harmful effects on seabed ecology of trawling and Danish seine has come to the fore. This technological conflict is deep rooted in the Norwegian fisheries, between those who have to stay in the fisheries “in good and bad times” as the coastal fishermen like to express it and those accused of investing in trawl technology only to gain more short termed profit. It also affects the distribution of the more fundamental right to become owners of registered fishing boats, now tailored to prevent so-called outside capital to invade coastal fisheries, according to principles stated by the «Participation law». Since the development of a Norwegian trawler fleet, the coastal fishermen has protested to their damaging effects on the production system for wild fish, i.e. the ecosystem. A recent discovery of the destruction of vast areas of coral reefs which are core feeding areas for many species, has further sharpened the conflict. Over the years it has expanded also to comprise conflicts with auto-liners and Danish seiners, mobile vessels which exploit resources in fjords and coastal waters previously used almost exclusively by local coastal fishermen.

All types of fisheries are organized in the umbrella organization, the Norwegian Fisherman Union. It has had and still has an important formal role in the co-management of marine fish resources in the Norwegian management regime. But taking on regulative responsibilities it also becomes vulnerable for the negotiated solutions and the subsequent criticism from discontented groups. The coastal fishermen form the very back-bone of the organization, but have become increasingly skeptic to their own organization as the regulatory system has developed. Due to the regulations, the former variety in fishery adaptations has gradually been transformed to fewer and bigger units. The coastal fisheries have been loosing ground, wrapped in a regulatory system favoring specialization and disfavoring traditional diversified fishing practice.

Another effect could also be noted. The detailed regulations comprising the coastal fleet have lead to a situation of split within the coastal fisheries. Some have become content with the system of individual boat quotas and want no change to a more free and competitive regulative system. Others are discontented and demand an immediate change to an more open-like common for the coastal fleet. Side effects like the rise in market prices for boats with quotas and other externalities of the detailed regulative system, have lead to an unsettled dispute over the present regulations and a growing unrest over the real need to keep them during periods when more normal TACs have been set. Local and regional entities of the Fishermen Union in Northern Norway have demanded a change, having noted that the inshore fleet is losing its former share of regulated stocks to offshore fishing companies buying boats with quotas. But as time passed on, the former criticism has decreased and the individual vessel quotas now seems to have become a permanent regulatory measure. And as the quotas follow the boat when sold, Norway has in practice established a sort an individual transferable quota (ITQ) system. But the links to the local community has been cut. The fishing rights have become an objective for market allocation.

Detailed regulations of the fisheries have also caused increased efforts in policing and control, especially when the regulatory system is disputed. During the 90s a growing number of persons and vessels were caught in or accused of illegal fishing, or of buying and selling illegal catches.

And with the fixed quotas the discard problem also increased. Both Norwegian trawlers, long-liners and inshore vessels were counted among the reported offenses. It seems plausible to argue that the long period of dispute over the unfairness and inequity of regulatory effects for the different groups of fishermen, have led to a wearing down of the legitimacy basis for the regulations. In such a situation illegal fishing could be expected to take place and hence an expanded need for policing and control.

It should also be noted that complex regulative rules may demand more attention and knowledge than the affected actor is willing or able to handle. Illegal fishing may then occur unintentionally or the motivation to keep informed and act correspondingly may be weakened by the very complexity of the rules. A detailed regulative system also presupposes a residual information flow that is problematic to create when action is badly needed. The possibilities for unintended conflicts and disputes over the decided regulations therefore seem to be manifold in such regulative situations. And the motivation to abide to them could be reduced to the questions of the scope and quality of control. And as Norwegian fishermen are exploiting mostly shared resources, the behavior of foreign fishermen may also affect the motivation to abide to regulations. Here the liberalization and the break-down of the political economy of the former Soviet Union has made it profitable for Russian trawlers to land their catches in Northern Norway. Both Russian trawlers and the Norwegian fish producers would make extra profit from so-called black market transactions, a business that has been documented after the upheaval of a ban on foreign landings. The weakened state authority also seems to have affected the motivation to stick to allotted quotas. Russian trawlers have been suspected of considerable over-fishing, a rumor that was later confirmed by the Norwegian Coast Guard and by reported amounts of landings abroad. There was a widely shared impression in the Norwegian public debate that a huge illegal fishing, the use of illegal trawl nets, bribes and economic crimes were taking place across the border and that controlling tasks were neglected or insufficiently performed. When the normative base thus breaks down in one institution that govern the utilization of a shared resource, it very quickly have effects on the norms on which other institutions are dependent.

Summing up the institutional development of Norwegian coastal fisheries, they have moved from a rather open and unrestricted commons for various and flexible forms of coastal fisheries to a system with a rigid business structure and comprehensive restrictions. This also represents a shift from a community or «guild-type» (brotherhood) informal “regulating ethics» to a situation where the behavior is more or less dictated by detailed rules, representing a kind of system coercion. The shared individual ethics as a regulatory force becomes replaced by detailed rules and the fishing culture rooted in generations of experience, is gradually changed to reflect the more short term rationality of industrial actors. In the daily concern among these, it is difficult to find a place for ecosystem responsibility, regardless of whether it is based on a utilitarian or deontologic foundation.

Forces of modernization in coastal cultivation.

From feeble experiments in the 1960s , marine aquaculture as salmon farming has increased dramatically in the course of only 3 decades. A major part of the export of marine products from North Atlantic coasts is already made up of farmed fish and shellfish. In commercial terms, this

means that the attention of investors on the coast are shifting from improved harvesting from the wild ecosystems, towards transforming the wild ecosystems into cultivated ecosystems which is believed to give a more predictable harvest and improved return on capital. In the near future we will witness the adoption of new species of marine organisms for cultivation, such as halibut, turbot and catfish and in several countries an improved legal protection of sea ranching enterprises for shellfish, lobster and other stationary marine species. Fodder for farmed predators is today a major bottleneck in marine cultivation, an increasing portion of the catch from “biomass fishing” on wild fish stocks is today channeled into fish farming. Shortage of fodder will increase prices and spur innovation and investments into massive plankton fishing for direct feed, or the farming of fodder organisms in large scale schemes based on the use of sea area, photosynthesis and added nutrients.

New species, new forms of aquaculture, fodder-cultivation and the emergence of sea-ranching and semicultures means an increased demand for coastal sea areas.

Experience also shows that marine cultivation is risky, both in terms of weather, markets and pathogenic factors. Ecological or financial disaster at one site in one out of 10 years is a conservative risk assessment. This means that an aquaculture firm must be of a certain size, and have its cultivations spread in many different ecologies in order to be able to absorb this risk without having to stop operations altogether. This has meant a strong pressure towards a structural concentration of North Atlantic aquaculture, a few giant conglomerates with high profitability now dominate an industry which was started up by thousands of small coastal entrepreneurs. But by spreading their operations to many localities and keeping a large number of sites as reserve locations, these aquaculture giants actually demands more sea areas than the former atomistic structure in the industry.

These strong forces of change in coastal cultivation will lead to increasingly larger coastal sea-areas utilized for cultivation and the wild North Atlantic coasts will gradually develop into cultural landscapes with a mixture of wild and cultivated ecosystems. As the need for planned and used areas for cultivation increases, the potential conflicts with other users of the coastal zone will increase. A recent plan to establish coastal protection areas in Northern Norway was met with fierce resistance from the marine cultivating industry – to the extent that the decisions over this part of the “political ecology” was escalated into a Government White Paper on “Protection and Use in the Coastal Zone” to be debated by the Parliament (St.meld. nr 43 – 1998-99). The antagonists were the environmental movement against the whole fisheries sector, the latter representing the “use-strategy” for the coast. While objectively, the coastal fishers depending on the harvest of wild fish, should have common interests with the environmentalists who want to protect certain coastal sea areas from cultivation activities.

In most “seascapes”, however, the ecological interaction between wild ecosystems and cultivated ecosystems is much more intense than in terrestrial environments. And when the cultivated areas increase, the number of interactions tend to multiply until the cultivated coastal sea-areas start to dominate over the wild areas. Examples of such ecological interactions is the growth of the wild otter population as a result of the enormous biomass concentration in salmon farming pens, which the otter is smart enough to be able to prey on. The increased otter populations resulting from this interaction then represents a danger for other wild organisms, notably the eiderducks and their chicks during the nesting season. But on the other hand the ecological interactions between shellfarms and sea-birds means that the eiderducks have an easier access to their favorite food

and can raise more chicks. Such interactions can therefore have opposite results. In some cases a mixed wild/cultural seascape can maintain a higher biodiversity than the previous wild seascape. In other cases, the cultivated organisms, with their diseases, their parasites and their owners/protectors will drive out the wild organisms from the area and reduce the biological diversity. The decisive factor will here be the human factor and the knowledge of ecological relations applied when decisions are made about the “political ecology” of the coast.

Modernization and rationalization of mariculture industries is now one of the strongest forces of change in the coastal areas of the North Atlantic. In addition to the operational and risk-avoiding strategies of the sea cultivating industry, we can observe the common industrial processes of sell-out at generation-shifts, vertical integration and the merger of firms to achieve more financial muscles and more market power. Thus virtually all the smaller coastal pioneers who started the modern aquaculture industry in Norway, Scotland, Iceland and Ireland in the 1970s have disappeared and their site licenses are bought by larger non-local firms. After 30 years of mergers in the young industry, these processes have resulted in a small number of giant aquaculture firms controlling most of the production capacity on the North Atlantic coasts. With an increasing share of the world market, these giant firms are also gaining control over export and wholesale markets and will gradually be able to reap oligopoly profit on established marine products like salmon and trout. Through efficient lobbying towards policy-makers, they have also secured the value of their property rights; hardly any new site licenses are issued that could enable new small coastal entrepreneurs to challenge the large conglomerates. Instead, the latter have been allowed to expand their use of sea area.

In recent years we have also witnessed the final stage of modernization. As capital knows no borders, international mergers and sell-outs are becoming a familiar part of the coastal cultivation efforts. What started off as a community supported utilization of a coastal commons by pioneering heroes, has now entered the stock exchanges of the world as a globally tradable commodity. Not only the markets for aquaculture products are globalized, but also its ownership structure, its modes of operation and a whole array of supporting industries. A crucial point here is that in most North Atlantic environments, the state has been a crucial factor in the “privatization of the coastal commons”. Although most of the initial pioneers were local entrepreneurs, there was often local opposition against the sea farming operations. The system for state licenses for fish farming did not only regulate what seemed like a wild growing business boom. But it also gave the aquaculturalist a legal right to farm fish and modify the marine ecosystem in the area, irrespective of local opposition and objections from holders of traditional, but weaker rights. Such rights to cultivate and transform an ecosystem without actually owning the sea-area is often termed a semi-property right. A new proposed law for sea-ranching in Norway takes this logic of semi-property rights a step further with an intention to grant licensees exclusive property rights to the re-catch of all organism of a particular specie in a defined sea-area, both farmed and wild. With a right also to feed the farmed organisms, and with a future claim to protect ones property against wild predators, this represents a more fundamental modification of larger parts of the natural ecosystem than does the open cage aquaculture. Our institutional analysis thus predicts that exclusive individual rights to sea-ranching given by the state will develop into even more tangible transferable property rights to sea areas than the site-licenses that are now the fundamental asset of salmon farming. Thus the result of this institutionalization will be very different from that of an alternative process where a local collective of users was granted inclusive property rights to the improved harvest from a stock

enhancement enterprise in a fjord or an archipelago. Our question is whether such collective and inclusive institutions for resource management necessarily would be ethically superior to the privatized and exclusive institutions generated by mainstream modernization? And whether we can shed some light on this question when we add a normative analysis to the institutional analysis?

In the following we shall distinguish between the effects of ecological interactions and the effects of social interaction. We have already mentioned a number of experienced and possible ecological interactions arising from marine cultivation efforts. In terms of the ethics of ecosystem responsibility, increased cultivation of coastal seas can both reduce and enhance biodiversity and ecosystem resilience, it all depends on how it is done. That is a parallel situation to the harvesting from wild fish stocks, where e.g. irresponsible biomass fishing of tobis near the coast reduces the survival rate of the sea puffin. Fish and mussel farmers as well as sea-ranchers can run their operations at a scale and in a manner that increases the vulnerability to diseases and parasites of the adjoining wild ecosystems. Especially industrial scale marine monocultures with intensive feeding and predator control can create algae-blooms, epidemics and eco-shocks that simplifies the total ecology and decreases the resilience of the ecosystems in a larger region. While wise practices of sea cultivation at modes scales can create a «patchy» seascape with a healthy intermixture of cultivated and wild ecosystems that increases ecological complexity and thereby the biodiversity and resilience of the ecosystems of a larger region.

The principle of ecosystem responsibility therefore has to be applied to all level of decisions. All the way from the social choice of whether to start harvesting from a wild stock of fish, whether to augment or enhance a depleted stock or whether to farm or ranch a specific specie, there are numerous hard decisions to make. These have to take into consideration scale and modes of operation, choice of technology and choice of organization. In making these choices, we are used to think in terms of efficiency, sustainability and legitimacy as the fundamental requirements. Lowering transaction costs, lowering monitoring and sanctioning costs, internalizing external costs and the prevention of free-riding has been the contribution of institutional analysis and institutional design theory in this field. If we now add ecosystem responsibility to these requirements for healthy coastal cultivations, that can either be seen as a utilitarian ethical principle with positive long term effects which to some degree can be traded off against return on investments in the short run. Or it can be seen as an absolute (*deontic*) duty we as humans have towards the vital ecosystems that make up our life supporting systems. The level of such ethical consciousness among fishermen and resource managers was measured as part of the ELSA project and the results from the North Atlantic region are summarized in the next section. But either way, whether these ethics have a utilitaristic or deontic base, the ecosystem responsibility will have to be made an integral part of institutional analysis and institutional design. Numerous avenues are here possible and we shall briefly sketch some of these before returning to such fundamental questions towards the end of this paper.

One avenue is that the market itself, through increased consumer consciousness, is the best institution to take care of ecosystem responsibility. After decades of debate on chemical or radioactive pollution and toxic algae-blooms, the consumer awareness is high not only of the quality of the food alone, but also of how it is produced. The market will therefore sanction those companies that does not operate in an environmentally responsible way and eventually put them out of business. Ecosystem responsibility can therefore easily be incorporated in the “green

profiles” and corporate strategies of modern sea-food companies. In addition “institutional hedging” by credit and insurance companies will prevent “environmentally bad” companies to start operating. The available tools here, “Environmental impact analysis” and “Environmental risk analysis” are thus suitable for inclusion in the array of tools for institutional analysis. Often we see that the largest, most international and most vertically integrated corporations have the most advanced design for securing environmental quality of their operations and their products. They also have the largest resources to present the most polished image of ecosystem responsibility to their consumers. In face of a freer world market for sea products we therefore find that the globalization of environmental concerns gives the globalized corporation a competitive advantage over the smaller local firms.

Another avenue for integrating the ethics of ecosystem responsibility in institutional design for coastal cultivation is the planning and management instruments developed as Coastal Zone Planning and Integrated Coastal Zone Management (ICZM). The foundations for these and the development of these instruments on the North Atlantic coasts are analyzed in detail in the COASTMAN project. The crucial evolutionary element here were the increasing social and institutional interactions in the coastal areas. Unclear or overlapping property rights, competing jurisdictions and sectoral jealousy made most attempts at comprehensive coastal zone planning and management a very frustrating effort (Coastman 2000). In a number of northern municipalities, the Coastal Zone Plans were given up or shelved because of objections from both the state fisheries sector and the state environmental sector. As long as the political responsibility for the detailed “use” of the coast is placed in one state sector, while the political responsibility for the environmental concerns are placed in another sector, the integration of the ethics of ecosystem responsibility in planning and management by public authority is difficult to achieve. The whole of the EU-system have experienced the same problems with fragmentation and lack of coordination between state sectors (European Commission, 1999).

Two opposite trends indicate a way out of this stalemate. One is the willingness to decentralize resource management decisions in coastal zones to the municipal level – as the lowest appropriate level. That would make the hard decisions regarding use or protection of coastal ecosystem resources a societal choice for the territorial population concerned. Thus ecosystem responsibility can be built into the political processes of deciding what kind of ecology the different interests in the affected communities can agree on. The ethics of coastal resource management would then depend on the utilitarian or deontic quality of political decisions that affects peoples own lives. The other trend endangers this kind of devolution efforts. The transformation of state licenses for aquaculture or sea-ranching into internationally marketable property rights, leads to an irreversible process of alienation of the property rights to coastal resources. Fundamental decisions on scale of operations, choice of cultivated species and farming technology will thus gradually be taken in distant board rooms. This removes crucial decisions from a local political level where integration of ecosystem concerns could have been achieved. Small municipalities with a weak administration and a desperate need for employment, will easily be overrun by corporate environmental experts. During this period it is the intense interplay between these two trends that decide how the ethics of ecosystem responsibility will be incorporated in the future development of institutions for governing coastal resources in the North Atlantic area.

Bio-ethics and measures of ecosystem responsibility among Danish, Icelandic and Norwegian fishermen and resource managers.

In contrast to the method of ethical scenario-techniques applied above, the ELSA-Peche project used in-depth individual interviews with different actors in the fisheries sectors in three different countries, Denmark, Iceland and Norway. These interviews were conducted by two graduate students in sociology at Bodø Regional University. The interviews took place during the late spring of 1999, when the gloomy prospects for the northern cod was becoming apparent..

The core stakeholder groups were identified as the:

- fishermen
- administrators
- politicians
- fisheries researchers
- environmental organizations (NGO)

The aims of the interviews were to cover four major themes in fisheries and in marine cultivation that has an ethical foundation or has major ethical implications. In brief, these themes can be classified as:

- The global view on environment
- The state of resources, the state of crucial ecosystems and the causes of the problems
- Opinions on the principles, values, duties and rights that should govern the human to nature relationships in marine resource management
- Opinions on the principles, values, duties and rights that should govern the human to human relationships in marine resource management, as well as opinions on the appropriate goals, agents and management instruments to achieve this

In each of the 3 countries, 15-25 key persons were interviewed with an aim to map the attitudes towards these four themes among the five different groups of actors in fisheries policy (Gullberg, H., 2000;.Elsbak L.,2000). Also the major characteristics - and the strength and weakness of the national and regional fisheries in the particular countries were touched upon in the interviews, but these are covered more fully in separate studies of the fisheries management studies of the 3 countries(Nielsen, J.R., 2000, Eythórsson, E., 2000, Sagdahl,B.K., 2000). The interviews were deeply personal, but with persons with prospective reflective attitudes towards present predicaments and future prospects of fisheries management in Iceland, Denmark and Norway. Statistical representativity was not sought for, but instead the diversity in the perception of key issues for the future by those who presently “lead” the fisheries management system. Those interviewed might be in charge of a responsibility today or have been so in the past, or they are known to have influence over the resource management policies.

The interviews were semi-directive, with a number of ethical key entries that were open for discussion, and in a perspective somewhat detached from present practical policy issues. The seven questions may seem overlapping, but they are intended to maintain the discussion at the “detached” ethical level. The grounds for this particular ethical approach are the discussions above of which values, ethical principles or decision rules should regulate Man to Man or Man to Nature relation in fisheries; what sense of right or obligation/duty should apply and how can they

be implemented in the practical world. In addition this perspective includes the gathering value judgments of past and present practices from those interviewed.

Ethical issues are defined as those related to the perception and practical implication of duties, obligations and rights, either towards other humans, towards oneself, or towards nature. Such issues are often discussed in the order of values. Research on ethical issues is viewed as the recognition and documentation of changes in values held by crucial actors and the practical consequences of this. For example, the building up of a “precautionary”, a “prudence”, a “sustainability” or a “responsibility” principle does not self-define a change of values in an univocal way. They express in words only perceived necessary changes in the order of values in order to be able to re-think the relations between man and nature and between man and man in relation to nature. The strength, or the range of implications can be seen only from the practical choices and the actions themselves. Therefore we had to look for illustrations of how fisheries management and fishing practices have changed in the past 20 years in this regard and which changes that can be foreseen for the near future. This is thus a search for new ethical grounds for change and their practical consequences in the field of fisheries management as it affects legal changes, the perception of fairness among actors, the public and private choices and the societal definition of policy objectives and means. In this respect, the ethical issues structuring the interviews become entries to discuss most aspects of modern fisheries management. In this paper we can only give a short summary of the results of the interviews

First the informants were asked about their view on the ecosystem as such and they were asked whether they agreed that:

- *The sea is a reservoir of resources and opportunities to be exploited by mankind, mastered through technical means and knowledge, so that they contribute to satisfy its needs,* or whether:
- *The sea is a biotic (ecological) community of which man is part by its activity and from which he should not ignore the complexity of interactions and impacts.*

It was not easy, for the informants to choose from these alternatives. Most of the informants chose both or the last and stressed that they did not really see the contradiction between them. Those who had a ecological community perspective also had a tendency to base their views on this in other questions as well. The imperative to exploit the resources and to master the nature is perceived as less abstract and that it is the common way to view the sea. Some states that the first view is old fashioned while others held that the second is an academic and typical urban view. In many ways they say the same, but the first can be interpreted as a negative attitude to the exploitation view and the second as a negative attitude to the ecosystem view.

Only few of the informants hold the opinion that the first position is the right way to look at the sea. But most of those who do have this opinion are central actors in the fisheries department, and we find them in all the three countries. In addition fishermen from Iceland have a tendency to agree with this view. The argument here is that the basis for fisheries is to exploit the resources in the sea and that improved knowledge and technical means are the essence of the fishing industry. However, also these fishermen stress that this view must be combined with responsibility and with care. And they underline that they do not see the big difference between the views in practice. That place them, like most fishermen in the middle of the two views. It should be noted that the answers to this question mirror the fact that the views asked for are very abstract and that there

implicitly seems to be more positive weight on the second than on the first statement. The notion of “exploitation” seems to have some negative undertone, while being part of a community and the duty to “not ignore” is perceived more positively. The traditional view in fisheries has until now been the first position and the rest of the answers have more weight on this perception of man’s place in the marine ecosystem. This means that the more practical the informants are asked to be, the closer they tend to be to an exploitative outlook.

Then the informants were asked about their worries about the the present state of marine resources in the world. They were told that *«The situation of the fisheries is well documented: overexploitation of 70% of the stocks, complete depletion of some of them, loss of about 20 million tonnes every year due to discarding. Weakening of the marine ecosystems (environment and resources), variability and uncertainty are the main characteristics of fishing today»* And they were asked: « According to you, what are the main reasons for that?»

On answering this question some of the informants were skeptical to the figures. But most of them accept them or have no comment to the figures as such.

What they see as the reason to these problems is closely related to the local problems in the fisheries they know themselves. The Icelanders are for example not especially engaged in questions of discard or pollution. Over-exploitation is the big problem here. In Denmark the contrast is strong, here they see discard caused by low quotas and pollution from the oil industry as the main cause. The Norwegians are not that interested in discard and environmental pollution. They see the problems in fisheries as a result of strict demands on economic efficiency in operations and a lack of scientific knowledge in the management of fish resources.

Many of the informants from all three countries start out with explanations that blame the sad state of the world fisheries on certain characteristics of fishermen and ship-owners, like greed, shortsightedness and stupidity. Later they tend to change this view into more system related explanations, like demands from a the capitalist market, poor management and the lack of information from the government.

Then the informants were asked which *«values (principles) should provide the basis for formulating objectives and goals for a good management system for the fishing activity?»*

A number of the common watchwords in the public debate were frequently mentioned, but these were mixed with more practical concerns related to the operational reality of fisheries:

- Sustainability
- Keeping the view at the totality
- You should not kill the last cow
- The local community perspective
- The long term perspective
- Combination of science and traditional local based knowledge
- Respect for fish stock?
- Application of The Precautionary principle and environmental preservation
- The maintenance of employment in fishing communities and a decentralized settlement pattern
- Minimum use of fossil energy in harvesting operations and cost reductions
- Improved security and comfort in marine workplaces

- Minimum by-catch and discard
- A larger share of harvest to human food
- Minimum damage on the ecosystem from harvesting operations

Then the informants were asked the more fundamental question whether they thought « *that the moral consideration which in principle rules the human interactions may be extended to the marine ecosystems, e.g. that it may exist an idea of a duty of care in their regard?* ».

This question also implies the basis question of whether morals and values are at all relevant for fisheries activities and fisheries management. Most of the informants stated and even stressed that these indeed are morally relevant activities. Some do however not see the morality in this immediately, but the way they are answering the subsequent questions show that they after a while can see the morality or the ethic aspect of fisheries management.

On the issue of relationships between the nature and the human society, the informants can be divided into three categories:

One group is those who feel that fisheries and fisheries management are moral relevant because it is about food for people, these held what we can call anthropocentric oriented values.

A second group, which is also the largest group think that fisheries and fisheries management are morally relevant because of certain thresholds which should not be crossed. They held that man have no right to extinguish species and that all species have a right to exist. And they express a clear view that « we have no right to tamper with the nature or to destroy it ». We can interpret this group as expressing utilitarian ecosystem oriented values where nature is useful for us humans only as long as we observe its own moral codes.

A third and smaller group goes further and think that fisheries and fisheries management has a moral duty towards marine ecosystems and species like the duties we find between humans towards other humans. We can interpret this group as expressing deontic ecosystem oriented values where such duties are absolute.

On this question the informants expressed their most central values and core principles. Among the most typically expressed ethical principles were the following:

- We have responsibility for nature's ability to continue the production of food: for the next generations
- All species have a right to exist
- We must have respect: for the ecosystem as a whole
- We have a duty: to take care of all species, also those that not are directly useful for man
- We humans have a responsibility to take care of the ecosystem
- Our main obligations are towards the next generation; their food and their variety of species
- Our exploitation of marine ecosystems must be conducted with prudence and caution
- The precautionary principle is fundamental, we must stop marine exploitation before the pilot lamp blink, even if we do not have sufficient knowledge
- We humans are the nature's masters and have both a right to exploit nature and a duty to take care of it.

To explore these attitudes further, the informants were then asked about their opinions of « *the active defense or protection policies for some species, threatened or accidentally captured, which are designed under the framework of marine environment protection?* » They were asked: « *For you does this relate to the recognition of rights to this species or only to human moral duties toward this species?* ». Very few of the informants were able to see the difference between the

species' rights as such and the human moral duty towards a threatened specie. The common-sense interpretation is that the species' rights are protected by the humans as their duty, and only a small minority did understand the ethical basis of this question.

But according to the answers, most of the informants underline the same as in the question above; the duty is first and foremost of utilitarian nature and related to human interests; we have a duty to manage natural resources for our selves, our children and our grandchildren..

Thus threatened species must in periods have particular protection, because all species have a right to exist. The human need for bio-diversity is thus used as one argument for protecting some species. Certain higher mammals or spectacular birds have however no superior rights compared to less conspicuous species. And when it comes to conflict of interests between man and nature's own predators, humans comes first. Manipulation of the ecosystem, for instance as cultivation of coastal areas, is a right that humans should have.

One example is the Danish view regarding cormorants. Although a mythical and spectacular bird, these birds threaten the fishermen's interest and have no right to multiply ad infinitum. While the Norwegians and the Icelanders are mentioning the whale and the seal as a kind of competitor that humans have a right to reduce in numbers without making it extinct. Some informants take this one step further and underline the immorality of protecting whales and seals who consume a lots of the worlds marine protein while half the worlds human population are starving. "We cannot make the ocean a playground for these predatory species". However, a view that is common among the informants, is that they look at the marine mammals (whale and seal) as competitors and that the protection movements specializing in these species are viewed as extreme and threatening to traditional coastal harvesting traditions.. The "extreme" environmentalists and animal rights protagonists, are among fishermen seen as «hysterical» and unrealistic. This view is most prevalent in Norway and Iceland.

The conclusion on this question is that all the species have a right to exist and that we have a duty to take care of their habitat and protect them and their place in the ecosystem. But if some specie threatens our own basis of existence, our duty is toward humans, not towards any absolute rights of particular species. Again this can be classified as a prevailing utilitarian attitude towards the ethics of ecosystem responsibility. Thus the idea of treating special species and individual animals in the same way that we treat humans can not be called common-sense morality among fishermen and resource managers in these 3 countries.

In the last question the informants were asked to take a long term perspective and relate the idea of sustainable development as an objective or a strategy for social change to the Stockholm conference in 1972) and the Rio conference 20 years later. Then they were asked: «*In your opinion, what does the term "sustainable fisheries" involve?*»

To this question many of the informant states that sustainability in the fisheries is not only related to the ecosystem or the environment, but should be extended also to the social and economic field. Especially the Islanders are stressing the social factor. Settlement, employment and distribution are variables that one must consider in order to achieve sustainable fisheries. Cultural sustainability is also mentioned, in relation to the importance of coastal culture. As one of the informants said: "It is nice to be able to say we have healthy stocks, but where are all the fishermen? There are just a couple of factory trawlers out there – that's not sustainability in my mind!" To many informants sustainable fisheries means maintaining fisheries as a distinct culture for the next generation and for the grandchildren. In view of this, resource stability, i.e. to keep

the present steady or stable output from fisheries is a means to reach this end. The same applies to the frequently stated definition of sustainable fisheries as ways of operation that do not extinguish any stocks nor do **irreversible** encroachments on the marine ecosystem.

This motivation for conservation measures is stated especially amongst Icelanders and Norwegians. They might see some of the present national and European policies as threatening to their ideas of a sustainable fisheries. Fishermen's influence over the design of fisheries policies is also emphasized by many informants as a crucial **democratic** factor. To listen to the fishermen is therefore important for good and sustainable fisheries.

New Commons and new common responsibilities

As we have seen from these interviews with fishermen, politicians, administrators and fisheries managers, ethical considerations plays a role in the perceptions key actors in three North Atlantic countries have about sustainable fisheries. But the general picture is that these ethical values in general are based on utilitarian rather than deontic principles. In the long run it is more useful for us and our children, for the sake of our grandchildren, to exercise ecosystem responsibility rather than resource mining and extermination of key species in the biotic community. There is no doubt that these wide-spread ethical values have spread from UN-conferences and from the introduction of new environmental paradigms like «biodiversity» and «resilience» in schools and in the public discourse. But as shown above, fishermen in all these countries have themselves and in their own lifetime experienced serious marine resource crisis that has rocked the traditional belief of the oceans as limitless sources of harvest. This has taught fishermen real lessons of the dangers of over-fishing on single stocks like herring and cod and the dangers of creating fatal imbalances in the seas, like preventing a large young cod-stock from growing because of fisher-induced collapse in the capelin stock. Thus both the «ethical scenario technique» and the in-depth interviews on ethics found wide acceptance for a more holistic ecosystem management, which at the same time allows a continuation of dynamics and innovations in fisheries - as summed up in the «Green innovation scenario». If we then add to this the social interpretation of sustainability, as a development of fisheries and coastal cultivations that maintain fishing communities and a coastal culture, there seems to be a surprising agreement on what the future of North Atlantic marine food-production should look like.

Although the agreement on the goals might be stunning, the disagreement on the best means to get to the goal is bewildering. We have seen above how the introduction of vessel quotas in Norway and Iceland have excluded large number of coastal fishers and how the state licensing system for aquaculture has led to financial concentrations that has removed the control over the resources from the coastal communities. While the intention of these measures often was explained as improvements during crisis to achieve more sustainable fisheries management. The explanation close at hand is of course that some of the means are the real goals, like the exclusive property right of a quota, while the abstract goals of responsible fishing, biodiversity and precaution are not dangerous to adhere to as long as it does not hurt the bottom line.

The design of means is the task of institutional analysis. As mentioned above this has mainly been preoccupied with lowering the transaction costs of decisions, lowering the costs of monitoring and sanctioning and preventing disruptive free-riding. Institutional design has therefore often started with analysis of the nature of the goods and ended with «defining the

property rights» in a better way. In view of a terrestrial cultivation system (e.g. irrigation), where the need for tangible inputs into maintenance and other investments is obvious for all the members, this is often sufficient to serve the purpose of a long-enduring institution.

But in a marine or coastal environment, the dependence on the wild ecosystems as a long enduring production system is much higher. This is obvious for the harvesting of wild fish and other marine organisms, in addition to the human impact, their fluctuations is depending on numerous ecological interactions with other species, both further down and further up the food chain. But as we have seen, also the successful cultivation of coastal seas is depending on healthy wild ecosystems - and therefore has a responsibility to contribute to the continued health of these systems. In this way, marine cultivation is notably different from terrestrial cultivations. We have above seen how the ethical values concerning management of wild fish resources recently have changed in favor of more ecosystem responsibility, while environmentalism as special duties towards special «sacred» animals have been rejected. This has prepared the ground for new models of ecosystem management in integrated coastal zone management (ICZM). And it calls for more ecosystem management in the way fish resources are managed, rather than the species by species approach of the last 3 decades.

For institutional analysis, this is a major challenge, as both shared ethical values and the increased number of non-human players makes the task increasingly more complex. But as most ethical values seemed to be of a utilitarian character and in reality can be interpreted as a demand for a longer time horizon on present choices, this can be handled with conventional models. The non-human players, on the other hand, introduces environmental uncertainties which system ecologists are working hard to reduce. The idea of ecological robustness achieved through a management for maximum biological diversity and complexity, gives some needed directions to the work of developing the institutional analysis framework further. But until this ecological knowledge is firmly established, the institutional analysis for ecosystem management has to build in a precautionary principle in its institutional design recommendations. The definition of property rights have to be made with caution and in a manner that makes them less sticky in face of an uncertain future.

Bibliography:

COASTMAN, 2000

Final report from the EU-Coastman project, Brest 2000

Bentham, J., [1798],

An introduction to the Principles of Morals and Legislation,

Direktoratet for Naturforvaltning, 1999

Strategisk dokument for Direktoratet for Naturforvaltning 2000-2003, Trondheim 1999.

Eythórsson, E., 2000

- Fisheries management in Iceland: the grounds for design and implementation of public policies in the field of fisheries management, ELSA-Peche Working Paper no.#, Brest, France
- Elsbakk, L., 2000
Intervjuer med fiskere, ressursforvaltere, fiskeripolitikere og tillitsvalgte i Norge, Danmark og Island, Høgskolen i Bodø, Mimeo
- European Commission, 1999
Towards a European Integrated Coastal Zone Management (ICZM) Strategy, a Reflection Paper, Luxembourg.
- Goodin, R.E., 1996
Institutions and their design, in Robert E. Goodin ed., *The theory of Institutional Design*, Cambridge University Press, N.Y.
- Gullberg, H., 2000
Intervjuer med fiskere, ressursforvaltere, fiskeripolitikere og tillitsvalgte i Norge, Danmark og Island, Høgskolen i Bodø, Mimeo
- Hoel, A.H., Jentoft, S., Mikalsen, K. H. 1992:
User-group participation in Norwegian fisheries management. in Jentoft, S. 1998 : *Allmenningens komedie. Medforvaltning i fiskeri og reindrift*. Ad Notam, Oslo.
- Jonas, H., 1984,
The imperative of Responsibility, In Search of an Ethics for the Technological Age, University of Chicago Press, Chicago
- Kant, I., [1788]
Groundwork of the metaphysics of morals, Cambridge, Cambridge University Press 1998
- Kingdom of Norway, 1999,
St.meld. no 43 (1998-99), Vern og bruk i kystsona – Tilhøvet mellom verneinteresser og fiskerinæringane.
- Levinas E.1985
Ethics and infinity; conversations with Philippe Nemo Pittsburgh, Pa. Duquesne University Press ;
- Løgstrup, K.L. 1991,
Den etiske fordring, København, Gyldendal
- Mill, J.S., [1859],
On Liberty and Utilitarianism, New York, Bantam Books, 1993
- NENT, 1999,
En verddivurdering av norske fiskerier mot år 2020, Sluttrapport.
- Nilsen,J.R., 2000
Danish Fisheries Management Policy, ELSA-Peche Working Paper no.#, Brest, France
- Ostrom, E., Gardner, R., and Walker, J. 1994
Rules, games and Common Pool resources, Michigan University Press, Ann Arbor
- Ostrom, E. 1994
Neither Market Nor State: Governance of Common Pool Resources in the Twenty-first Century. IFPRI Lecture series no 2
- Rawls, J. 1971,'
A theory of Justice, Oxford University Press.
- Sagdahl, B. 1992
Ressursforvaltning og legitimitetsproblemer. NF-rapport nr. 15/92-20,
- Sagdahl, B. (ed) 1998,

Fjordressurser og reguleringspolitikk. Kommuneforlaget, Oslo.
Nordlandsforskning, Bodø.

Sagdahl, B.K., 2000

Norwegian Fishery Management, Learning by doing and «fishing» for solutions? ELSA-
Peche Working Paper no. #, Brest, France

Sandberg, A., 1999

Conditions for Community based Governance of Biodiversity, NF-report 1999:11,
Nordland Research Institute, Bodø

UNEP/CBD/COP/4/Inf.9, 1998

Report of the Workshop on the Ecosystem Approach, Lilongwe; Malawi, 1998