



# Fish management – establishing fundamental elements for a sustainable fishing industry.

A case study of Norwegian fish management

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# Abstract

Decreasing fish stocks and other threats to marine environments is nowadays a major concern for fishing industries. The question is what it takes to maintain a sustainable fishery for future generations. The purpose of this case study of Norwegian fish management was to identify and analyze elements that contribute to the management of a sustainable fishing industry.

Material for the study was collected from research reports and literature about various management forms of governing.

The analysis indicated that environmental governance is a decisive element for a sustainable fishing industry. This type of governance is based on the fact that fish industries often share fishing grounds. Other significant elements for the distributed responsibility that characterize environmental governance are: valid and shared information about fish stocks, domestic institutions in control of adopted regulations and multiple international agreements. These are the fundamental elements for a sustainable fishing industry.

*Key words:* fish management, fish industry, sustainable fishery, environmental governance, Norway.

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# Abbreviations

DoF	Directorate of Fisheries
FAO	Food and Agriculture Organization of the United Nation
GDP	Gross Domestic Product
ICES	International Council for the Exploration of the Sea
IMR	Institute for Marine Research
NGOs	Non-governmental organizations
NPM	New Public Management
TAC	Total Allowable Catches

# Glossary and definitions

Some of the more central concepts and terms in the thesis are defined below in order to facilitate comprehension and understanding for the reader.

**Environmental governance:** *“All the processes by which political, economic, and social actors regulate interactions between humans and nature”* (Bevir, 2009: 78).

**Exclusive economic zones:** *“Coastal waters exclusive to each state”* (United Nations, 2002: 2)

**Fishery:** *“The industry or occupation devoted to the catching, processing, or selling of fish, shellfish, or other aquatic animals”* ([www.thefreedictionary.com](http://www.thefreedictionary.com), 091217).

**Fish management:** *“The activity of organizing and controlling the extent of human exploitation of a single fish resource or combination of fish resources”* (Dankel 2009: 7).

**Fish stock:** *“The population or [total mass] of a fishery resource. Such stocks are usually identified by their location. They can be, but are not always, genetically discrete from other stocks”* ([www.greenfacts.org](http://www.greenfacts.org), 091217).

**Governance:** *“The process whereby elements in society wield power and authority, and influence and enact policies and decisions concerning public life, and economic and social development”* ([www.gdrc.org](http://www.gdrc.org), 091215).

**Sustainability:** *“Development that meets the needs of the present without compromising the ability of future generations to meet their own needs”* (Dankel, 2009: 11).

# 1 Introduction

**"The marine environment is facing challenges that, if not addressed immediately and effectively, will have profound implications for sustainable development."** *Kofi Annan, Former UN Secretary General World Environment Day, June 2004*

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From ancient times, fishing has been a major source of food for humanity and a provider of employment and economic benefits to those engaged in this activity. In a recently published research report it is estimated that the value of the ocean resources is 7\$ trillion per year (United Nations, 2002: 5). The importance and value of fish relative to other food products may however differ among countries depending upon geography that has fostered various food traditions.

Nowadays, nations share the insight that the marine resource of fish needs to be managed in a sustainable manner. At the same time, reports about decreasing catches indicate that this renewable resource is decreasing in certain regions due to more efficient industrial fishing. The modernization of fishing fleets with technical developments of fishing gear, such as satellite navigations, temperature-depth gauges and long-line fishing gear has made it easier to get big fish-catches. As a result the global markets are provided with more fish products (Payne, 2007: 265). These improvements in more efficient fishery have, however, not only been beneficial. Instead, more effective techniques have resulted in overfishing. Numerous examples of overfishing in various sea regions have produced major problems for fishing industries and even caused fisheries to a total collapse.

In order to achieve a sustainable fishery and deal with the fact that fishing catches are declining, communities have historically attempted to regulate their fishing more locally (Lerøy, 2008: 4). A country that has shown a great success by applying regulation of their fishery is Norway. Fishing has been an important asset for years and Norway is today considered as one of the most experienced fishing nations in the world. Norway's geographical position has given the country the fortunate of a grand access to the sea and thereby to fish, which over the years has generated a large fishing fleet. Today Norway is counted to be the top fishing nation in Europe and according to statistics from Food and Agriculture Organization (FAO) number 11 of fish-countries measured by their volume of fish. Together with the US and Canada, Norway was also identified as the highest scoring countries in an evaluation of implementing the *FAO Code of Conduct for Responsible Fisheries* (Baltic Sea 2020, 2009: 16). The Norwegian fleet is furthermore considered to be the most technically developed fishing fleet in the world.

The Norwegian fishing is distinguished of being highly regulated with well developed restrictions, quotas and licensing requirements. Since the foundation of

the Directorate of Fisheries in 1900 the importance of regulations and legible instructions has steadily increased (Baltic Sea 2020, 2009: 71). There is an indistinct knowledge of when the first regulation concerning the Norwegian fishing industry was introduced, and it is therefore common that the foundation of the Directorate is seen as the starting point.

The geographical position has not only given the potential for a large supply of fish but has also made it necessary for Norway to share the fish supply with other nations. Notably, recent statistics indicate that as much as 90 % of the potential fish stock is shared with other states (Erlandsson, 1995). In order for the involved countries to obtain a sustainable fishery and at the same time get as much fish as they require, initiatives for durable policies have been developed.

The resource for the fishing industry can be distinguished from other industries since fish do not take account of national boundaries which may result in conflicts among countries as well as between companies and other parties involved. To manage the fishing industry according to requirements for sustainability is consequently of fundamental importance. International, national and local agreements have important roles due to the complexity and the obvious difficulties associated with the management of an industry that involve multiple interests and various actors, from the small traditional local coast fishery to modern and highly efficient fishing fleets protected by national interests. Many of these core elements for fish management represent aspects along the continuum of governance - government addressed in political science.

## 1.1 Purpose and research question

Solving the challenging task of using our natural resources in a sustainable way represents a goal, adopted by member countries of the United Nations. This ambition is also repeated in many other international agreements and declarations (Dankel, 2009: 15). One component in these goals is to secure and guarantee a sustainable marine resource for fish and other seafood. In a recent UN publication only about 22 % of the worlds fisheries are considered sustainable (Ibid.). In order to rise this percentage many nations are facing the challenge of developing a successful fish management that will result in sustainability of fisheries.

In the history of fishing one country has been more prominent than many others, that is Norway. This unique fishing nation has access to some of the world's best fishing grounds; they also have long and extensive experience of fishery which positioned Norway ahead of many other fishing nations. Their way of managing the industry has been to balance priorities of the short-term perspective with that of the long-time perspective, based upon the insight that the valuable resource of fish need to be developed and managed in a responsible manner that protects the fish stock and thereby secure the future for many elements of the nationally important fishing industry.

The fishing industry is complex in many ways and numerous obstacles might prevent sustainability. The primary problems often highlighted are related to

fishing boundaries, quantities of fish that are assumed to be acceptable to catch and the specific techniques and methods that fisheries are allowed to use. From a political science perspective, however, the crucial questions refer to the mechanisms for management that are applied to maintain a well-functioning and effective fish industry even in the future. Norway is the fishing nation that so far, and with international standards, has demonstrated successful management of the fishing industry as well as rule enforcement (Baltic Sea 2020, 2009: 70).

The overall purpose of this study is to identify and analyze the role of important elements in the management of a marine based national fishing industry that acts to guarantee a sustainable future fishery. The specific research question that provides the guideline for the study is; *what are the lessons for political science from the Norwegian fish management?*

## 1.2 Theoretical approach and methodology

A qualitative descriptive approach was applied given the above background and rationale for a case study of the management of the Norwegian fishery. The focus will be on circumstances that have contributed in making Norway into a successful fishing nation.

The main reason to select Norway as the case for study is that Norway without doubts has held the international position as the most successful country in fishery. Although other countries during periods have shown higher fish catch levels, Norway is the only country that has had an overall stable fishing-structure for a long time period.

At an early stage the ambition was to make a comparison between Norway and Chile; the second largest fishing nation in the world. An initial screening of available information and literature unfortunately showed that almost all information was available only in Spanish (which prevented the author from personal scrutiny and collection of relevant information needed to accomplish the comparison). Furthermore, a cross-national comparison was also considered to become too complex because of major national differences in the political and socio-historical context for fish and fishery.

The understanding of various principles for management applicable also to fishery is addressed in two sections in chapter 3. In the first part I discuss the change that many political scientists recently have addressed; that from government towards governance. “Change” doesn’t imply that traditional government has come to end rather to emphasize the modernization of traditional political management towards more interwoven principles for management with less involvement of state regulating instances and more distributed responsibilities and agreements among several partners. The balance of these principles for management is considered to be of crucial relevance for the fishery and fishing industry.

In order to accomplish the purpose of the study, it became necessary to choose a suitable ‘glasses’ that could provide adequate theoretical guidelines. Matters



concerning fishery are typically related to general environmental concerns which made it natural to apply theoretical perspectives of more general environmental character.

Following these initial considerations I decided to apply the approach of so called 'ideal types'. These 'ideal types' are environmental governance and government. My ambition will result in a concluding chapter, which will demonstrate that these two 'ideal types' are significant in understanding the development of the successful Norwegian fishery.

There are potentially other theories and approaches that could be suitable and applied for the purpose of the study. Example of such would be a strict economic perspective in which implemented policies for fishery could be related to general principles for market economy and re-allocation by general governmental initiatives. However, from a political science perspective focus on the crucial management dimension provided arguments for an analysis of circumstances and elements that contribute to a sustainable fishing industry.

### 1.3 Limitations

The need to limit and restrict the study is obvious since fishery is broad-based and encompasses multiple aspects that potentially could be analyzed from a political science perspective. I have deliberately chosen to primarily focus my study on what has been accomplished by various political agreements and other means to manage the Norwegian fishery. The literature search about these aspects was mainly restricted to information presented during the most recent decade by official sources. At first I had the ambition that my study also should cover matters such as willingness to implement techniques for a sustainable future fishery, agreements or potential disagreements about fishing stocks. Given the fact that fishery encompasses multiple domains the focus was however, narrowed to central elements in the management of a sustainable fishing industry.

### 1.4 Material

The empirical material used is primarily collected from previous research rapport, such as "Baltic Sea 2020", "Building Blocks of Sustainability in Marine Fisheries Management" and literature about governance and government as well as relevant information about the current state of Norwegian fishery.

The ambition throughout the work has been to be as objective and open-minded as possible given the awareness that some of the information may be produced according to national and specific partners and company interests. Although an initially premature and superficial knowledge of the topic I have tried to be critical in the evaluation of the reviewed information.

## 2 Fishery as a political challenge

The aquatic resources were for many years seen to be an almost unlimited gift of nature to humankind. But, with increased knowledge of nature simultaneously with the dynamic development of modern fisheries after the Second World War, we are today aware that the aquatic resources are not infinite (Erlandsson, 1995). Public awareness and research has provided empirical evidence and arguments for the need of a proper management of water and sea resources if the economic and social well-being of the growing world's population is to be sustained.

In the 1970s exclusive economic zones (EEZs) was introduced and together with the adoption of the United Nations Convention on the Law of the Sea ([www.un.org](http://www.un.org), 100102) it provided a new framework for a better management of marine resources. For the coastal nations it meant that they received legal right and responsibilities for management and use of fishery resources within their EEZs, which embraced approximately 90 % of the world's marine fisheries (Erlandsson, 1995). The implementation of this extended national jurisdiction was considered to be a necessary step in the right direction although insufficient, of reaching an efficient management and a sustainable development of fisheries.

But, in order to form a fishing industry that will survive in the future, it also becomes necessary to recognize the importance of the challenges of solving the "collective-action problem" and the idea of the "tragedy of the commons". In the book "*Governing the Commons*" by Elinor Ostrom (Ostrom, 1990: 5-6) the logic of collective action is described as "...groups tend to act in support of their group interests...if the members of some group have a common interest or object, and if they would all be better off if that objective were achieved, it has been thought to follow logically that the individuals in that group would, if they were rational and self-interested, act to achieve that objective" (Ostrom, 1990: 5-6). Applied on the fishing industry it means that since fish is a resource that all fisheries involved are interested in preserving, they should act in a way that this resource is protected and becomes sustainable in order to generate food and profits even in the future.

The idea of the "tragedy of the commons" is related to the "collective-action problem". Garret Hardin describes the situation where multiple individuals act independently and does only consult their own self-interests, whereupon the shared limited resource eventually will be depleted. This even if no one had the interest of this to actually happen ([www.garretthardinsociety.org](http://www.garretthardinsociety.org), 091211). These intention nor the theoretical approaches suggest that the most important task in the work of preserving fish as a living resource for the future is to look beyond one's self-interest. Since fishing is a resource that we never can have the power to fully control (fishes swim wherever they want), we have to manage fishery in order to make it sustainable. If we could develop a fish management with collaborations among nations as well as among other actors such as companies, we might be able

to diminish the risk of a 'tragedy' and instead reach a development that actually would work in the long-term in a way that it makes everyone involved to share the benefits of the fish marine resource.

If we look back in history, it is not a surprise that we today have to deal with problems concerning fishery. For a long time we did not take in consideration methods used and allowed fish-catch levels were too efficient and high for a sustainable fishery. If we compare fishing methods today and the ones used in the mid-50's advancement in technology is astonishing. From the use of small boats with lines and sisal nets, that only circulated close to shore and mainly focused on human consumption on a local scale, to the current fishing vessels with sonar and satellites that allow locating fishing shoals. These 'ships' do have the capacity to conserve and store fish catches on board, but also to stay at sea for months at a time (Birnie, Boyle, Redgwell, 2009: 703). In 1938 the total fish catch was estimated to 15 million tonnes (mt); in 1958 to 28 mt and finally to 90 million tonnes 1992. As these figures show the development has been extremely fast and if we do not act properly today it might soon be too late to achieve the goal of sustainability. (Birnie, Boyle, Redgwell, 2009: 703)

Perhaps, the most challenging task to achieve successful decisions about environmental issues is that information often are incomplete and sometimes contradictory. Certain environmental degradation is visible, such as falling fish stocks, but scientific knowledge is needed to make an accurate assessment of the "heat of nature". The fact that we are not able to, with our own eyes, see all the damage that affects the environment, it is likely to make environmental problems a relatively abstract matter for many people. This is problematic for policymakers because they are the ones responsible for the decisions and the need for public support. Without complete information the decisions on how to act becomes uncertain and complex. If policymakers and the public had all the information they need to understand the causes of problems, then it would be obviously easier to design effective and implement solutions. But, unfortunately even policymakers have to act with incomplete information. Faced with uncertainty one could ask if policymakers should adopt a precautionary approach to a problem, or continue depleting an environmental resource until scientific evidence proves that action must be taken or even postpone actions until the point where enough public support are given for environmental actions.

Many environmental issues are complicated by the fact that their impact will carry on for a long time, and will affect future rather than the present generation. To adopt policies before the full negative effect of a problem become evident is therefore urgent. Unfortunately politicians tend to have short term concerns – for example forthcoming elections- and also aware of the difficult task in persuading people to act today in order to protect those not yet born. To sum, it is often easier to make policies that respond to urgent political pressure rather than address tomorrow's environmental problems (Payne, 2007: 179).

Finally, environmental policies produce both winners and losers. For governments this means that they have to face the challenge of balancing competing interests, which raises fundamental issues of equity, but also social justice between current and future generations (Payne, 2007: 179).

### 3 Fishery and ideal types of governing; more or less of governance or government?

Since the time when environmental problems first started to occur and become either noticeable or visible for humans, the work of how to deal with these problems has changed. Not too many years back we did not have the knowledge of the environment as compared with the current awareness. We now realize decisions about the environment should have been made many years earlier. But, it is not until recently they have been addressed to the global political agenda. This means that it is of vital importance that we act in the best possible way in order secure a sustainable environment, for ourselves and for future generations. Applied to the fishing sector this means that it is important to analyze the kind of management that is used and if there might be better ways to govern this industry. By fish management I refer to *“the activity of organizing and controlling the extent of human exploitation of a single fish resource or combination of fish resources”* (Dankel, 2009: 7).

In this chapter I will examine the change from the traditional government management type towards a governance management. Since government and general governance is closely interacted they are addressed in the same chapter. Additionally I have chosen to put special focus on a form of governance that is called ‘Environmental governance’.

#### 3.1 Government and the change towards governance

*“Governments’ general response to the speed and the scale of global changes has been a reluctance to recognize sufficiently the need to change themselves... Those responsible for managing natural resources and protecting the environment are institutionally separated from those responsible for managing the economy. The real world of interlocking economic and ecological systems will not change; the policies and institutions concerned must.”* (Carter, 2007: 292).

The above quote describes the changes that governments are dealing with since the upswing of environmental concerns. A world in urgent need of proper management to deal environmental matters has resulted in a changed political context for those responsible for such matters. Most environmental policies and regulations are however taken and implemented at the national level (Carter,

2007: 292). But, since the emergence of 'environmental governance' governments have increased their work with other actors, such as businesses, NGOs and even individual citizens (Ibid.). In the book *The Politics of the Environment: Ideas, Activism, Policy* (Carter, 2007) the author writes, "Policy elites have to rethink the way they perceive the world so that environmental considerations are integrated across government and penetrate routine policymaking processes within every sector" (Carter, 2007: 292).

The change began already in the early 90's when Agenda 21 was implemented and might be seen as a starting point for the change of governments and their approach towards environmental matters (Carter, 2007: 318). At present most governments have developed strategic approaches towards sustainable development as well as created institutions and adopted reforms that would help them in the work of reaching the pronounced goals (Carter, 2007: 318). An effect of this change has been that environmental matters today is considered by some policymakers to be matters that should be on the agenda as a routinely matter. Such a statement confirms the fact that there has been a change from the traditional paradigm of environmental issues towards what is called 'environmental governance' (Ibid.). But, in order to understand environmental governance important is to first say something about 'governance' in general.

As stated earlier the debate of environmental matters are about to change. The era that we are a part of has a demand for environmental interactions or as it is written in *Governance for the Environment New Perspectives* "...the quest for sustainable development is growing, while confidence in the capacity of government – the conventional mechanism for handling such matters – to address problems of governance is waning". (Delmas, Young, 2009: 3) What this primarily means is that in the world today the importance and awareness of being able to govern environmental challenges in a proper manner is growing. The role that states had before to manage these types of issues on their own is no longer existing and a new concept has risen - governance.

The origins of governance can be traced far back in history. In the literature it is often said to have evolved when people began to organize themselves into groups (Agrawal, Lemos, 2009: 71). The studies of governance are though younger and derive from the changes of the role and nature of the state and the reforms that arose in 1980s (Bevir, 2009: 3). What the concept wants to clarify is that the political process has changed; from a hierarchical bureaucracy towards participation among different actors and a greater use of markets and networks than what was the case before (Ibid). This also implies a change from a centralized governing system to a decentralized system. Significant factors to the change has been the overall globalization, growth of regional institutions such as the European Union and the fact that regions have increasing power which has made it impossible for states to act alone in matters that has got widespread affects.

With a concise description governance means that the state is increasing its dependence on various organizations in order to secure their own policies (Bevir, 2009: 3). Governance primarily works through social bands that is focused on guiding societies and human groups away from collective undesirable outcomes

and instead against socially desirable outcomes, for what is called collective-action problems (Delmas, Young, 2009: 6, Young, 2009: 15).

The use of governance as a specific term however, differs in the literature. But, they all coincide that it basically refer to various patterns of rules for social binding. Due to different thoughts about governance it has enabled theorists to explore abstract analyses of different constructions of social orders, such as social-, practices and coordination. For example in the book *Key Concepts in Governance* by Mark Bevir (Bevis, 2009) it is written that “Theorists can divorce such abstract analyses from specific questions about, say, the state, the international system, or the corporation. However, if we are to use governance in this general way, perhaps we need to describe the changes in the state since the 1980s using an alternative phrase, such as ‘the new governance’”. Irrespective of whether these patterns of rules we choose to focus on, governance has brought up issues about public policy and democracy (Bevir, 2009: 4).

## 3.2 Environmental Governance

Environmental governance is a form of governance that specializes on matters concerning the environment. In the book, *Governance for the Environment: New Perspectives* (Delmas, Young, 2009) it is written “Environmental governance is the use of institutionalized power to shape environmental processes and outcomes” (Delmas, Young, 2009: 71). There are though different definitions of environmental governance. I propose the following: “Environmental governance refers to all the processes by which political, economic, and social actors regulate interactions between humans and nature” (Bevir, 2009: 78).

The ‘new’ governance derives from the reforms that concerned the public sector in the 1980s. The reforms pointed to the “informal authority of markets and networks, constitutes, supplements, and supplants the formal authority of governments” (Bevir, 2009: 9). The reforms are often seen to have occurred in two principal waves. The first wave refers to the reforms that consisted of the new public management (NPM). The goal was to increase the role of corporate management techniques and of markets in the public sector. In the second wave focus were instead concentrated on how to develop and manage the set of networks and partnerships that where being informed by a revived public sector (Bevir, 2009: 9). Even if there has been separated opinions between advocates from the two waves on what reforms are most beneficial for the state, the reforms has had a great effect on the public sector and resulted in changes (Ibid.).

The relation between ‘new’ governance and environmental governance is that environmental governance tries to examine current trends related to the increasing awareness of circumstances protecting the environment. These are for example, the increasing prominence of marketization, networks based on civil society and transnationalism (Bevir, 2009: 78). By “increasing prominence of marketization” I refer to the mechanisms from markets that make people seek to influence on how other people live and how they affect the environment (Bevir, 2009: 79). In

the last couple of years, the awareness of effects on the environment that are caused by humans has increased drastically. As an effect increasing numbers of citizens are in different ways trying to change their own living habits to become more environmentally friendly. Scientific reports in the news have also played a major role in affecting people. In some cases people have boycotted products because of articles and other media. But, people are not only changing when it comes to what kinds of products to choose in-between but also to be extra fastidious when it comes to investments. For companies this means a relatively rapid change from a few environmental criterion towards a situation where the whole process in one way or the other should work in favor of the environment. By investing in more environmentally friendly companies' investors furthermore often hope to influence the decisions of corporations (Bevir, 2009: 79).

Policies concerning the environment are often dependent on market forces as well as costs and benefits when it comes to encourage or discourage certain activities. Important benefits involve partnerships and subsidies. Mechanisms provided by the market may also appear in transnational and supranational systems in order to address environmental issues. Apart from marketization, environmental governance also consists of networks based on organization from the civil society (Bevir, 2009: 79). These organizations do not only have a dual role in environmental governance but also often seen as one of the most familiar actors when it comes to questions concerning the environment (Ibid.)

Environmental governance is well suited for an analysis of the fishing industry because fishery is a good example of an environmentally based and highly environmentally dependent business that typically involves various actors. The complexity of this industry makes it difficult for governments to act alone since they lack the rights nor possibilities to make decisions that affects more than their own country. By using the idea of environmental governance and problem solving related to fishery it opens up for a dialogue among actors about how problems are viewed and may be solved in the best possible way by collaborative efforts. This represents a recent trend that is likely to become more significant in the years to come. An interesting example is given by the Fisheries management Science Programme (FMSP) in the report "Fisheries and Governance" (FMSP Policy Brief 5) in which governance issues are seen as fundamental to achieve effective management of fisheries to ensure sustainability and to maintain their contributions to economic growth, food security and livelihoods. The report identifies the need for support in the following areas:

- Research to determine the appropriate governance structures required in different circumstances for various fishery types, depending on the scale at which they operate and the stakeholders involved.

- Capacity building of developing country fisheries institutions to be able to fulfill their evolving roles in a changing governance environment, to address new and emerging issues and to adopt appropriate management measures and resolutions.

- Improving and strengthening data collection, handling and dissemination, including the development of tools and methodologies for fish stock assessment, appropriate for developing country contexts ([www.mrag.co.uk](http://www.mrag.co.uk), 100102).

## 4 Analysis of the impact of governmental and environmental governance of Norwegian fishery

In this chapter I will analyze those elements which I consider to have special importance in contributing successfully to the Norwegian fish management. The analyze is based on the following elements; *historical experience – hundreds of years in fishing, geographical position and access to fishing grounds, international agreements, national agreements and plans, knowledge and research, controlling the fishing industry*. The reason why I have chosen these specific elements in the analysis is primarily because I believe are the most important elements in the sustainable Norwegian fishing industry.

### 4.1 Historical experience - hundreds of years in fishing

Fish has been an important asset for Norway since the 1300-century but the primary upswing for the fishing industry did not until the 1800-century. During this period the world trade arose tremendously since the ideological business cycle were in favor of free trade (Øystein i Schröder, 1995: 35). As an effect the Norwegian shipping industry developed massively and fish became quickly one of the most important goods of trade.

The Norwegian fish empire was during the 1850- and 1860's characterized of strongly liberal doctrines and it was common that Norwegian officers rectified these doctrines in favor of getting the fishing industry to develop (Øystein i Schröder, 1995: 35). Some decades later the lack of honesty practiced by the officer resulted in an expansive shipping fleet and in the year of 1880 Norway was announced to have the third largest fishing fleet in the world (Ibid.).

Because of some hundreds years of fishing experience, the Norwegian fishery has today the advantages of good knowledge about the industry. Even if vessels, gears and technicalities where modernized continuously over the years, the characteristics of the fish has pretty much stayed the same. What fisherman has learned is primarily to not fully rely on the nature. The reason is that not all powerful processes at sea will affect the fishing. Even if water temperatures changes, certain species switch fish grounds it does not automatically mean that a new ecological disaster is lurking (Grytås i Schröder, 1995: 198).



With good knowledge of the marine resource it is without doubt easier to make good judgments of whether or not to act upon certain changes in the marine environment. Since Norway has the fortune of having the relevant experience because of many hundreds of years of fishing, they can look back at the fishing-history and for that reason perhaps make better judgments than countries with a less extensive fishing history. It is important however to state that even if there is good and available information it is still important to not fully rely on historical events, since history has a tendency to not repeat itself. What experience and information instead can contribute with is a better understanding for policymakers and others involved of what is needed for various sceneries for the fishing industry. This is likely to put fishery on the agenda both for policymakers and the public.

## 4.2 Geographical position and access to fishing grounds

Norway is controlling some of the world's richest fishing grounds including The North Sea, Norway's coastal waters, the Barents Sea and the Norwegian Sea polar front. These waters are bordering by other countries whereupon the Norwegian fishery has to share 90 % of the fish stock with other nations, which primarily are the European Union and Russia (Baltic Sea 2020, 2009: 73).

The fact that Norway share fishing grounds for many years with other nations has forced a need to establish close relations with the neighboring nations. Fishing nations today are in that way very vulnerable and in need of agreements. Most countries today are dependent on other nations concerning, for example trade of certain goods but also because of other businesses. What this means is that if something would happen that could damage the relations between the involved countries it could result in crisis that could have great effects on the nations economies. Therefore take good care of the relations that countries have becomes important. For Norway this has meant a close cooperation with the European Union and the other countries that they share fishing grounds with. By accepting the jurisdictions that the involved actors together have agreed upon, the relations strengthens and there is a better chance to obtain good relations with nations that otherwise may be seen as competitors.

The fishing ground that surrounds the Norwegian coast contains a lot of fish provide a natural advantage but is beyond full human control. Fishes do not consider whether or not to cross water boundaries. As a result there is some parts of the world that attracts more fish than others, since they have certain characteristics that entice species to enter these waters. What specific natural characteristics that makes fishes to remain in Norwegian waters is far beyond the scope of this thesis. But, it is enough to say that there are biological reasons why Norway has rich access to fish due to the long coastal line with deep as well as shallow parts. The rich fish stock has also given rise to a diverse industry based on

fish and fish products. The entire business sector of the Norwegian fishery seem to provide national support for sustainable fishery and the management needed to protect geographical interests as well as agreements with other nations to protect marine resources.

### 4.3 International agreements

Since Norway share as much as 90 % of their fishing grounds with other nations and thereby has a divided fish stock, it has been important for the involved countries to collaborate (Baltic Sea 2020, 2009: 20). This is mainly due to the fact that all countries want to profit as much as possible from the industry. By adopted international agreements several countries have been eager to negotiate about matters that affect all parties, from allowable fish-catches and techniques to allocation of quotas. Thus, to collaborate with other nations has been necessary for Norway because their fishing grounds are also accessible for other nations.

Furthermore, and as previously mentioned, our currently globalized world tend to make countries more motivated to maintain good relations with other nations in order to prevent potential conflicts. As fish can be seen as a collective good, “a good which it is difficult to exclude anyone from benefiting of and for which additional consumers can be added without diminishing the enjoyment of anyone else”, there is even a greater concern of a proper managment ([www.yourdictionary.com](http://www.yourdictionary.com), 091227).

International agreements are consequently of great concern for the Norwegian fishery because national policies are dependent on agreements finalized at the international level. This context makes it easy to understand that both politicians and fishermen are concerned and often anxious about the effects of international agreements. .Example of a significant bilateral agreement is that between Norway and Russia through the “*Norwegian-Russian Fisheries Commission*”. This agreement is valid for 30-years (Baltic Sea 2020, 2009: 74). Central issues that has been negotiated are about TAC quotas and other strategies that will act to obtain a sustainable fishery for both nations (Ibid.).

The implementation of more international agreements has led to a change in how Norway also governs its fishing industry; from the ideal type of a more centralized national system (government) to the ideal type of a more decentralized way of govern (environmental governance).

Environmental governance has made it possible for Norway to participate more actively in the international political decision process. Most issues on the international agenda are nowadays impossible to decide about alone for the Norwegian government. They do not have the right nor the possibilities to apply a strict national decision making process. Instead countries like Norway are forced to collaborate with the others about common fishery interests. Furthermore, international collaboration has per see created an atmosphere in which parties are aware of the need for dialogue among others parties. This has most likely given room for a better understanding of what is needed at the national level to secure a

sustainable fishery which in turn helps policymakers in their work of solving issues related to fishing and to receive public understanding for actions that otherwise only may be considered as negative at the national level. In this respect international collaborations may provide support for actions that otherwise would have been problematic to take only at the national.

To collaborate through international agreements has also the effect of making involved actors more careful of their domestic fishing. If countries can demonstrate examples of a well-functioning national fishing industry it provides arguments that are more likely to build up trust among others at the international level. Agreements which involve many actors are often related with uncertainties whether one partner really can rely on the others. As in the case of Norway, representatives are actually able to demonstrate that they for a long time have had the capability of an efficient management of the domestic fishery, it also becomes more likely that they will receive recognition and the confidence needed from others involved in negotiations aiming at bilateral, multilateral and international agreements.

The overall stable domestic fishing industry has positioned Norway upfront at the international level and contributed to its significant role also in influencing other actors concerning format and content for various common agreements, for example quote “Norway has been a very active contributor both in global and regional bodies” in the work against IUU fishing, which is the Food and Agriculture Organization of the United Nations' Plan of Action on Illegal, Unreported and Unregulated fishing ([www.fisheries.no](http://www.fisheries.no), 100102).

## 4.4 National agreements and plans

To efficiently manage the fishing industry at the national level the government has created several institutions with important roles. The Ministry of Fisheries and Coastal Affairs is an example of a central administrative body. The task is to adopt and to secure implementation of legislations and regulations. Notably, this body is also responsible for the entire agriculture industry, seafood safety, fish health, infrastructure for the maritime transportations and security concerning pollution in the waters (Baltic Sea 2020, 2009: 71). As the Ministry carries a great responsibility they are in need of information from the Directorate of Fisheries, with its mission to provide professional guidance based on research. This helps the Ministry in their decision making concerning matters such as legislations and regulation planning. However, the Directorate is also in charge of the implementation of taken political decisions, applications that have been made and that resource controls and monitoring are working properly (Baltic Sea 2020, 2009: 71).

Another important institution is the Institute of Marine Research (IMR) which is responsible of providing both the Ministry and the Directorate with scientific advice on fish stocks and sustainability within the Norwegian borders. At first IMR worked under the directive of the Directorate but in 1989 it was separated to

ensure that scientific advice kept its independence. The Institute of Marine Research is a key player in providing information for international management decisions (Baltic Sea 2020, 2009: 72).

In addition to the above institutions, several political initiatives and developed plans have proposed by the government to ensure that the management of the fishing industry works according to requirements for sustainability. For example, in the year of 1998, a plan was adopted concerning the Norwegian fisheries development (Baltic Sea 2020, 2009: 74) that specifically suggest changes for responsible management towards of natural renewable resources, in the development of markets and products and also how to act in a more responsible manner in the utilization of secondary products (Baltic Sea 2020, 2009: 74). In the year of 2002 another plan was announced by the government, “The White Paper”. The focus of this document was on how to meet the needs of a sustainable development and how the ideas about sustainability should be integrated into all existing management plans as well as to the once to come (Baltic Sea 2020, 2009: 74). The White Paper became important for the Norwegian fisheries as it explicitly stated that it at present is impossible to neglect the need of a precautionary approach and that management of fishery in general should be based to 100 % on research information about the ecosystem. This strong recommendation for the protection of the marine environment was introduced to secure biological diversity (Baltic Sea 2020, 2009: 74). Since the White Paper, the Norwegian Fishery policy’s is today based on four specific objectives:

- Commercial viability of the industry
  - Sustainable management of the resources
  - Stable employment and settlement in coastal areas
  - Economic sustainability through market orientation
- (Baltic Sea 2020, 2009: 74).

The policy’s has the goal of covering all the objectives that exists within the environmental, economic and social field. Also, in 2008 a new jurisdictional framework was announced by the government and adopted in 2009, “Havressurlova – the Marine Resource Law”. Like the policy’s mentioned above, the framework comprises several objectives that emphasize sustainability for the fish management. The implementation of Havressurlova was recently accomplished by law regulations (Baltic Sea 2020, 2009: 75).

The various national institutions, operating according to determined plans, represent the important political mechanisms for managing the fishing industry. The shared responsibility among these institutions is likely to foster effective mechanisms to secure a reliable domestic fishing industry. Although various roles these institutions are also closely connected, for example via IMR that provides information to the Directorate as well as to the Ministry (Baltic Sea 2020, 2009: 71)

Noteworthy, Norway’s shared fishing grounds give restricted room for separate national agreements. Approximately, 90 % of issues related to fishery is agreed upon at an international level and there are few domestic agreements that can be identified apart from the international agreements (Baltic Sea 2020, 2009:

70). These circumstances directly imply the need for environmental governance at the national level. There are on the whole too many involved actors in fishery at the international level that influences domestic fishing. As a consequence it prevents and restricts the Norwegian fishing industry to act only at the national level ignoring the international context. Although a restricted room for national policies, Norway has also adopted some supplement regulations that only concerns the domestic fishery. Together with the international agreements these policies for the overall Norwegian fishing industry have positioned Norway as a nation with an advanced management for a successful of fishery (Baltic Sea 2020, 2009: 70).

## 4.5 Knowledge and research

Unlike many other fishing nations Norwegian scientists have a close collaboration with the fishing industry. This has been beneficial for both parts since scientists have provided research based knowledge to the various national institutions and industry to act upon. The industry is also supplied with useful information which has strengthened cooperation and respect for scientific information.

Today about 40 fishing vessels in the ordinary fishing fleet serves as moveable informers to the scientists. Compensation for the additional costs for the mission of providing empirical data about fish stocks and related information and the training needed for the fishermen is provided by a special research quota. The close collaboration between representatives for the fishermen and scientist has been successful in the sense that fishermen become directly involved in research and thereby get a better understanding of why certain regulations or policy's are implemented (Baltic Sea 2020, 2009: 73).

To make accurate and informed decisions about fishing at the international level the responsible management has to be provided with valid information. This is completed by the International Council of the Exploration of the Seas (ICES), which is a network that consists of over 1600 scientists from over 200 institutions. ICES was founded explicitly to help and add value to national research efforts concerning fisheries and marine ecosystems (Baltic Sea 2020, 2009: 13). When ICES has provided information and their recommendations about for example stock levels, the negotiations with other countries can be started. The domestic decision-making process is not initiated before these negotiations are agreed upon and finalized (Baltic Sea 2020, 2009: 70, Dankel, 2009: 19).

The fishing industry is decisive in receiving reliable information in order to make appropriate decisions. The interaction between fishermen and scientists that has evolved can be viewed as an important step along the ideas of environmental governance. The fishing industry is currently involved in the entire process, which was not the case at an earlier stage. The collaboration between scientist and workers from the "field" not only mean that reliable information becomes accessible for research but also that fishermen become directly involved in the

understanding of all aspects of the fishery. This insight into the process also provides fishermen with a better understanding why certain policies and regulations are implemented. In the long perspective this is likely to ensure support for measures taken that aims to maintain a sustainable fishery,

Interestingly, information that forms the basis for international as well as national decisions and agreements is provided by the same institution, the ICES. Since the information therefore also includes other actors the environmental governance idea is applied even at this level that one might concern to be a national matter. Moreover, as ICES include scientists from different parts of the world, it is likely that the information is considered. If the information only was provided from a certain region or nation there is an obvious risk that the information could be viewed as biased due to partial interest. To ensure sustainability of fishery it seems necessary to have consensus about the validity of the information sources used for decisions.

## 4.6 Control of fishing industry

A well-functioning and sustainable fishing industry requires that the Norwegian fisheries follow regulations and policies. To ensure that this is the case the Norwegian Fishery Inspection Service has been given capacities and the right to inspect and continuously gather information from actors along the chain of fishery. Documents such as for example logbooks and sales notes can be reviewed and used for inspections in order to check whether fishing is conducted according to laws, regulations and agreements. The Fishery Inspection has a supply of helicopters and high-powered vessel to monitor and ensure legal fishing also at sea. A crucial aspect for the goal of a sustainable fishery is the right to control documents that proof that the actual caught of fish are in accordance with the amounts agreed upon (Baltic Sea 2020, 2009:77). The governmental control-system with the Fishery Inspection has a central role that would be difficult to be held by domestic governance partners.

The Norwegian Fishery Inspection serves to maintain a national and international trustworthy fishing industry. The control-system also act to prevent conflicts and crises in the fishing industry concerning legal matters. There is so far no evidence for any major conflicts with the fishing industry. Although divergent opinions about certain regulations and agreements, there is a general consensus among fisheries about the necessity to adhere to national and international policies and regulations. The governmental control also prevents “free riders” or those who ‘over consume public resources. This is otherwise a likely risk in fishery and may in turn create inequalities among actors (Stanford encyclopedia of philosophy, 091225).

Most importantly, the control-system makes the fishing industry more successful in a longer perspective. The inspections also provide feedback to the government and information about the ‘overall health of fishery’ in order to do what it takes to ensure that the industry is sustainable also in a future perspective.

## 5 Discussion

The focus on the Norwegian fishing industry in this thesis was based on the prior understanding of its relative success at the national and international level. The circumstances for the assumed success were analyzed using a case study approach in which various official documents were reviewed in addition to political science literature especially about government and governance management that could be applied to fishery. The performed analysis generally confirmed the notion of a successful and sustainable Norwegian fishery.

The fishing industry has focused more intensively both at the national and international agenda in recent years. A reason for this interest is that the industry is in many ways is global, complex and problematic relative to challenges imposed by demands for environmental sustainability. Environmental awareness also demands more efficient and proper management of decisions to be implemented by policymaker concerning marine resources.

First, a major challenge of fisheries is due to the fact that there are no natural borders for the fish stock that correspond with national borders. This fact highlights a discussion about who has the actual right to make decisions of a resource that we never can control at national levels. This makes various forms of international agreements necessary to solve most issues related to a sustainable fishery.

The Norwegian way of management of the fishing industry is generally seen as very successful. The analysis performed in this thesis confirms this even further. The conclusion is based on an analysis of elements identified as central for a marine based national industry that guarantee a sustainable fishery. The following elements were addressed; historical experience, geographical position and access to fishing grounds, international and national agreements and plans, knowledge and research, and a national control system that ensure adherence to laws, regulations and agreements.

The fishery in Norway has for a long time been a national treasure although the economic importance of the entire fishing industry is only approximately 1 percent of the total GDP (Baltic Sea 2020, 2009: 70). However, Norway is the major fishing nation in Europe and numbers 11 at the global arena. The value of the export, however, puts Norway at the second place after China at the international level. The expertise required for an efficient national fishery is nowadays not only maintained within families of fishermen whom generations after generations have had their income from marine resources. Current knowledge about fishery and related research is nowadays also brought into formal educational systems that promote an efficient fishing industry.

Supply of fish and other seafood has over a long historical period provided fundamental understanding in Norway of the importance of a well-functioning fishery and largely fostered food habits that demand fish on dinner tables. In this respect the national fishing fleet is given public acknowledgement and support. There seems to be no evidence for divergent political opinions about the need to preserve the national fishery that has developed over centuries. Over the years mechanisms for the management of fishery has evolved from a situation of no regulations what so ever, to awareness that only international agreements that combines governmental management with ideas of environmental governance guarantees sustainability.

Compared with many other issues, environmental topics are typically even more complex due to the fact that these issues are transnational and even supranational. The current discussion about climate change and the depletion of certain ground species is illustrative also for the fishery sector. A major problem is that many actors are involved, from nations and multinational corporations to local industry and fishermen. To resolve issues of this character is most likely among the most pressing for the twenty-first century (Bevir, 2009: 80).

The central element of the long Norwegian coastal line and the geographical position that provides access to rich fishing grounds may at first be considered only to foster a national perspective. However, shared fishing grounds have laid the foundation for numerous international agreements. Norway has participated as a major player to solve problematic negotiations about for example calculations of fish stocks and possible fish catches in various regions and proper fishing techniques that will ensure a healthy marine environment. Norway has in this sense been forced to give up much of own rights to decide in fishery matters. Potential possibilities to act independently may be seen in terms of national freedom. Close relations and adherence to international agreements and bilateral agreements with neighboring nations should rather be seen as an efficient way also to protect its own fishery.

Interestingly, the question about Norway's independence raises one of the most discussed national questions in the last decades; whether or not to join the European Union. An EU membership would mean that Norway to an even lesser degree than today will have the possibility to 'rule over the waters that they have access to' (Knudsen i Schröder, 1995: 196). There are of course not only fishing interests that has been decisive in this matter but according to many Norwegians the national interests in fishery is claimed to be a major concern. One might understand the reluctance of an EU membership especially among representatives for the coastal fishery who protect autonomy and refer to the price already paid for shared fishing grounds

The context for fishery in general and shared fishing grounds especially has made Norway to largely change its way of governing the fishing industry. Ranked as the richest country in the world, it wouldn't be possible nowadays for the government to act and manage issues related to fishery without responding to inputs and demands from other nations.

A topic more seldom addressed in political terms is the ongoing development of advancing technicalities for what type of fishing gears that should be allowed.



Improved techniques and gear would make it possible even for smaller fishing vessels to catch a big amount of fish. This was impossible only a few years ago. As addressed in the introduction this development is not only beneficial for the industry. With a modernized fishing fleet the possibility of overfishing becomes an even greater risk which results in an even bigger concern to develop restrictions to prevent such scenery. Technical advances are linked with another important question, that about the optimal number of active fishing vessels. Statistics shows that there has been a rapid drop of vessels in the last years. At a first glance one might think that this is beneficial because the fish stock is also decreasing. But, on the other hand the thousands of small vessels that were active at sea before are now replaced by big fishing vessels, ships, that with advanced technical gears nowadays almost tend to entirely clear certain marine waters with fish. With this in mind one could ask whether it was preferably to keep a larger number of smaller vessels with restricted allowable gears that are better also to protect diversity of fish stocks. In that way the entire fishing industry could act more sustainable. However, financial arguments are typically raised to oppose preventative measures for development also of the fishing industry.

Finally, it is important to emphasize that a national fishing industry not only include that of fishermen and their boats. Instead fishery contains an extended and long chain of interwoven businesses that are variously affected by a management that aims to work properly to meet environmental criteria for sustainability. Traditions, knowledge and expertise about gears and other technicalities, types of fishing boats and many other elements all need to be considered to fully understand how politics affects fishery, a sectors that perhaps in many ways is more complex than many other industries. Fishery is a challenging task for political science and this thesis may hopefully provide some guidelines for a more detailed analysis.

## 6 Conclusion

The overall purpose of this study was to identify and analyze the role of important elements in the management of a marine based national fishing industry that acts to guarantee a sustainable future fishery. The research question that provided a guideline for the study concerned the lessons to be drawn in political science from Norwegian fish management.

In sum, the analysis of the Norwegian fishery clearly indicates that in order to maintain a well-functioning and sustainable national fishing industry it becomes decisive to develop a proper management system via institutions that act according to national law, regulations and international agreements. In the case of Norway, I have identified certain central elements that together form a platform on which the entire fishing management is based.

Environmental governance was identified as significant type of governing towards reaching the goal of sustainability for the Norwegian fishery. Combining this ideal type of governance with traditional governmental management has made it possible for Norway to establish agreements with other actors and nations. Because of largely shared fishing grounds this has been crucial at international as well as national levels.

Norway has a long experience in fishing and this might have resulted in a national acceptance of implementing policies and regulations. The relatively liberal acceptance of restrictions could have been developed from previous examples and awareness that fisheries need clear guidance. A sustainable industry will unlikely rely solely on voluntary restrictions concerning optimal catches and assessments of available fish stocks. Most parties realize that there is a need to adhere to rules that fisheries have to follow both at the national and international level.

In addition to restrictions, it is also important that various national institutions take on a responsibility for managing other problematic issues related to fishery. The division of responsibilities among Norwegian institutions seems to make monitoring and controls more effective across the entire fishery chain given each a specific and professional role. The crucial point at the end is however governmental support. For political reasons there is also a needed public support for a certain type of management. The degrees of freedom for a national management are nowadays restricted by international agreements that make a strict national management of the fishing industry impossible even for a major international 'player' as Norway.

Valid empirically based data about 'marine health' and the fishing industry is important to provide policymakers and involved institutions with information needed for decisions about fishery. Over the years Norway has developed a close collaboration among scientists and fisheries. The collaboration, which includes

designated boats at sea that continuously provide information about marine life in general, has resulted in that scientists receives the best scientific information available. Besides, the collaboration also gets fisheries directly involved in the fish management process. I believe that this knowledge and research based element of the Norwegian fishery is extremely beneficial for the entire industry in a long-term perspective and acts to maintain a sustainable fishery.

What are the lessons to be learned from the Norwegian way of managing the fishing industry? The probably most important is to develop a structured industry. By structured I refer to all regulations and policies adopted at international and national levels along the lines of environmental governance with diverse institutions responsible for various concerns, that policymakers and the public receive useful and reliable information from scientists and involved fishermen, and finally how an inspection body can secure that agreed policies and agreements actually are being followed.

Norway has access to some of the world's richest fishing grounds. This biological bonus represents an advantage that needs to be taken into consideration in analyses of fisheries elsewhere. This fact also makes it difficult to generalize the Norwegian case to other countries. Across the globe we can easily realize that nations have unequal access to natural resources because of geographical location and the cultural traditions and advancement of technology evolved over time.

To summarize, the lessons for political science from the present analysis of the management of the Norwegian fishery is that a sustainable industry requires knowledge about available marine resources that actually is used for national restrictions, which in turn offers valid arguments for agreements and well-functioning relations with other fishing nations at the international level. Thus, the ideal type of governance for fishery is environmental governance with multiple actors that potentially share responsibility for a sustainable fishery.

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