# Master thesis
# Natural Resources Management 2016-18

## Sustainability in Norwegian Aquaculture

## -Path development or sustainable transition?

A case study of the allocation of the development licenses and power, discourse and ideas.

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## Declaration

I, Steffen R. Larssen hereby declare that this study contains no material or information which has been used for the award of any other degree or diploma in any institution and to the best of my knowledge, contains no information or data previously published by any other, except where due reference has been made.

## Abstract

The aim of this study has to been to gain a deeper understanding of the development of the allocation process of the development licenses in norwegian aquaculture. The licenses have to differing main purposes, to create economic growth and to strengthen sustainability. The development licenses are supposed to contribute to this through the application of new technology.

The norwegian aquaculture industry has gone through different phases since it´s origin and started out with a regional development perspective. However, since the perspective of the future of the oil- and gas industry have changed in the recent years due to climate change, the aquaculture industry has been adressed as a new source for national economic growth. The industry has had a solid economic growth the last decades. On the other side, since the 1980´s the industry have had various problems with pollution and other environmental problems.

As the industry is on it´s way into a national matter, actors, stakeholders, networks, goals and arguments regarding the industry change. With this background it has been important to adress power, discourses, narratives and ideas in the time when the industry has been set to change. This also makes the process an interesting case regarding to which extent the industry develops into a sustainable direction.

Critical discourse analysis has been applied to analyse how central actors discuss central issues as sustainability, economic growth, the governments role and how technology should be applied.

The results show a great diversity of manifestations of power, discourses and narratives, and how coalitions have seemed to form around certain suggestions for sustainable technologies. It also shows that this process has set a direction for further sustainability in the industry. The government and the public management have played an important role in this development.

## List of abbreviations

| | |
|---|---|
| ANT: | Actor Network Theory |
| CAS: | Complex Adaptive Systems |
| CCS: | Closed Containment Systems |
| CDA: | Critical Discourse Analysis |
| DKNVS: | Det Kongelige Norske Vitenskapers Selskap |
| FHL: | Fiskeri- og Havbruksnæringens Landsforening |
| GNP: | Gross National Product |
| IPBES: | Inter-governmental Science-Policy Platform on Biodiversity and Ecosystem Services |
| IPCC: | Inter-governmental Panel on Climate Change |
| LBPS: | Land-Based Production System |
| MA: | Millenium Ecosystem Assessment |
| MLP: | Multi-Level Perspective |
| MTB: | Maksimalt Tillatt Biomasse |
| NDC: | Nationally Determined Contributions |
| NGO: | Non-governmental Organization |
| NIS: | National Innovation System |
| NOU: | Norsk Offentlig Utredning |
| NTVA: | Norges Tekniske Vitenskapsakademi |
| OAOS: | Offshore Aquaculture Operation Systems |
| OECD: | Organization for Economic Co-operation and Development |
| OEP: | Offentlig Elektronisk Postjournal |
| PB: | Planetary Boundaries |
| RFMO: | Regional Fisheries Management Organizations |
| R&D: | Research and Development |
| SMB: | Små- og Mellomstore Bedrifter |
| SNM: | Strategic Niche Management |
| SRC: | Stockholm Resilience Centre |
| SSB: | Statistisk Sentralbyrå |
| SVC: | Shared Value Creation |
| SWOT: | Strength, Weaknesses, Opportunities, Threats |
| TEEB: | The Economics of Ecosystem Services and Biodiversity |

UNFCCC: United Nations Framework Convention on Climate Change

UNESCO: United Nations Educational, Scientific, Cultural and Agricultural Organization

WCED: World Commission on Environment and Development

WFF: Welfare Fish Farming

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# 1. Introduction

## 1.1. Background: Norway looking for new industrial opportunities after oil and gas

The IPCC (2018) have the last decades warned about and documented the consequences for both nature and humans from the increasing carbon emission and the response from the global community is multilateral negotiations and agreements, for now ending with the Paris agreement. Norway is part of the agreement, and through the central element of nationally determined contributions (NDC), Norway has obliged to reduce carbon emissions (UNFCCC 2018). The agreement has many implications, one of them being an expected decrease in oil demand.

Norwegian economic development has historically been dependent on natural resources, and especially since 1970, oil and gas. From 1971 to 2017 the Norwegian export sales revenue from oil increased dramatically, and natural gas became an additional source of income. The figure below (Regjeringen 2016) shows, in addition, a high relative worth compared to other central macroeconomic activities, namely share of export income, share of GNP (BNP) and last but not least share of the national states´ income since 1971.

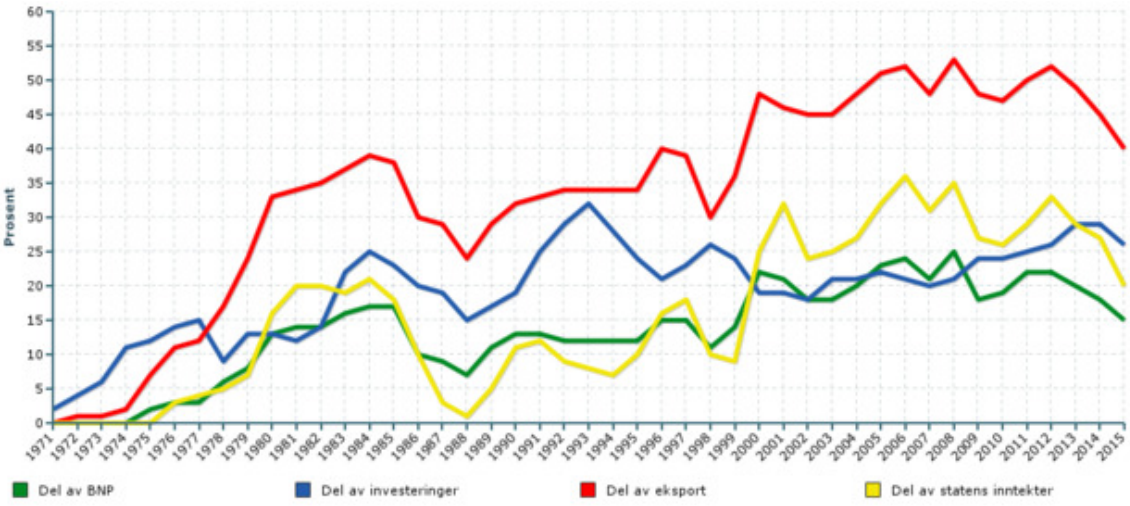



*Figure 1: historical development in key national economic figures related to oil and gas production in Norway (Source: Regjeringen 2016).*

Early in June 2011, the white paper *En næring for framtida – om petroleumsvirksomheten* was released. In the goal and summary section it is stated that the oil resources are the property of the norwegian people and should benefit all, for a qualitatively better life. Further it is stated that this has been the basic premise since the industry´s beginning and that it relates to the concession laws originally made for the waterfalls, and the ´original owner principle´ (´hjemfallsrett´).

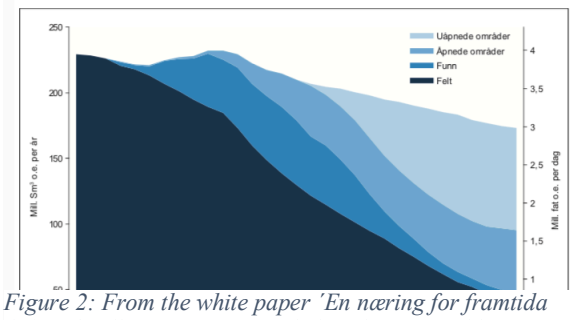


*Figure 2: From the white paper ´En næring for framtida (...)´: The illustration is intended to show ´possible course of production at a broad commitment on norwegian shelf´. Source: (Regjeringen 2018).*

It is also stated that the goal of the policy for oil and gas is to ´arrange for profitable production of oil and gas in a long-term perspective´ (Regjeringen 2018, 6). The reason given is that especially gas is seen as still profitable, and more upstream companies' suppliers are involved. Already opened areas should be exploited more and un-opened areas should be investigated further. The white paper and the commitment to the Paris agreement signals a further commitment to national income from oil and gas, but also an intensified search for other sources of income to maintain the welfare state.

## 1.2. New industries emerge

Already back in December 5th, 2008 the Stoltenberg government published the first white paper addressing a more profound change in the economy in order to create an ´innovative and sustainable Norway´; *Et nyskapende og bærekraftig Norge* (Regjeringen 2018). The marine sector in general, and the aquaculture sector specifically, and the fact 90% of Norwegian seafood is exported is highlighted.

### Strong growth in aquaculture

The sales value of farmed salmon from Norway have had a strong growth over many years. In the period 1998-2016 the growth in sales value for farmed salmon, trout and rainbow trout have grown from 8,6 bill. NOK (1998) to 63,8 bill NOK, or more than 700% increase (2016) (Fiskeridirektoratet 2018).

The overarching strategy of strengthening new industries have been followed up, specified and targeted in various reports and documents but also somewhat also reformulated by the government in office today, the Solberg Government. This will be thoroughly reviewed later.

### Planetary boundaries affected by chemical waste and loss of biodiversity

Still other human activity besides oil and gas in the oceans are not without risks and consequences. Research leading to the introduction of the concept Planetary Boundaries (PB) (Rockström 2009) shows that biogeochemical waste and the loss of biodiversity also profoundly threatens the living conditions on earth. To address these issues, especially the value of ecosystems and biological diversity, a corresponding panel (to the IPCC) named IPBES (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services) has been established with the aim of providing policymakers with objective scientific assessment about the planet´s biodiversity, ecosystems and the benefits they provide to people (IPBES 2018). Norway is a member of IPBES.

### Problems with externalities in Norway

According to Havforskningsinstituttet (Havforskningsinstituttet 2018, 10), the main problems - or negative externalities – and thus risks posed on the environment from an environmental and biological point of view is:

- *Salmon lice (Lepeophtheirus salmonis salmonis)*, affecting animal welfare and mortality in general and in particular mortality for post smolt.
- *Pathogens*, or viral diseases, represents a major risk to the industry.
- *Escapes and genetic interaction* with wild / Atlantic salmon (*Salmo salar*); Farmed salmon escape and mix with wild salmon, affecting the genetic integrity of the wild salmon, but the risk is, according to Havforskningsinstituttet difficult to assess.
- *Emissions of nutrients and organic waste*; the risk for poorer water quality due to such emissions are assessed by Havforskningsinstituttet to be low based on the current production volume.
- *Contaminants*; environmental pollutants as for example copper (Cu) are regarded most critical in relation to food safety, and results indicate the overall level of contamination in live fish grazing in some areas close to aquaculture cages is lower than reference fish stocks elsewhere.
- *Drugs*; certain combination of anti-sea lice drugs are assessed to affect non-target organisms significantly, but more specifically, the ´effect on cod eggs, chameleon shrimp, rockpool shrimp and lump sucker when exposed over a short period of time is estimated as low.´ (Havforskningsinstituttet 2018, 10).

- *Cleaner fish*; even if considered environmental friendly, cleaner fish is associated with risk related to both ecological and genetic effects on wild stocks, concretely poorer welfare and spreading of diseases.

In addition, the Office of the Auditor General of Norway has stated that the growth in norwegian aquaculture have significant environmental impact (Christiansen & Jakobsen 2017).

### International conventions for conserving the Atlantic salmon

Norway is part of the international convention for the protection and conservation of the Atlantic salmon (Miljødirektoratet 2017). The value of the wild salmon is considered both biological through its unique genetic and ecological traits, societal through ´communal well-being´, aesthetic pleasure, and ´retreat´, and economic returns through sports, tourism or commercial profit, according to Dodson et al. (1998). The approach for the management and conservation of the Atlantic salmon should, according to Miljødirektoratet (2013) be done through the precautionary principle approach and scientific advisory - and aquaculture is among the activities that is being considered for the protection of the Atlantic salmon. With this background, other norwegian local stakeholders have higher interests at stake when it comes to commercial aquaculture and its effects on tourism, leisure activities and the relation to nature.

## 1.3. Clarification of the problem

Small countries like Norway have a greater imperative for exploiting new technology to create economic growth effectively, since their economies are much more dependent on the global economies than the other way around. Also, the innovation activities often happen beyond the borders of the corporations, and thus it is suggested that this element should be considered by policy-makers when shaping national policies (Fagerberg et al. 2009, 2).
The continued pursue of income from oil and gas is relevant to the research objective of this thesis. Even if there is a consensus that income from oil and gas will be reduced, it is an explicit goal, expressed through the ocean strategy, *Ny vekst stolt historie* (Regjeringen 2018), of the government to exploit synergy effects between oil and gas industry and other ocean industries. Thus, two different but interlinked strategies of future economic growth have been briefly presented. They have historically gained both similarities and differences regarding their storylines, for example when it comes to welfare, national or regional policy goals and

the complexity of technology. As activities and goals related to natural resources, this is also particularly true for sustainability storylines.

### Use of the term sustainability

The term sustainability has, since it was highlighted through the Brundtland report *Vår felles fremtid* (WCED 1987), developed into different domains, received different meanings, and been applied by a whole range of different stakeholders and actors (Hajer 1995). This makes the application of the term valuable in different settings, for different stakeholders and actors. This way the term is given different meanings in different contexts, spaces and time. Following this, relevant general and specific environmental discourses develop (Christiansen 2013; Christiansen & Jakobsen 2017; Dryzek 2005), and following these discourses, narratives, storylines, ideas and coalitions are developed and presented to the public and in networks.

### The ´history´ of aquaculture as suitable for economic growth emerges

In august 2012 The *´Kongelige Norske Videnskapers Selskap´* (DKNVS) and *´Norges Tekniske Vitenskapsakademi´* (NTVA) publish a report written by a work group led and administered by SINTEF that stated there is considerable opportunities for *´value creation´* based on productive norwegian oceans (SINTEF 2012). In the report it was stated that it builds on previous work and reports (´Norges muligheter for verdiskaping innen akvakultur´ and ´Utnyttelse av biomarine ressurser – globale muligheter for norsk ekspertise´) which is labelled ´brave work with the purpose of creating societal debate´ (SINTEF 2012, 2). In short, the report highlights opportunities for ´value creation´ in marine industries (oil/gas, shipping, fisheries, aquaculture and new industries like new species and biochemicals). The estimated worth in the report was almost 550 bill. NOK in 2050, with the largest contribution coming from aquaculture (and second largest from supplier industries including fodder production). The establishing of a supercluster, and a strategy for technology development is among the recommendations for achieving this opportunity. Key prerequisites for this is, among others, said to be competitiveness and predictability for the industry, and in addition the industry should be developed in a sustainable manner (SINTEF, 2012). *Value creation* is written above with exclamation marks because, as will be addressed later, the report has been criticized for a misleading use of the term, specifically from professor (in social economics) at NTNU, Anders Skonhoft; The term is normally used to address gross sales, but costs from every part of the value chain should be deducted in order to show the value creation from the production

process itself. But the report consistently uses it to describe gross sales (Harvest 2017). The report will later in the thesis be reviewed in more detail as it appears to have provided a strong symbolic argument by the specific use of the term ´value creation´, for the aquaculture industry and also for the process of the development licenses.

### Economic growth through technology

November 2015 the newly elected government issued a new concept of *special licenses* (that differs from commercial licenses as having a special purpose (Fiskeridirektoratet 2017); the development licenses. The development license regulations are subject to and subordinate to the aquaculture act. In §1 the act states that it shall ´promote the industry´s profitability and competitiveness within the frames of a sustainable development and contribute to value creation on the coast´ (Lovdata 2005). According to a press release from the government, the fisheries minister at the time, Elisabeth Vik Aspaker stated in 2015 that the main goal was to arrange for considerable growth in the industry, and this should mainly be done through the development of new technology. The development licenses would, according to Vik Aspaker, contribute to a ´technology lift´ (´løft´) and the restructuring the industry needed. Also, she underlined, this could mean great opportunities for the supplier industries. The focus on the governments´ role as innovation entrepreneur, and as such, a contributor to the establishment of new industrial growth is apparent. However, emphasis on the environment and the negative externalities seems to be given a rhetorically secondary focus in the text. One sentence expresses that technology can solve the *environmental and area challenges the industry is facing*, and thus the emphasis is on the *challenges* obstructing growth in the industry. However, also the new system for management and growth in the industry known as the ´traffic light system´ is mentioned, and it is stated that it will stand firm (´stå fast´) (Regjeringen 2015).

However, the development licenses have been given exemption from this system (Lovdata 2018), and the traffic light system only address salmon lice as an indicator of pollution. This means that environmental sustainability is given relevance to the case at hand, but it seems to be given a secondary role.

What is the relation between, and meaning of economic growth and environmental sustainability?

## 1.4. Justification of the study

There are different ´end targets´ or main goals among the different *actors*. For instance, the main goal of every stock-based corporation is to increase the short-term yield of the financial stocks or shares (Christiansen 2013), and in addition contribute to social well-being and jobs. Also, as has been addressed, the national state often sees it as its role to take a leading role in industrial development, restructuring and innovation. But it also carries the responsibility of safeguarding the environment according to national laws and regulations and international conventions and principles. Municipalities and County municipalities have the task of both stimulating local economic growth (Higdem 2007), but also to consider environmental impacts and relevant laws and regulations. Science is given a role of assessing both theoretical and actual impacts from human activity and in addition national and local NGO´s have a main goal of protecting the natural environment.

Together, these actors pose versatile and opposing meanings, goals and strategies related to both economy and the environment, characterized by instability, versatility, rivalry and controversy with goals pointing in differing directions. Still most of the time all label and justify their targets and expectations as good for the economy and the environment.

### What happens when *local* becomes *national and global*?

According to Wiig Aslesen (2009), the policy related to norwegian aquaculture for a considerable time was regarded as hegemonic on behalf of regional development or policies. The justification of the norwegian oil industry has gained hegemony as legitimate in order to provide for national quality of life, or welfare. But now the dire effects of climate change demand a halt in use and production. What happens when historically local economic activity – as aquaculture - receives attention and is given responsibility to ´feed the world´? How do the changes in regional, industrial and environmental policies change todays hegemonic view on aquaculture? Is it expected to replace oil and gas as our new warranty for well-being? And will it possibly take over the hegemony and thus the relations to economy and to how we see nature?

### Which path will norwegian aquaculture develop into?

The short review above has implied that industries and sectors could develop into certain paths. Paths can be defined as outcomes of ´multiple and heterogeneous historical processes´ (Wicken 2009, 33), and, linked to innovation, further also as outcome of historical variety

creation, adaption, selection and retention (Fagerberg et al. 2009). Self-reinforcing effects and momentum are key elements for understanding the direction and selection of paths (Christiansen & Jakobsen 2017). With the large-scale industrialization of the oil and gas industry in mind, the announcement of development licenses in norwegian aquaculture, and relevant environmental concerns, what kind of path development will we see for the aquaculture industry?

The announcement of the development licenses for the norwegian aquaculture industry is the first in the world, and there already have already been done some research on this specific topic. But the process that ended up with the specific development licenses, and how the ideas, narratives and discourses are used by coalitions to achieve their goals, are to my knowledge not studied with the case of the development licenses specifically in mind. This is as addressed above, important as it has implications to hegemonies defining our relation to nature and industry, and thus our view on environmental sustainability. Thus, by studying the preliminary processes, the discourses that are appearing and the actual allocation of licenses it is also possible to suggest which sustainability discourse(s), and thus narratives, storylines and ideas, that gain momentum and create hegemony.

The elements addressed above together shapes the preconditions for the future outcome of the development licenses, illustrated in the principal figure below. A more detailed illustration will be presented in the theory chapter.

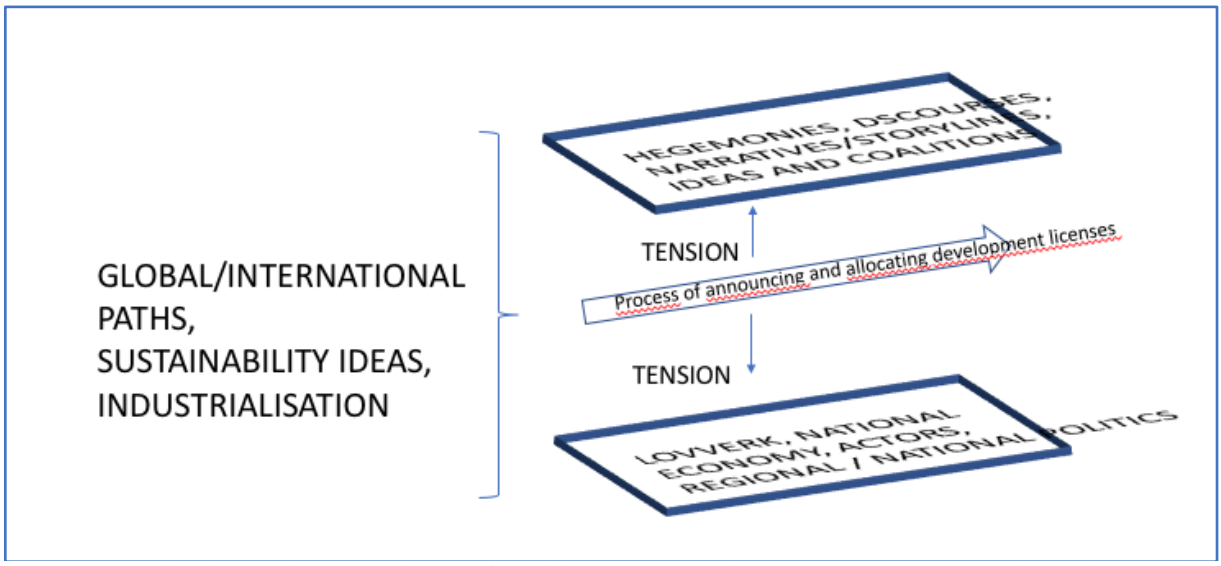



*Figure 3: Own ill.: showing the tensions between formal law, economy and interpretations, meanings, values, culture and ideas on the other, creating tension on the process of shaping the development licenses.*

## 1.5. Research objective and research question

The introduction brings me to the following research objective:

### Research objective

Identify relevant actors and coalitions, discourses, storylines and ideas applied in the process of shaping the development licenses, and thus how they could to contribute to, or affect, the outcome of the development licenses, and how this outcome could contribute to an enforced, or altered hegemony regarding our view on nature, industry and economy.

### Research question

Bryman (Bryman 2008, 69-74) advices to write research questions in order to avoid open ended research and confusion about the focus. Also, it will guide the work process. Further Bryman presents good sources of research questions. Among them are new social and technical developments and social trends, and empirical examples that trigger amazement, and finally (new) methods and theories and how they might be applied in new settings. Bryman also identifies criteria for evaluating research questions. Among these is; they should be clear, have connections with established theory and research, make an original contribution and neither too broad or narrow. This led me to the following research question:

### Main research question:

- How do actors mobilize power through discourse and ideas in norwegian aquaculture to achieve hegemony in industrial development?

### Sub research question:

- Which discourses and ideas prevail?
- Is there a coalition behind this idea that can be identified?
- Does the process of allocation of the development licenses contribute to further path development or sustainable transition?

## 1.6. Structure of the thesis

The rest of the thesis is divided into the following sections:

- Background chapter:
    - To identify the **main actors**, and the networks, or **coalitions** they could be part of, in the case of the development licenses.
    - In short describe briefly the **history** of the norwegian aquaculture and the **process** leading to the announcement of the development licenses, and the **regulations´ main features**.
    - Propose a ***practical*** **analytical framework** for the norwegian aquaculture industry to categorize and choose relevant study objects among the applicants for development licenses.
    - Identify and categorize the actors´ applied **sustainability narratives**.
- Methodology chapter to describe and legitimize chosen methods and sources of data.
- Theory chapter to:
    - Address the relevance of hegemony and the concept´s relation to nature and industrial development.
    - Present and describe dominating ideas on sustainability.
    - Describe through relevant theory a practical, conceptual framework for power, ideas, coalitions, sustainability discourse, path development and sustainable transitions.
- Results from data collection and analysis related to theory:
    - Uncovering the actors´ **discursive strategic framing of the problem (technological and economic development of the aquaculture industry, and the implications for the environment) and the ideas presented as solutions** for the development licenses and the **use of power** to achieve goals.
- Discussion and conclusion.
    - Relating the findings to the research question and possible other related findings.
    - Identify prevailing ideas, narratives/storylines and discourses.
    - Implications from the process that could alter the national hegemonic view on **nature, economy and sustainability.**

# 2. Development of the norwegian aquaculture path(s)

The theme of the thesis requires a structure with a short historical and analytical review to clarify both the past and the present for the industry.

### 1970-85: Rural development narrative

According to Wiig Aslesen (Wiig Aslesen 2009, 232) most norwegian aquaculture companies resemble Wicken´s (2009) first (of three) path of small-scale decentralized industrialization, with localized learning and weak connections to the knowledge bases.

The historical regulation of the aquaculture industry has to a great extent been related to regional development policies with the aim to strengthen rural areas in Norway.

Also, and importantly, Wiig Aslesen claims that the policy for aquaculture initially was described as a *´regional policy hegemony´*, affecting the following development of the industry. Similarly, Fløysand & Jakobsen (Fløysand & Jakobsen 2017, 216) have termed this first period the *rural development narrative.* However, political attention towards the industry have increased and thus changed the policies, the hegemony and the regional effects.

Laws and regulation of the aquaculture sector was for a long time (since the 1970´s) designed for a regional policy and the goals to sustain local communities, with central elements as local ownership and small enterprises.

### 1985-2000: The environmental degradation narrative

In the 1980´s, Fløysand & Jakobsen (2017) points to increasing disease problems in Norwegian aquaculture. At same time after a period of falling prices due to oversupply and increased competition and following bankruptcies. The action of the industry towards these problems was higher production which, according to Fløysand & Jakobsen, lead to increased negative effects. The ownership regulation to ensure local ownership was liberalized with the most important consequence being the acceptance of multiple ownership of licenses, and the departure from the demand that the owner of the company must reside at the same localization as their company. This led to a restructuring of the industry, and larger-scale companies continuing the industry, but the narrative prevailed. ´This fundamental shift in the industry towards greater concentration, scaling-up and bulk production was not immediately followed by a shift in narrative as the new big players and political authorities continued to employ a form of rural development narrative, though in practice showing less concern with dispersed local development impacts and more with aggregate growth of a global industry´ (Fløysand & Jakobsen 2017, 143). The development, however, continued towards open-net

pens with high productivity but also with several negative impacts on the natural environment of the pens. This lead to concerned stakeholders arguing for a halt in the growth ambitions, labelling the development with an *environmental degradation narrative* (Fløysand & Jakobsen 2017, 143-44).

### 2000-present: The global demand narrative

Finally, in 2001 the Aquaculture act was changed and a payment for the licenses was allowed for the ministry to collect. The result being that small-scale companies was economically excluded and thus weakening the previous goal of maintaining the regional policy hegemony (Wiig Aslesen 2009, 217). A response from the industry to the degradation narrative has been, according to Fløysand et al., to introduce a *global demand narrative*; ´an alternative ethic for the industry by introducing a global demand narrative´ (…), involving ´a discursive shift from the environment to a notion of global food and nutrition, thus allowing for a perpetuation of growth and profit making. The core claim of the global demand narrative is that the industry is ´obliged´ to expand to supply the world with food´ (Fløysand & Jakobsen 2017, 144).

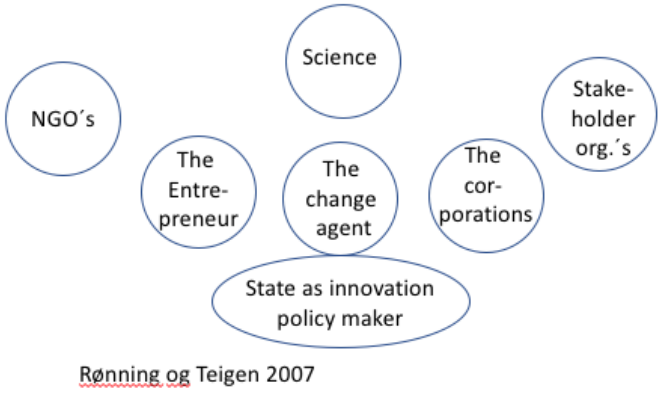
### 2013: Green licenses

In June, 2013, the ministry of industry and fisheries passed new regulations for commercial aquaculture, the so-called ´green licenses´. Their purpose was to reduce the environmental challenges of escaping of farmed salmon and the spreading of salmon lice. The ministry appointed a group of experts (´faggruppe´) to assess the applications, and the fisheries directorate was the secretariat for the group. The licenses were limited to a national total of 45, and the regulation was stated to have the purpose of stimulating the realisation of new technological solutions or ways of operating (´driftsmåter´) that reduces the environmental challenges of escapes and spreading of salmon lice. Especially for ´group C´ (applicable to the whole country, and relevant for the focus of this thesis) only 10 licenses was allocated, the applicant had to commit to apply technological solutions or apply ways of operating that compared to commercially used and commonly applied (´alminnelig kommersiell bruk´) solutions today, reduces the environmental challenges *considerably* through either reducing the risk that the farming activity affect wild salmon due to escape, or secure that there is less than 0,1 grown female lice (per fish) in the facilities (cage(s)), or emissions of the same number. Also, a condition was that the farmers receiving the licenses shared their knowledge and experiences, to benefit the whole industry.

From this evolution of the industry path in Norway, three main different technology systems are emerging; Land-based production systems (LBPS), Closed containment systems (CCS) and Offshore aquaculture operation systems (OAOS) (Fløysand & Jakobsen 2017, 147-148).

## 2.1. The development licenses; actors

Based on Schumpeter's classification on central actors in innovation processes (Teigen 2007) and adding state and public administration, science and NGO´s, a theory-based depiction of relevant actors is shown below. In the findings chapter, a detailed mapping of the relevant actors in the case of the development licenses are presented.




Rønning og Teigen 2007

## 2.2. The development licenses; course of events

The illustration below shows a simplified depiction of the *most relevant* events and are also reviewed in the following text.


*Figure 5 Timeline of the main events in the allocation process of the development licenses.*

### Salmar denied green licenses

In October 2013 Norwegian aquaculture company Salmar receives a rejection to their application for the new, green licenses (reviewed above) for aquaculture. The application was centered around an `ocean-based cage construction´. The company, through its co-founder and director of strategic projects Gustav Witzøe saw this concept as ´qualitatively and environmentally so strong that it should have been rewarded with a substantial part of the concessions in this group´, and criticises the decision to not allocate licenses strongly (iLaks 2014).

### Marine Harvest leaves Sjømat Norge because of different understanding of sustainability

In March, 2015 Marine Harvest, the largest salmon farmer in the world leaves norwegian interest and industry organisation *Sjømat Norge* because of what they term ´fundamentally different views on sustainability´. According to Marine Harvest´s CCO (Chief Communication Officer) Kristine Gramstad, there is disagreement on several of the profound questions about how the industry should develop and the role that Seafood Norway (at the time ´FHL`) as a union (for the aquaculture farmers) should act (Kyst.no 2015). Marine Harvest stated that Sjømat Norge should not be a political organization, leaving a consensus principle, and promote issues that there is not internal agreement about. Marine Harvest also stated that the industry, to reach its potential, needs to develop Norway´s next biggest export industry further in an environmentally sustainable way. As a consequence of this Sjømat Norge instead joined industry interest organization Norsk Industri, and they together published a *Roadmap for the aquaculture industry*. This document is reviewed in the *findings* chapter.

### June 2015; hearing letter published by the ministry for trade and fisheries

In June 2015 the ministry publishes a hearing letter suggesting new special licenses; development licenses. The hearing letter focuses on further economic growth halted by market failure, the need to solve one or more of the environmental and area problems the industry is facing, discusses possible technological solutions, and suggests replacing formerly used scientific and independent committees by assessment through the fisheries directorate where professional discernment (faglig skjønn) is central.

In addition, it is stated that the purpose of the arrangement is to help the projects that means too high risk for the actors to fulfill alone. Another goal of the arrangement is to contribute to

make it possible to apply other areas than the sheltered Norwegian fjords, that is considered constrained and conflicted/contested areas with regards to aquaculture and other user groups, like traditional fisheries.

### November 2015; regulation for development licenses published and fisheries directorate opens for applications for development licenses

In November 2015 the fisheries directorate opened for applications for the development licenses, on the authority from the industry and fisheries ministry.
The general requirements of the regulation and assessment of the applications for the licenses included (Lovdata 2018):

- High degree of required investments in the projects.
- The projects should fill the gap between research and commercialization.
- Applicants´ description of the projects´ impact on the selected (by government) sustainability indicators.
- A plan for sharing experiences from the project with the rest of the industry.
- The advisory expert group that is used for other special licenses, specifically licenses for research and broodstock (´stamfisk´) to assess the applications, is not applied. Instead the fisheries directorate is given the task of assessing the applications.
- The development licenses are excepted from the traffic light system.

### The guidelines for assessing applications for development licenses

The ministry of industry and fisheries also have issued guidelines for assessing applications for the development licences (Fiskeridirektoratet 2016). The main features of the guidelines are:

- The general purpose is to stimulate to increased sustainability, a wanted restructuring and innovation and increased accumulated value creation in the industry.
    - ´Concretely´, the development licenses shall arrange for a technological ´push´ (´-løft´), delineated to only technological solutions (not ways of operating) and only address ´the big projects´ that the industry itself do not want to accept the risk of.
- To be allocated a license the project needs to entail *considerable* innovation. However, what should be regarded considerable innovation should be subject to discernment (´skjønnsmessig vurdering´), with the starting point of what is defined as

´development work´ by SSB, as suggested in the initial hearing letter (Regjeringen 2015).

- If similar projects are applied for, only the first project is given license.
- Projects already started can have licenses allocated.
- Possible obstacles regarding patents are considered and eliminated.

### The process of allocation of development licenses

The process of allocation is done in two steps, termed the "two-step" system (Fiskeridirektoratet 2017) according to the fisheries directorate. In the first step, the fisheries directorate decides who (of any applicant) will get a permit. This is in many cases of special licenses, as the development licenses, done through the assessment of an external council consisting of various members, such as scientists or representatives from commercial interests. However, in the case of the development licenses, this council is replaced by an assessment process conducted by the directorate itself. Directions for the assessment are made by the ministry of fisheries and trade.

In the second step, the ´coordinating authority´, as of today, the county municipality, processes the locality clearing. This means that the county municipality runs the process of coordinating considerations and final decisions with regards to current laws. Different sector authorities are making the final decision according to current laws, regulations, instructions and signals from the central authority.

The role of the county municipality is interesting because it also has responsibility for stimulating industry development within the county. The county municipality do, originally, not make any decisions regarding laws and regulations, but *coordinates* the process and keeps the dialogue with the applicant. This way of allocating authority has been termed Forvaltningsmodellen and Trøndelagsmodellen and has been initiated to improve the time of the locality clearing process. This means that if the application is not approved by any of the sector authorities (see fig.) the county municipality manages the dialogue with the applicant (Samforsk 2015).

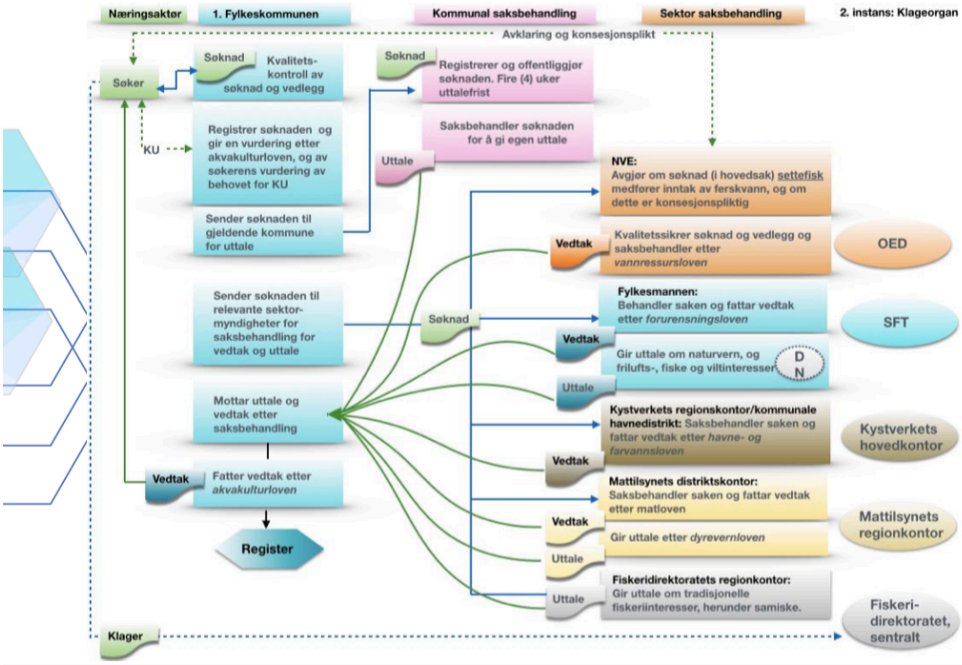



*Figure 6: Cooperation between county municipality and other authorities when clearing localities for aquaculture. Source: Samforsk 2015.*

### December 2017: More than 100 applications after deadline

By 08th December 2017, and after the application window had been closed (date), more than 100 applications had been issued. Today (29th may) more than 70 applications are being assessed, 9 have been approved and 35 have been rejected (Fiskeridirektoratet 2018).

## 2.3. The Case study´s selected applicants

Three applicants have been chosen among the total amount of more than 100. To categorize them (see illustration below) I used three dimensions from Fløysand & Jakobsen (2017), namely historical/chronological (left axis), technological (bottom axis: LBPS; Land Based Production Systems, CCS; Close Containment Systems and OAOS; Offshore Aquaculture Operations Systems), and in addition three main narratives (right axis) regarded central in norwegian aquaculture discourse. I also used the industrial path/layer development categorization presented above by Wicken (2009) (top axis) (abbr.: small-scale industrialization, large scale industrialization and R&D intensive industrialization). The cases were chosen with the limitation of the availability of information at the time of selection, and their internal differences with regards to central elements for development licenses and the categorization above. The categorization is intended as a principle categorization, and the use of four axises will hopefully demonstrate validity and that real cases principally fall into theoretical frameworks. However, for example The Welfare Fish farming is by far not a

LBPS, but still central parts of the complete process, as the supply of energy was intended to take place on land. As a consequence, the project has been adjusted towards the centre in the figure. Also, regarding the ´global demand narrative´, the similarities between Havmerd1 and The Donut are great as both, together with their membership organisations, address this narrative in their communication. This might not appear clearly from the figure.

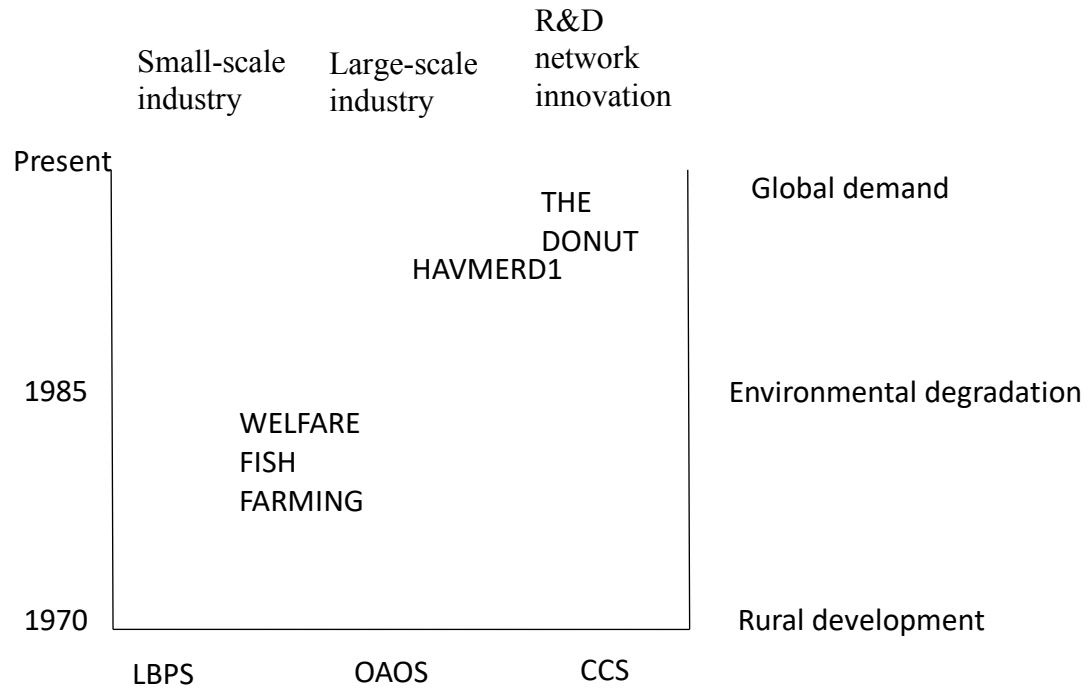



*Figure 7 Categorization of the selected applicants.*

### Applicant 1; Salmars *Ocean Cage 1*

The Havmerd1 is a concept applied for by shareholder company Salmar (they have applied and operate through a subsidiary called *Ocean Farming AS* – Salmar owns 93,4% - but for simplicity reasons ´Salmar´ is referred to in this thesis), one of the largest salmon farming companies in Norway.

According to the application (Einnsyn 2018), the Havmerd1 is an open pen solution designed for new and more exposed areas (OAOS). The application and practical testing (the cage has been put into the ocean) shows that it is not planned for open ocean areas, but ´more exposed´, or ´close to the ocean´ (havnære) areas (Einnsyn 2018, 4-5). The solution is partly developed in cooperation with MARINTEK in Trondheim and is based on (oil) offshore technology. Thus, it has also put emphasis on including the supplier industries in the technological solutions provided for the final cage and supporting operational elements such

as the well-boats (´brønnbåt´).
Further, Salmar admits that the technology will not reduce the spread, or risk for infection of lice, but that the handling of such problems will be better with the new construction. Besides, according to the application, the cage will be constructed for new localities in more exposed areas, so it could be put in areas with lower lice load, according to the application.
Further, the application is pointing out that the Havmerd1 can contribute to healthy food for a growing global population. Salmar is member of Sjømat Norge.

### Applicant 2; ØPD and Marine Harvests *the Donut*

**The Donut**, applied for by shareholder Marine Harvest (and technology developed by technology company ØPD from Bamble, Telemark) is a closed containment system (CCS) which according to the application is escape-safe and prohibits lice and other infections from the surrounding environment (Einnsyn 2018). The former because of water intake far below sea surface level. The installation also collects waste and surplus fodder, and contributes to good animal welfare through powered water currents running through the cages for the fish to swim in.
The cages can also, according to the application withstand exposed conditions in the sea but is not suitable for open ocean localization. The technology is patented.
The application is not approved due to disagreement with the directorate around number of (donut) units required to conduct the development process. The directorate argues that the number (5) of units it is applied for is not necessary, and thus fewer licenses should be given. Marine Harvest argues the whole setup of 5 units connected is needed for both technical and financial reasons.
Marine Harvest left their member-, employer and lobby organization Sjømat Norge due to incompatible differences in the view on sustainability. Instead they joined Norsk Industri which subsequently published a roadmap (Norsk Industri 2018) for a sustainable aquaculture and put great emphasis on the biological carrying capacity of the oceans, and the feed the world narrative.

### Applicant 3; Pure Farmings *Welfare Fish farming*

**The Welfare Fish Farming** (WFF) project is developed by a consortium of local industry located at Nordmøre, Møre og Romsdal, but formally applied for by Pure Farming AS, one of the participants of the consortium (Einnsyn 2018).

The solution is, according to the application, based on further development of partly known technical solutions like ´skirt, cleaning fish and freshwater´, but put together in new way as a ´fleet-solution´, that allows for a combining of today's open pen solutions with local non-medicational treatment capacity, and replace diesel power aggregates with locally produced wind power. The main focus is in lice, animal health and welfare, and optimal environmentally - and certified - farming of Atlantic salmon sold to the high (price) end market in Europe.

Besides relying on wind power, the project plans to use environmentally friendly batteries for storage og power, and thus claims to expand the content of sustainability in this particular case (of aquaculture).

The suggestion has a particular focus on animal welfare and refers primarily to concerns by the Norwegian Food safety Authority relating to ´sickness, mortality, lack of emergency preparedness and increasing salmon lice problems´ (p. 6).

Further, they emphasise the collection and destruction of lice before it can leave a location, and also without the use of well-boats which there is according to the application a great shortage of.

The applicant pure farming is member of the interest organization Salmon Group; an organization for small farmers in Norway, and produce high quality salmon, *label rouge*, for a niche market.

The Welfare Fish Farming concept was rejected by the fisheries directorate and did not success with appeals to higher juridical institutions.

## 2.4. Summarized; cases represent different views on contributions to sustainability

An important goal, besides the purely economic, is in all three cases presented as contributing to sustainability. The Ocean cage by relocating (and substituting technology), The Donut by closing the cage and WFF by using know technology and operating procedures in new ways. Thus, the technological solutions presented, and the narratives, are different (as shown in the categorization above). As such, they are well suited to assess what kind of solution and narrative the authorities end up selecting.

# 3. Methodology

## 3.1. Overall justification

The topic of this thesis addresses how relevant and empowered actors and stakeholders talk and write about both the *social*, the *economy* and the *environment*, and as such, their interpretations of different realities. This could in turn affect their goals and strategies. Yin (2011) advices researchers to acknowledge their epistemological location, because; ´having stated your epistemological location, you would then indicate how the design of your study and the selection of your research procedures reflected the stated position´ (Yin 2011, 18). In this thesis there is a need to address concrete issues like new technological solutions for farming cages, biological issues like salmon lice and in addition abstract measures like meaning and power. Critical realism `is a specific form of realism whose manifesto is to recognize the reality of the natural order and the events and discourses of the social world´ and holds that ´ These discourses are not spontaneously apparent in the observable pattern of events; they can only be identified through the practical and theoretical work of social sciences.´ (Yin 2011, 14). Thus, methodologically this thesis approaches an epistemological location of critical realism.

## 3.2. Research design

Holme and Solvang (1996) characterizes methodology as not a goal in itself, but a tool to reach other goals of investigational- and researching characteristic, and that these goals will be very hard to achieve without a basic understanding of methods. The goal of this work was to gain a qualitative and deeper understanding of the motivations, meanings, and goals residing with the involved actors and institutions in the allocation process of the development licenses. Graham (2005) defines research design as consisting of methods, approaches and theories, and if the goal is to understand meanings and discourse, then qualitative *methods*, involving (not exclusively) in-depth interviews should be applied. However, for this project document review and analysis was a natural first step as this was a rich source of data to study and look for discursive elements. This contributed to a great part to the robustness of the data. According to Friedman (2003), a desired *approach* towards representing reality is about robustness, yet simplicity. Thus, to achieve robustness the collection of data was especially oriented towards triangulation and as addressed above, richness. More in-depth clarification of robustness will be done in the *Strength and Weaknesses of data*-section. To achieve overall simplicity, to reveal only ´the essence of what is going on´ (Friedman 2003, 519), the main

strategy for data collection was the application of actor-network-theory data collection; to follow the actors. This was done especially in step two of the document analysis, the review of the hearing letters. Also, for simplicity I kept only to formal documents, and used media only as supporting source of information. To further select and analyse the data; their meanings and interpretations - especially discourses relating to power - critical discourse theory methods have been applied.

### Case study

Yin provides a concretization of variations within qualitative research and among these are *case studies*, which is briefly described as studying ´a phenomenon (the "case") in its real-world context.´ (Yin 2011, 17). Bryman describes case studies as detailed, intensive and concerned with complexity (Bryman 2008, 52). A case study approach is therefore preferred for this project, as the main objective is to study a ´real-world´, and complex process of the issuing of the development licenses.

## 3.3. Quantitative and qualitative research approaches

Probably the most central distinction of methods in social science is the distinction between qualitative and quantitative research. Babbie (Babbie 2004, 26) claims that ´the distinction between quantitative and qualitative data in social research is essentially the distinction between numerical and nonnumerical data´, whereas qualitative data are varying kinds of nonnumerical data. Miller and Brewer advocate that through qualitative research ´people are seen as ´meaning endowing´ and discursive, such that they have the capacity to endow the world with meaning and are able to articulate these meanings when asked.´ (Miller & Brewer 2003, 239).

The choice of using qualitative data and case study can thus primarily be argued for by focusing on how power-laden discourses and narratives affect the process and outcome of the governmental formal initiative to both strengthen the aquaculture industry (economically and technologically) and take responsibility for environmental problems in the industry.

## 3.4. Data collection and analysis

The figure below illustrates the principal choices regarding approach (addressed above) in the data collection and sampling procedure. This will be further elaborated below.

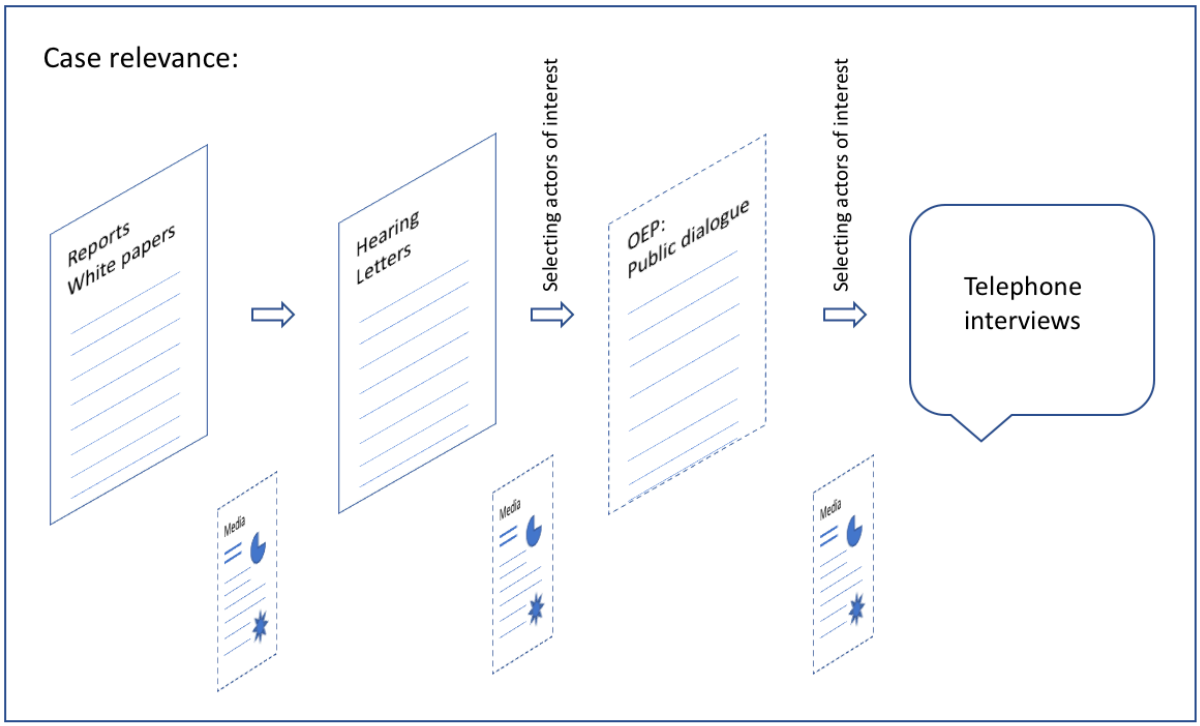



*Figure 8: Principal illustration of the data collection process that was conducted; chronologically from left to right, within the frame of a case study. Other ´media´, as the various authorities´ websites and digital newspapers were used as supplement.*

## Data collection

Among the data collection and analysis methods that has acquired authority and reputation within qualitative research are unstructured interviewing and discourse analysis, and that these methods gather data that can be characterized as ´soft´, ´rich´ and ´deep´, and are often extracted from material such as texts and discourse (Miller and Brewer 2003, 239). As this subject contains many narratives and views, and a great deal of the accessible data is of this nature (industrial visions, white papers and governmental strategies), the unstructured approach towards discourses appear to be of central importance. Jäger and Maier recommend, when conducting critical discourse analysis, to choose a discourse plane - which in this case I define as the aquaculture industry and politics - and within this plane they recommend selecting a discourse sector (Jäger & Maier 2009, 48). I chose public formal documents as white papers, reports and hearing letters as primary a source and used media (websites and newspapers) if further information was needed. The formal papers are rich in data, and thus allows for effective data collection and a greater extent of objectivity and reliability can be expected.

Yin address the task of effective and reliable data collection. ´The complexity of the field setting, and the diversity of the participants are likely to warrant the use of interviews and

observations and even the inspections of documents and artefacts. The study´s conclusions are likely to be based on triangulating the data from the different sources. This convergence will add to the study´s credibility and trustworthiness.´ (Yin 2011, 9). In this case the data collection was done through two main activities, document inspection and interviews.

### Document selection and investigation

My starting point for data collection was two-fold (document overview is presented in a table below). First, I wanted to gain a long-term and deep understanding of the initial publicly accessible arguments and analysis through secondary data. The trailing of the relevant actors and ´their´ documents uncovered that the SINTEF-report (2012) seemed to be an initial starting point (providing value creation as a strong collective symbol/topoi), of both the national strategy for the oceans (and aquaculture), other later reports and white papers, and thus the hearing process. relating to Latour and ANT this report seems to be one of the starting points for the controversy and the following process, and appeared to be a good point to start, following the principles of ANT. Asdal (2011) have pointed to the hearing process (in general) as a governance ´technology´ used to send complicated issues or processes out in the public for feedback and scrutiny. Since the case of the development licenses was sent on such a hearing, the initial hearing letter and the following replies was also used as source of data. In addition, to further validate the findings from the previously mentioned documents, publicly accessible communication between all relevant actors and the public management in the ´EInnsyn´ (Previously *Offentlig Elektronisk Postjournal/OEP*) *(einnsyn.no),* was referred to for comparison, for example requests for closer dialogue with the fisheries directorate about the applications. EInnsyn was also used to follow possible allocations of licenses during the work with the thesis.

### Use of secondary data

Frankfort-Nachmias and Nachmias points out that secondary data have long traditions in social science and highlights three basic factors that encourage use of secondary data. The first of them being conceptual-substantive factors, meaning that secondary data can have firm and important meaning for the phenomena at hand. Since the selected documents are both public, have been produced with great effort, and they are legitimized (in different ways) by their formal properties (both the sender and the writers) they can be said to fulfil this expectation. Also, according to the authors these data can be the only available data, and also, they ´enable one to search through a wider range of materials covering larger areas and longer

periods of time than would be possible using only primary data´ (Frankfort-Nachmias & Nachmias 2008, 277), and thus we can better understand the historical context, and in addition use them for comparison (between the documents). The public documents selected satisfy these criteria as well. And especially the possibility to compare the chorological line and their possible interlinkages was available.

Second, methodological factors can pose an argument for secondary data. Frankfort-Nachmias and Nachmias thus points out that secondary data produced over a long period of time can be compared with primary data, and thus in reality do a follow-up study (Frankfort-Nachmias & Nachmias 2008, 278). By referring to the documents in the interviews and asking for understanding and interpretations of both how the respondents understood documents formulate by others, and in addition ask for why the expressed themselves as they did in their own documents, contributed to rich data.

### Document overview

The documents can be divided in four main types (groups) and two main sources (listed chronologically top – bottom), see next page;

*Table 1: Document categorization (data collection)*

| **TYPE:**<br>**SOURCE:**<br>**Year:** | Report/strategy<br>Non-gov./publ. | Whitepap./Strategy<br>Government | Hearing doc.<br>Ministry/Non-gov. | Wr. dialogue<br>OEP |
|---|---|---|---|---|
| 2008 | | (*Stoltenberg WP*: `Et nyskapende og bærekraftig Norge (2008/-09)) | | |
| 2012 | *SINTEF-report:* ´Verdiskaping basert på produktive hav i 2050´ (aug. 2012)<br>*National R&D-strategy proposal: ´Hav21`* (Nov. 2012) | | | |
| 2013 | *NOU 2013: 10* Naturens goder – om verdien av økosystemtjenester (August 2013) | *Stoltenberg WP:* ´Verdens fremste havnasjon` (March 2013) | | |
| 2015 | | *Solberg WP:* ´Forutsigbar og miljømessig bærekraftig vekst i norsk lakse- og ørretoppdrett (March 2015) | *Hearing letter from ministry of trade and fisheries:* ´Forslag om å opne for tildeling av løyve til akvakultur til utviklingsformål´ (June 2015)<br><br>Various hearing replies (June – august 2015) | *Formal dialogue;* through OEP (2015-2017) (now ´eInnsyn´)<br><br>Formal complaints to the allocation of the Salmar Ocean Cage from NGO´s. |

These documents were chosen because they represent rich sources of data with high possibility for gaining a deeper understanding of the issue. Also, they reflect different interests of the different parties and as such have clear explicit or implicit statements regarding values, interests, preferences and more, and thus contributions to different discourse strands and narratives. As such, they also could reveal strategic framings, interdiscursivity and discursive entanglements.

### Primary data collection; telephone interviews

Telephone interviews were used as primary data collection and as a follow up method to understand more, and go in depth, from the review and analysis of the secondary data (overview of respondents in telephone interview is presented in table below). Primary data can thus be used to clear up uncertainties and last but not least to allow the actors to speak directly in their own words about the issues at hand. 19 interviews were conducted, which is a relatively high number. However, in order to stay true to the principle of following the actors, this was needed. But not all interviews contributed with relevant findings.

Telephone interviews was selected as interview type. Parfitt advocate that ´the match between research topic, resources (including time) and the use of a particular survey technique is one that should be made carefully.´ (Parfitt 2005, 101). Also, Barbour recommend considering telephone interviews with ´elites´ being busy and otherwise might reject to be approached for interview (Barbour 2014, 128). The main reason for selecting telephone in this survey was that the respondents was both spread around the country and also appeared to have very little time available, and thus not always actually available at the pre-appointed time. Parfitt also emphasise that telephone interviewing could be a good compromise between available techniques. One of the main reasons in addition to the ones mentioned is the avoidance of the responses being influenced by the presence of another person (Parfitt 2005, 103).

The interviews were conducted as semi-structured. Barbour points out that the semi-structured fashion of the interview is ´crucial´ when the interviewer wants to withdraw data (from respondents) that are ´perspectives of salience´ to them, and thus avoid dictating the direction and contents of the interview. Barbour continues to elaborate that in the semi-structured technique, there as variance in the interviewer's personal style as to how rigid the interview guide is shaped in advance. The important thing according to Barber is to balance the research agenda (including the balance between over-arching questions and more detailed) with a room for the respondent to address insights and reflections. In the interview guide it was left room for alternative questioning.

Asking questions to former ministers, and individuals with a busy agenda and important positions can be intimidating and difficult. It was important throughout the interviews to keep this in mind. Questions can be understood as too little thought though, uninformed, and the like. Also, the interviewees might feel threatened by the academic nature of the interview. Related to this, Barbour also addresses that it is ´essential that the researcher ´own´ the questions, which enables the interview to work in a way similar to a regular conversation (Barbour 2014, 120-121, 128).

Regarding the telephone interview guide, it is warned against too rigid and long schemas for less structured interviews, because ´we are (…) concerned with eliciting in-depth accounts from people, with room for them to select which aspects they wish to emphasize.´ (Barbour 2014, 113). The questionnaire was design for approximately 20 minutes of interview and this seemed to suit the respondents fine. Starting with the least sensitive or challenging questions (and thus rather finish), not ask leading questions, prompting (to encourage the respondent to answer more in-depth by using certain que-words) and leaving room for more (planned) structured and concrete questions are advices by Barbour (2014) that was used in the preparation and conducting of the interviews. Unique interview guides were made for each respondent, with the goal to achieve highest possible relevance for both the study and the respondent.

Interviews; respondents contacted, appointments, rejections and accomplished interviews, and respondent´s role in organization.

*Table 2: Overview of respondents for telephone interview. See highlighted box for participation.*

| | Media | The cases | Relevant individuals | NGO´s | Municipalities | Stakeholder org´s. | Research-/prof. inst./agencies | Suppliers/ Partners | Authorities |
|---|---|---|---|---|---|---|---|---|---|
| **Høringen** | | | | | Frøya kommune (OF) [a] Jan Otto Fredagsvik, Senorrådgiver for Rådmannen | Norges Fiskarlag Jan Henrik Sandberg, Seniorrådgiver | Miljø-direktoratet Atle Kambestad. Seniorrådgiver Fiskeseksjonen | | Fylkesmannen, Seniorrådgiver. Anonym representant. |
| | | | | | | Norske Lakseelver, Erik Sterud, Fagsjef | | | Sør-Trøndelag Fylkeskomm. |
| | | | | | | Sjømat Norge | Veterinær-instituttet | | |
| **Case-relatert** | | Havmerd1/ Salmar Alf Jostein Skjærvik, Samfunns-kontakt | | Salmon Camera (OF) [d] Rune Jensen, Styreleder og Daglig leder | Frøya kommune, Salmarfondet (OF) [b] Knut Arne Strømøy, Seniorrådgiver | Norsk Industri (MH) | | Kongsberg Maritime (OF)[e] | Nordland Fylkes-kommune (MH) |
| | | Pure Farming/ Welfare Fish Farming Per Gunnar Kvenseth, Prosjektleder | | Norges Miljøvern-forbund (OF) [d] | Smøla kommune (PF) Einar Wikan, Rådgiver | Salmon Group (PF) | Havforsknings-instituttet[b] Terje Svåsand, Forskningssjef og Programleder Akvakultur-programmet | ØPD, The Donut (MH) Nils Johan Tufte, Sjef forretnings-utvikling. | Møre- og Romsdal Fylkeskom. (PF) |
| | | The Donut Marine Harvest / ØPD | | | Herøy kommune (MH) | PF = Pure Farming MH = Marine Harvest OF = Ocean Farming | | | Mattilsynet [f] Kristin Vassbotten, Seniorrådgiver |
| | | | | | Bamble kommune (MH) | | | | |
| **Aktiv ifm utlysningen** | | | Elisabeth Vik Aspaker [c] Høyre Daværende Fiskeriminister | *) Lite aktive ifm relevant case | | | | | Fiskeri-direktoratet Anne Osland, Seksjonssjef Tildelings-seksjonen |
| | | | | | | | | | Nærings- og fiskeridep. Silje Myklebust Wangen og Christopher Grøvdal Rønbeck, Senior-rådgivere |
| | | | | | | | | | Kystverket Tormod Engen, Rådgiver, Tilsyns-seksjonen |

= not contacted

= appointment for interview

= interview accomplished

= withdrawn x 2

= Rejected interview

= Uncertain if can / want to be interviewed

### Data sampling; Critical discourse analysis – no typical method for data sampling

The thesis´ central theme is about discourses in Norwegian aquaculture. The task of finding the sources, uncover the networks they are shaped and channelled through, seemed central for the problem definition of the thesis. In other words, the data sampling was important. However, Wodak and Meyer points out that when it comes to methodology, in critical discourse analysis, sampling (of data) is particularly worthy of discussion, and that most studies analyse ´typical texts´, but also that what could said to be typical in different social situations is vague (Wodak & Meyer 2009, 23). Also, when it comes to gathering data, and thus selecting sources, Wodak and Meyer states that CDA is no particular theory or method, but rather, ´multifarious, derived from quite different theoretical backgrounds, oriented towards different data and methodologies (Wodak & Meyer 2009, 5); ´there is no CDA way of gathering data, either´, and that most of the approaches to CDA do not explicitly recommend sampling procedures.´ (Wodak & Meyer 2009, 27).

#### *Data sampling by following actors; ANT*

For data sampling I have instead chosen the principles used in Actor-Network Theory. This theory has specific recommendations when it comes to data collection and sampling in controversial social questions.

Latour suggests that society and the social should be understood as the *connected elements* that is *united by* the *connectors* and non-social elements, like the economy, the material world like landscape and the oceans, but also actants like political documents or technological solutions. In other words, ´the social is shifting through connectors and associations, and this is called translations´ (Latour 2005, 133). Also, the shifting *networks* can be traced through these translations. This theoretical view is then of relevance because it highlights the unpredictable (social) processes that temporarily arises as a consequence of the above-mentioned connectors, and that can be defined as discourses, narratives, storylines and ideas. These translations also then are similar to what Hajer (1995) and others term ´transformations´ of narratives/storylines/ideas.

To find answers (to research questions), and in this case more relevant – to track down where the answers can be found, ANT uses social controversies that arises in constant formation and reformation of social groups as a starting point (Latour 2005). In this case the controversy has at least three starting points; the denial to Salmars application for green development licenses,

the withdrawal from Sjømat Norge by Marine Harvest, and the controversy around the SINTEF-report *Verdiskaping basert på produktive hav I 2050*. In addition, of course there are numerous controversies to be found in the hearing letters. For example, the controversy over the role of science and scientists in the assessment of the applications and the assessment of biological sustainability. To learn about these controversies, how - and more importantly where - they develop and who the actors are that have a role in the controversy, one should follow the actors (Latour 2005, 33). Around these controversies one should look for, and to understand the social processes, five *uncertainties.* However, these five uncertainties are central part of the analytical framework for ANT, and instead the data will be analysed through critical discourse analysis (for reasons explained below), and the uncertainties of ANT will not be discussed more in detail here.

### *Critical discourse analysis (CDA); to analyse and investigate struggles for hegemony*

This case; the initial processes, the announcement and allocation of development licenses is, as has been addressed earlier, heavily laden with political and private actors and stakeholders´ values, interests, and their access to influence and employ power. Through media, traces of highly different opinions, struggles for hegemony for interpretations of sustainability, technology, rights and values, have been highly apparent. In the data collection and analysis my aim thus was to look for lasting traces of these struggles and conflicts of what interpretations, values and interests that took part, withstood, became hegemonic and thus could contribute to an industrial lock-in or sustainable transition.

Critical discourse analysis, CDA, is a sub-field of discourse analysis. Wodak and Meyer stress that by *critical* discourse analysis it is not necessarily meant that the subject of investigation has to be seen as a burden for society, consist of mainly negative connotations or valour or otherwise have somewhat *asocial* features; ´Any social phenomena lends itself to critical investigation, to be challenged and not taken for granted.´ (Wodak & Meyer 2009, 2). In addition, critical discourse analysis is ´characterized by the common interest in de-mystifying ideologies and power through the systematic and *retroductable* investigation of semiotic data (written, spoken or visual). CDA researchers also attempt to make their own positions and interests explicit while retaining their respective scientific methodologies and while remaining self-reflective of their own research process´ (Wodak & Meyer 2009, 3). The position this thesis has developed from is addressed in the clarification and justification of the study.

## 3.5. Analyzing the data

Arriving then at methods for analysing discourses, Jäger and Meier outlines ´concepts and methods´ for facilitating (critical) discourse analysis (Jäger & Maier 2009, 45-56): They include discourse terminology, and a ´a little toolbox for discourse analysis´.

### Chosen discourse elements to look for

Relating to terminology and thus the understanding and order of importance of the data, I looked in particular for *special discourses,* which is discourses in science that feeds into *interdiscourse,* which is non-scientific discourse *and discourse strands*, which are subtopics of a discourse that are more concretely formulated than the abstract discourses (Jäger & Maier 2009). I will also look for *discursive strategies* (Hyland and Paltridge 2011), whereas *strategy* is referred to as plans of discursive practices adopted to achieve a particular social or political goal. The most relevant strategies are *argumentation strategies*, used to justify positive or negative attributions (effects of negative externalities), and *framing strategies*, that can be described as means of expressing involvement and position in a case for example through narration. Framings can further be described as *strategic and undeliberate framings,* meaning that these framings can be of intended motivation, or (undeliberate) of unconscious and/or unintended framing (Christiansen 2013). Strategic framing can as such for example be to address the issue of pollution in car traffic as regarding issues only hydrogen cars can solve (and not electrical cars).

This has been the most important aim in the analysis because it is a way of categorising, concretizing and understanding the discourses and formation of narratives. I also wanted to narrow down the *discourse planes*, or ´social locations´ (as politics and science) of discourse (Jäger & Maier 2009, 48), and the *sectors* of the planes (for example the formal reports and white papers), where discourses arise from. I chose the ones with the most formally committing style, the reports and white papers, to be able to secure a high reliability in the data. In the same way, *collective symbols/topoi* (warrants for a certain conclusion (Hyland & Paltridge 2011, 49-50)*, discursive context* (related to time-space dimension), *relevant global discourses* (feed the world) and *discursive positions* (political ideology) (Jäger & Maier 2009, 48-50) have been relevant to look for in the analysis, because they can be said to ignite, and set direction, or strengthen/weaken the following process or it´s actors or coalitions.

### Practical step-by-step implementation

The six-step recommendation for analysis provided by Jäger and Maier (Jäger & Maier 2009, 53-54) has accordingly been applied. In this process, *argumentation, vocabulary, symbols and interpretations, sub-topics* as *economic* (national and company specific) and *technological* (development, patents and development) arguments, frequency of the sub-topics, arguments and especially how they are articulated and put together (´technological development for a sustainable industry´, ´solve one or more of the area- and environmental problems the industry is facing´) of special interest. Also, since this process have been going on over time, the diachronic aspect and the consistency of some of the above-mentioned elements have been of particular interest in the analysis.

Lastly, the possible *discursive entanglements and knots*, have been of interest to find. Discursive entanglements mean the connection of discourses or discourse strands with each other, that could allow for easier strategic framing or particular narratives, story-lines, discourses and finally hegemonies to be sustained.

In full detail, Wodak and Meyer also advice to look for context, text surface, rhetorical means, content and ideological statements, other possible peculiarities and overall messages of the selected texts (which in this case also have been tried validated through the interviews) (Jäger & Maier 2009, 55).

### Narratives, storylines, ideas, coalitions and mobilization of power

As addressed earlier (Hajer, 1995), discourses also appear in the form of narratives, storylines ideas, and also form coalitions. These elements will thoroughly be discussed in the theory chapter but also analysed through the methodology presented above.

Power and the mobilization of it will also be addressed theoretically, and what can could be visible traces of power mobilization are also sought after in the analysis. The elements found will be presented in the findings chapter.

## 3.6. Strengths and weaknesses of data

In general, qualitative research is subject to critique for various reasons. Bryman (Bryman 2008, 391-392) summarizes the critique of qualitative research as being too subjective, difficult to replicate and generalize, and the possible lack of transparency.

### Subjectivity, replication, generalization and transparency

In this case, through the implementation of critical discourse analysis, there is an intent of being critically subjective. The considerations for doing this the right way and with the right motives have been thoroughly addressed. This does however not safeguard against other kinds of subjectivity. The most central problem pointed out by Bryman is the risk for subjectively following paths of information. This have been attempted avoided by the ANT-method of sampling data and letting the actors and preliminary findings guide this path of information instead of myself.

Regarding the issue of replication, Bryman explains that the researcher is so central in the data collection process that a replication of the same data findings would be almost impossible. In this case, both sources (documents and respondent selection) are, even if impossible to quantify, as much a result of the data sampling method as my individual assessments and weighing of the relevance of the data. In this perspective the data should be possible to replicate.

When it comes to generalization and the problems of lack of quantifiable data, especially when unstructured interviews are done, reliable generalizations to larger populations are not possible. But as Bryman argues, the intent of qualitative research is to test the strength and coherency of the findings with relevant theory. And I find this especially relevant to claim for case studies.

Lack of transparency, meaning lack of insight into how respondents was chosen, is the last point of critique Bryman points to. For this study, the main criteria for interviewing was who had sent hearing answers and thereby taken part and showed interest in the process of allocating development licenses. These choices were also seen in connection with relevant published reports, white papers and strategies. Also, the applications of the companies that wanted development licenses was used to invite participants. Lastly, the institutions formally involved in the allocation process was invited to be interview. Thus, lack of transparency should not pose a major issue for this thesis.

### Validity of the data

Yin further states that the key to controlling the quality of the findings is to assess the validity: ´A valid study is one that has properly collected and interpreted its data, so that the conclusions accurately reflect and represent the real world (or laboratory) that was studied´ (Yin 2011, 78).

Maxwell have provided a 7-strategy checklist for assessing validity in qualitative studies. The most relevant and applicable for this study is *rich data*; to cover fully the field observations and interviews with detailed and varied data, *respondent validation*; to obtain feedback from the people studied, to lessen the misinterpretation of their self-reported behaviours and views, *searching for discrepant evidence and negative cases*, to test rival or competing explanations, *triangulation*; to collect converging evidence from different sources, and *comparison*, to compare explicitly the result across different settings, groups, or events (Maxwell 2009, 244-45).

To achieve a satisfactory level of rich data, relevant white papers, reports and strategies, and all the hearing documents for the hearing in question were thoroughly assessed. Also, all public documents relating to each case´s application was studied and prioritized for further use.

Respondent validation was achieved through the interviews through questions with the aim to reveal possible misinterpretations and such from the document analysis. Also, all transcripts have been sent to, and reviewed by each respondent.

Discrepant evidence and negative cases is a process that could happen in different parts of the study (Maxwell 2009, 80-81), also the discussion and the conclusion. In the data collection it was done by probing through the interviews, reading documents critically, and paying special attention to rival opinions, meanings and interpretations. However, in some cases the respondents asked to reply together with a colleague. This dual set-up could lead to other responses than if the respondent was alone because of for instance loyalty to their organisation or institution. However, this loyalty could also lead to more ´discourse oriented´ responses, and higher value for the data analysis. In addition, worth addressing, is the respondent´s sensitivity to the issue at hand. It has in some cases been difficult to have respondents to accept the invitation as respondent and answer questions.

Triangulation, ´the goal of seeking at least three ways of verifying or corroborating a particular event, description or fact being reported by a study.´ (Yin 2011, 81) was achieved in the same way as rich level of data. The data was mainly collected through three principally different data sources; 1) Documents; reports, white papers and governmental strategies, 2) digital communication; webpages (fisheries directorate) and publicly accessible dialogue (OEP) and 3) interviews with selected respondents.

The comparison is done by comparing the overall results with other similar (natural resource management) cases / incidents.

### Weakness of secondary data

Frankfort-Nachmias & Nachmias (2008) also points especially to weaknesses of secondary data. The first important factor they mention for this study is access to these data. On the one side there is high access to public documents as the reports, white papers and hearing documents. However, as I pointed out earlier, the public documents from the OEP are often sencored because of for example business sensitive character of the content. This way important information has been unavailable in this study. This also relates to the other relevant problem addressed by Frankfort-Nachmias and Nachmias, which is insufficient information about the data and the possibility for bias, errors and external and internal validity (Frankfort-Nachmias & Nachmias 2008, 279). In this study, all the secondary data have low requirements for documenting the truthfulness of the information. References, sources and documentation are given various attention. Both incompleteness of data and lack of information of data can in this case contribute to bias and reduced external validity.

### Transcription from telephone interviews

Barbour (2014) states that a verbatim transcription is useful as a resource that allows in a good way to return to data in later stages for further analysis. This was a main point for me in this phase, and in addition to capture, as wholly as possible, the original spoken meanings and nuances for the *discourse analysis*. This was also of importance as there was done no recording of the interview (see explanation under *practical challenges*), and last but not least because every interview was sent to the respondent for review. Thus, the interpretation of the answers would still be done by the respondent him- or herself. This was also done to avoid reification, or constructing meanings that weren´t there, from the transcripts. Finally, Barbour address gestures, facial expressions and the like. This was excluded as a source of both bias and information as the telephone interviews were consequently chosen as interview method, and invitations from some of the respondents to meet in person was thus politely declined.

## 3.7. Limitations of the study

### Practical challenges

Practical issues are emphasised by Bryman (2008) as the last important influence on research and the subsequent choices of the researcher. It is not allowed in Norway to store data digitally when doing social science, that can identify individuals without a written agreement with the data storage provider. This lead me to the choice of taking notes from the interview

during the interview instead of trying to establish written agreements about this with Apple, or companies making recording devices for Apple phones. The consequence of this was that the notes initially could misrepresent the actual wordings of the respondent, and the following transcription could also represent the same source of poor data quality. However, this has been compensated for by sending each transcription to the respondent for review and adjustments. Several were done, but with no significant changes to meanings, etc.

### Narrowing down the study´s focus area

The study will mainly address environmental and economic elements related to sustainability. First and foremost because as the findings show, this has been the core of the controversies regarding the development licenses. In addition, in 2015, there was set up an arrangement called *Havbruksfondet,* where the income to the state from future growth in the aquaculture industry should be divided by 20% to the state and 80% to municipalities and county municipalities (Fiskeridirektoratet 2017). This mechanism seems to work satisfactory to transfer economic surplus back to the local communities, and the level of conflict initiated locally seems to be smaller. However, the disputes regarding disposal of areas and local pollution for example between traditional fisheries and aquaculture is present and was addressed in the interview with *Norges Fiskarlag*. They were however surprisingly positive to the idea of development licenses, various solutions, and was also cooperating with Sjømat Norge on different arenas. This can be explained by the fact that traditional fisheries are not seen, even by the fishermen themselves as an alternative to replace the oil and gas industry because of historical problems with overfishing and regulations following this.

## 3.8. Ethical issues

It is important for the researcher in the social sciences to be aware of factors that influence his or her research. Bryman lists values and practical considerations.

Regarding values Bryman elaborates that the intention of the social sciences has always been to keep personal beliefs, interpretations, preferences and other elements that constitute our values out of the ´frame´ when doing research. But he continues by admitting, so to say, that the social science community has come to the recognition that this is probably impossible. Then the most central issues to be aware of this in the research process, and make efforts to not interfere or bias the research in basically all stages of the process, from choice of research area to the conclusions (Bryman 2008, 24-25).

For this thesis I am aware that both choice of research area and the formulation of research question has personal implications.
In addition, as I have addressed in a previous part of the chapter, this thesis is a critical discourse analysis. And as Bryman, who refers to feminism and the need to be consistent with the political need for women, and thus is biased, Also Wodak and Meyer emphasize that a critical stance is by far free of obligations or reflexivity; ´In any case, CDA researchers have to be aware that their own work is driven by social, economic and political motives like any other academic work and that they are not in any privileged position. Naming oneself ´critical´ only implies specific ethical standards: an intention to make their position, research interests and values explicit and their criteria as transparent as possible, without feeling the need to apologize for the critical stance of their work´ (Wodak & Meyer 2009, 7).
This approach could be termed conscious partiality – a partial identification with the researcher´s objects, according to Bryman (Bryman 2008, 25). In this case the partiality is based on the carrying capacity of nature; that there seems to be a need to employ a strong sustainability approach, to societal questions.

# 4. Theory

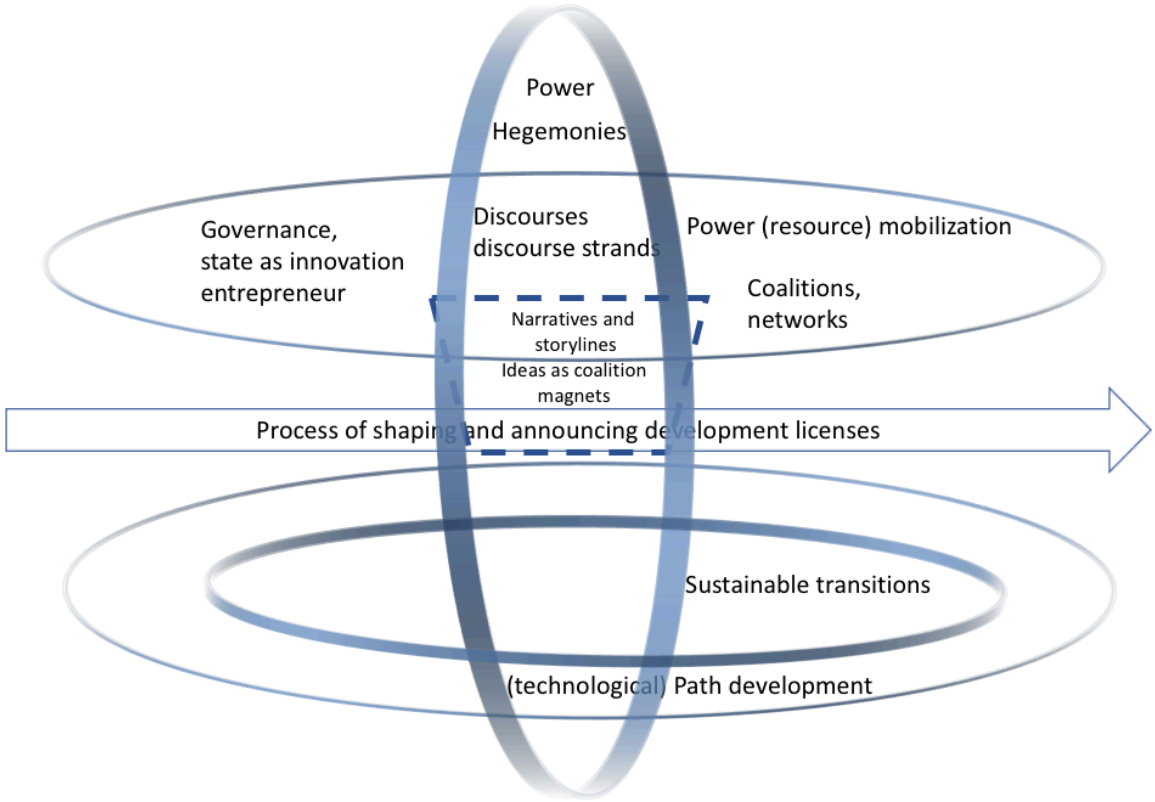



*Figure 9: Principal suggestive theoretical construction of factors affecting the process of announcing the development licenses.*

In the introduction, a brief discussion of industrialization and nature, different industrial paths in Norway, and central narratives and technological development of the norwegian aquaculture was presented. A battle for policy hegemony, and the subsequent alternatives for path development or sustainable transition seems to take place in, and around, the aquaculture industry. In particular this appears to be the case in the initiation of the development licenses, as it is initiated by government with great expectations to technology and industrial development, and at the same time with a necessary emphasis on natural sustainability, but different interpretations on what it is and how to get there. The figure above is a principal overview and ´working framework´ of the literature applied, and how I see them in relation to each other and the process of announcing the development licenses. The vertical circle illustrates the macro surroundings, or the landscape level (but only relevant elements) from the Multi-Level Model addressing sustainable transitions (Geels, 2004). These elements are not addressed *per se*. However, more operationalized elements of power mobilization are included at the more concrete level (top, horizontal circle) and traces of this power mobilization is addressed and searched for in the data. The top, horizontal circle represents

the epistemologically abstract elements relevant to the thesis and the development license process. The outer lower circle represents the physical (elements of) technological paths developed in norwegian historical economic development. The dotted line including narratives, storylines, ideas and coalition magnets represents the most concrete, approachable, and manageable elements of discourse that can be applied and to a greatest extent studied in case settings. The inner lower circle represents a possible sustainable transition, but is narrower, implying a more challenging approach to diminish negative externalities and thus in principle would be harder to achieve.
In the following, the background theories providing this framework will be reviewed.

## 4.1. Background theories

### Planetary boundaries

The concept of *planetary boundaries* (PB) mentioned in the introduction was introduced by Rockström et al. (2009). They warn that humanity is now on its way into a geological epoch that could be called the Anthropocene epoch because ´pressures on the Earth System have reached a scale where abrupt global environmental change can no longer be excluded´ (p. 1). They suggest an approach to global sustainability termed planetary boundaries within which humanity can operate safely. If these limits are exceeded, the consequences are expected to be catastrophic at a continental and even planetary scale for humans and their well-being. Nine boundaries are identified and among them are climate change, biogeochemical nitrogen (N) cycle and phosphorus (P) cycle and the rate of loss of biological diversity. For climate change, biological diversity loss and changes in the global nitrogen cycle it is estimated that the borders already are transgressed, and that all boundaries are interdependent. The proposed concept implies ´shifting our approach to governance and management, away from the essentially sectoral analyses of limits to growth aimed at minimizing negative externalities, toward the estimation of the safe space for human development´ (Rockström et al. 1).

### Hegemony for defining nature

In *Nature* (2005), an in-depth discussion of human and non-human phenomena including resources, Castree addresses the issue of *hegemony*. The term according to Castree, who is referring to marxist Antonio Gramsci, is related to varying degree of *lending assent to forms of government* with the consequence of limited freedom and implications on other sides of life for humans. Thereby, powerful groups do not need to use force, but can uphold their interests

through persuasion and assent. Thus, according to Castree and Gramsci, the process of establishing a hegemony becomes what groups in society with the ability to do so, advocates towards others not as capable, as ideas, beliefs or values that are good for the first group but also as being preferable for the latter, or the society as a whole. These hegemonic ideas then become embodied in policies and institutions.

Also, according to Castree, Raymond Williams (Marxist cultural critic) following up on the ideas of Gramsci, hegemony then becomes ´a lived system of meanings and values - constitutive and constituting – which, as they are experienced as practices appear as reciprocally confirming´. Castree then argues that nature is present in all our collective thoughts and practices and thus, the way it is understood is ´manifestly important´ (Castree 2005, 19). In this way Castree sees ideas about nature in the human world as somewhat taken for granted in our societies. But the ideas have a history, geography and sociology to them; they always originate in an organization, spread through space and to some extent reflect the agendas of the proponents of the ideas.

### Industrialism and nature

McLaughlin address the relation between nature, humans and industrialism as a path from scarcity to abundance through a domination of nature through science and technology, in which the former could be shaped in the way we preferred. Further, he claims that economies are the dominant factor in determining a society´s interaction with nature, and that the core of this activity is attempts by businesses to makes profit and governments facilitation the process for example by changing patterns of land use or pollution of air and water (19). In an industrial society, McLaughlin advocates that the relations between the economy and nature rests on either an ideal ´mode´ of making decisions that rely on markets, and/or individual decisions, or the other ideal ´mode´ where decisions are made through ´direct collective social choice´, involving ´some form of administrative decision-making procedures´ (…) typically taking ´the form of bureaucracies´ (McLaughlin 1993, 22).

### Using hegemony to select technology

Feenberg states that hegemony also is a relevant factor in technological design in a society, and that the cultural horizon of technology is one of the foundations of social hegemony. Feenberg defines hegemony as ´domination so deeply rooted in social life that it seems natural to those it dominates´, and adds to the explanation; ´one might also define it as that aspect of the distribution of social power which has the force of culture behind it´, and further

elaborates that he uses ´horizon´ as a term for ´general assumptions´ forming an ´unquestioned background´, and that some of these horizons support prevailing hegemonies. Feenberg further clarifies through a metaphor from centuries ago where the peasants could revolt in the name of the King, under God, the only power they knew, and argues that technocratic rationalization plays the same role, as the peasants, today (86). The relation is mutual according to Feenberg, as he further states that the dominating interests are the one selecting technologies among all possible ´configurations´, and that this selection process is guided by social codes ´established by the cultural and political struggles that define the horizon under which the technology will fall. Once introduced, technology offers a material validation of that cultural horizon. Finally, Feenberg states that a critical theory of technology can uncover this horizon, demystify the illusion of technical necessity, and expose the relativity of the prevailing technical choices´ (Feenberg 1999, 87).

## Hegemonies for sustainability

### *Views on biological and ecological sustainability*

Sustainability as a term has gained popularity over several decades but was given greatest with the Brundtland report Vår felles framtid (WCED 1987).

Today, one of the most scientifically robust and also cross academic contributions to a new operative understanding of biological or ecological sustainability is the concept of resilience, derived from the above-mentioned concept of planetary boundaries. The term, in this context means to find a ´space´ to operate for humans within the before mentioned planetary boundaries without overstaying natural thresholds of nature (Steffen et al. 2015). The Stockholm Resilience Centre (SRC) have identified seven principles for applying resilience thinking (Stockholm Resilience Centre 2018). They are: 1) Maintaining diversity and redundancy. This leads to an ´insurance´ for resilience through a surplus of system components, according to SRC. 2) managing connectivity, to both enable distribution of biodiversity to recover from shocks, but without arranging for the spreading of disturbances, 3) managing slow variables and feedbacks, to avoid thresholds being passed over time, 4) foster complex adaptive systems (CAS) thinking, to recognize that there are several levels of connectivity and to accept uncertainty and unpredictability in the system, 5) encourage learning to absorbe the changing nature of socio-ecological systems and encourage collaboration, 6) Broaden participation, to build trust and understanding for collective action 7) promote polycentric governance to promote interaction between governing bodies to

improve collective action when risking disturbance and change. As the principal figure below (Stockholm Resilience Centre 2018) shows, the resilience perspective implies a principle emphasis on the sustainability of the biosphere. The imperative is the view that ecosystem services and biodiversity form the basis of all human social and economic activities, and the figure is a further development of the UN´s 17 sustainability goals (UN 2018).
Beside the PB and resilience thinking initiatives, the most comprehensive framework for maintaining and strengthening the global ecosystems and biodiversity is The Intergovernmental Panel on Biodiversity and Ecosystem Services (IPBES 2018), establishing a framework between human well-being, the development of public and commercial services and natures biodiversity and ecosystem services. IPBES builds to a great extent on the Millennium Ecosystem Assessment, initiated by the UN to address the state of the ecosystems of the planet at the millennium change.

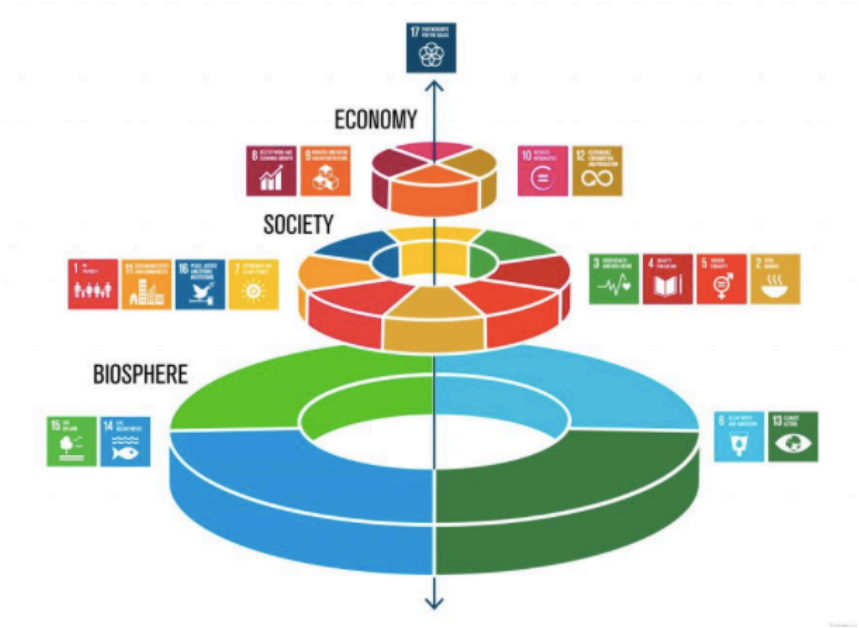



*Figure 10: Stockholm Resilience Center´s illustration of their principal view on sustainability, emphasizing the premises of nature and biology. Source: Stockholm Resilience Centre 2018.*

### *Views on sustainability from an economic vantage point*

On a global scale, TEEB, or *The Economics of Ecosystem Services and Biodiversity* is a UN initiative that focuses on the economic value of the services that originates from the world´s ecosystem services and maintained biodiversity. The principal objective is to ´mainstream the value of biodiversity and ecosystem services into decision making at all levels´, and ´aims to (…) help decision-makers recognize the wide range of benefits provided by ecosystems and biodiversity, demonstrate their values in economic terms and, where appropriate, capture those values in decision-making.´ (TEEB 2018). The TEEB project declares close ties to the UN sustainability goals but emphasize a ´scaling up with a three-tiered approach´, referring to

the Stockholm Resilience Centre´s principal emphasis on sustainability of the biosphere. Also, it is highlighted that the 17 sustainability goals are indivisible and should be incorporated in plans in an integrated manner, as the 17 goals are designed with the interconnectedness of the main elements in mind. TEEB states that it recognizes the interconnectedness between human well-being, ecosystem services and biodiversity in a similar manner as the IPBES framework.

Another perspective is *corporate* sustainability and the concept of shared value creation, or SVC (Porter & Cramer 2011), a notion that value, but not necessarily quantifiable value can arise from commercial business activity at all three areas, economic, environmental and social. A central imperative is that businesses need to realize that short term competitive measures are not sufficient to prevail as an economic actor in a long term. If the businesses want to keep staying alive, they need to address social and environmental sustainability issues as well. The SVC-perspective is divided into two paradigms, the instrumental win-win paradigm and the integrative trade-off paradigm. The former suggests that long term corporate strategies which are social and environmental friendly also pays off economically (Dyllick and Hockerts 2002), in other words that a corporate strategy can work as a catalyst for all three goals (thus *instrumental*). The latter suggests, according to Hahn et al. (2010) that this view is too simplistic and that operational tensions between the three goals lead to a trade-off compromise where the economic gain in the end will be of principal importance. This can lead to situations where significant biological or ecological gains could be abandoned for the benefit of the most attractive economic strategy (Figge & Hahn 2012).

### *Views on social sustainability*

Robbins´ understanding of political ecology is ´a field that seeks to unravel the political forces at work in environmental access, management, and transformation´ – through which he hopes to demonstrate – ´the way that politics is inevitably ecological and that ecology is inherently political´. Robbins further signals his intent with his book to ´show the politics of nature to be both universal and immediate´, and help break away from an ´image of a world where the human and the non-human are disconnected´ (Robbins 2004, 3).

Robbins submits five dominant narratives in political ecology. The most relevant for this thesis is *power and the distribution of it*, ecology, the interaction between organism and their environment, including the abiotic (non-living) ones, and the connections and interdependencies between them (political economy, power and ecology).

Also, Robbins (2004) draws a line between political ecology and *apolitical ecology.* An apolitical approach would mean, according to Robbins, to ignore any possible element of power in ecological systems development and change, and finally to approach subjects of interest objectively disinterested rather than explicitly normative. However, as stated earlier this thesis will focus mainly on the tension between economic and environmental understandings of sustainability, and for that reason the social sustainability aspect is not addressed further here.

### *The UN sustainable development goals*

September 25th 2015, the 17 UN sustainability goals was announced and declared with the goal of ´ending poverty, protecting the planet and ensure prosperity for all´ (UN 2018). The 17 UN sustainable development goals are embraced by governments, institutions, organizations and corporations. However, even if the goals are expected to encourage national ownership and frameworks, but are not legally binding (UN 2018) and, as the Stockholm resilience center indirectly address, they do not put ecological sustainability at the unequivocal center of sustainability thinking.

### *Weak and strong sustainability*

Another way of addressing sustainability is through the opposing principles of *weak and strong sustainability*. The first accepts that resources can be transformed into economic goods while making endeavors to maintaining sustainability, the latter do not (Haines-Young 2009). To elaborate the difference between weak and strong sustainability, Neumayer define sustainable development as ´development that does not decrease the capacity to provide non-declining per capita utility for infinity´. Following this, the interpretations and meanings have turned into ´real struggles´ of how to understand sustainable development and thus diverge according to Neumayer into the *weak* and *strong* paradigms. Neumayer states that the main difference stems from ´contrasting assumptions about the substitutability of natural capital´. Weak sustainability is explained through what is called the Solow-Hartwick sustainability, which requires keeping *total net investments* in all sorts of available capital (thus including natural capital) above zero. A prerequisite of this is the *unlimited substitutability of natural capital*, according to Neumayer. In other words, different kinds of capital, mainly man-made and natural are limitlessly interchangeable and the total ´outtake´ should just not decrease to lower than ´zero´. Assumptions related to weak sustainability in this way proposes that natural resources are ´super-abundant´, the substituting of man-made capital for natural resources in

the production process increases value (of capital in general) and ´technical progress can overcome any resource constraint´ (Neumayer 2003, 21-23).

Weak sustainability is also described as a view where economic, social or environmental sustainability can be substituted with one another. This view has been challenged by the term strong sustainability, which points to the assertion that social capital is dependently derived from natural capital and economic capital is dependently derived from social capital. (Wilson & Wu 2017). Others claim strong sustainability should regard the irreversibility of manufactured natural capital (Neumayer 2003; Martins 2016). However, the strong sustainability paradigm, according to Neumayer accepts the reinvestment in one natural capital stock for another, even the non-renewable. This way the burning of timber or coal could be (strong) sustainable if the net economic gains are reinvested in development of other renewable natural sources – as long as the aggregate value (not economic) of the natural resource stock remains constant. According to Neumayer, the strong sustainability paradigm prescribes management rules where the use of renewable resources takes place at a level where they don´t deteriorate; only harvest a *maximum sustainable yield*, and where using the environment as a sink for pollution only happens to the extent that it´s natural absorptive capacity is not diminishing over time (Neumayer 2003).

Under the strong sustainability perspective, authorities can deal with risk and uncertainty in different ways. Neumayer several, but the most relevant, having ´found its way into virtually every official document on the environment and appeared in countless international environmental treaties´ (Neumayer 2003, 104) is the *precautionary principle,* whereas two stand out as most important, according to Neumayer; preventive measures should be undertaken *before* unquestionable scientific findings ´demand´ action, as is recommended regarding the climate change threat. Secondly, the burden of proof should rest on the actors advocating there is only insignificant impacts from economic activities.

### The role of science in environmental policy and management issues

Hulme address the role of science in modern society by quoting science philosopher Thomas Kuhn: ´Science not only has a methodology, but it also has a history, geography and a sociology. This changing appreciation of science and its role in society was particularly evident in the environmental sciences.´, and further explains this statement by introducing the term of ´post-normal science´; a way of applying science to public issues where ´facts are uncertain, values in dispute, stakes high and decision urgent´. Hulme continues his reasoning by recommending, in a post-normal science situation with high stakes and high system

uncertainty that a ´wider range of expert voices must be heard in public arguments`. Continuing this he asks, ´who determines the research questions to be addressed by science, who evaluates the utility of research completed, and who selects which experts are to speak in the public sphere?´. Hulme highlights these points through his conclusion: ´Far from being able to eliminate uncertainty, science (…) is most useful to society when it finds good ways of recognizing, managing and communicating uncertainty.´ (Hulme 2009, 78-82).

But how does the scientific community respond to this task? According to Hulme, it also needs to take responsibility for the robustness of scientific knowledge, and he points to two elements of the scientific community´s tendency to handle complexity and uncertainty. The first is *bayesian beliefs*, in short what is seen and accepted as a qualified way by scientists of subjectively assessing the outcome of an event even if the uncertainty is high. The second is consensus in science, for example by issuing consensus statements ´in order to communicate a summary of agreed scientific knowledge to a wider public audience´ (Hulme 2009, 87). The former is a self-evident way of avoiding dealing with uncertainty. The latter - experience show from the issuing of IPCC assessment reports referred to by Hulme - can end up in diminishing uncertainty because of lack of capacity to predict and lack of evidence, with qualitative belief and subjectivity than can change (Hulme 2009, 90).

However, despite uncertainties and high stakes, the knowledge of science needs to be connected with policy making and management plans. Hulme (2009) refers to three differing science-policy models describing how the interaction between science and policy making can happen. These are:

i) Max Weber´s ´decisionist model´; policy makers initiate a process by defining end goals and experts and scientist presents available options to achieve these goals.

ii) The ´technocratic model´ whereas the politicians, as science evolve and become more complex and insightful, the politicians needs to depend more on it. This model is based on the assumption that scientific knowledge is neutral, unbiased and that all relevant facts can be uncovered by science. In this model, the responsibility for setting goals or limits to a great extent rests with the scientists and experts and to a greater extent acquits the policy makers.

iii) The ´co-production´ model has evolved out of a more complex scene of participants of policy making where also citizens and stakeholders have their voice heard. In this model where policy and knowledge co-produce knowledge, ´there is a recognition that both the goals of policy and the means of securing those goals emerge out of joint scientific and non-scientific (i.e. political or value-driven)

considerations´ (Hulme 2003, 105). Under this model of decision making, the element of risk due to uncertainty is open for negotiation and arguing openly to the public and set to a limit that can be ´tolerated´ by society.

## 4.2. Discourse, narratives/storylines, ideas and coalitions

Hajer (1995) states that national environmental policy plans were starting to be outlined from around 1990, as a response to the widely recognized report, *Vår felles fremtid* (WCED 1987). The Brundtland report not only addressed the need to preserve the planetary resources for future generations, but also the fairness between the current global generation. Hajer critiques the previously addressed Brundtland report of a ´(…)rhetorical ploy which conceals a strategy for a sustaining development rather than addressing the causes of the ecological crisis.´ (Hajer 1995, 12). These deviations, according to Hajer, have affected the progress of development in a somewhat diversified way towards the environmental discourse(s) we see today.

With this, Hajer addresses and underlines the central starting point of this thesis´; hegemonies in play and nature´s own status in environmental discourse (Hajer 1995, 16-21). The second point I refer from Hajer is in short that the natural environment addressed in the shaping of policies is both measurable and not measurable. This means that decisions and actions are created from our social and human perceptions of nature, and thus that since these perceptions differ between groups, our actions affecting nature and environment, will in many cases probably differ.

Hajer´s reasoning is to point out that in his opinion we, the public, not so much disagree about the environmental issues on our planet, but more about how to understand it, what values that are at stake, whose interpretations we should listen to and thus who´s solutions are best acquired.

Hajer´s point is thus that our debate or formation of discourses are shaped by images, beliefs, presuppositions, values and of course language, and refers to Neil Everden: “We must bear in mind that the current understanding of pollution is just that: the current understanding.” (Hajer 1995, 17).

With this Hajer presents several arguments for his view. The most relevant are (summarized):

- Environmental change is structural in character, and as such it should more precisely be defined as an environmental dilemma stemming from the industrial revolution, more than ´crisis´.

- Pollution is defined by reigning social orders. The severity of pollution is viewed and defined in the context of the socio-ecological surroundings and to what extent, and in what way it might become problematic for social groups in power.
- Environmental problems are seldom discussed in their full complexity but becomes fragmented and thus *emblematic*; revolving around central issues that evolves at certain spaces and times. These issues become the binoculars, but also blinders, that social groups see controversies through. Thus, according to Hajer, they are the centre of attention that actors mobilize around, and then the task of political analysis becomes to investigate this process and also the process of …´coalition formation´ for the environmental discourse.´´ (Hajer 1995, 20).
- Discursive strategies matter. Storylines need to be developed around environmental accidents or happenings in order for them to be ´picked up´ as physical events that need attention. Hajer exemplifies this by addressing different statements that all are valid, but with different focus, that could have evolved from an oil spill or leakage: Addressing the technological shortcomings of the tanker in question, or the characteristics of the weather (stormy weather might break down the chemistry of the oil) leads the discourse strategies further in different directions by the agency of the actors.

Also, Hajer quite interestingly points out, these strategies have different chances of survival or to become hegemonic with regards to the nature of the issue at hand. If they are regarded as slow evolving and not critical processes (acid rain/ precipitation, greenhouse gases, or even more interestingly the ozone layer (due to the slow tempo of a possible negative development of lice/disappearance of wild salmon), the political nature of the case would probably evolve in different directions than if they were more acute. Reports and analyses further redefines the event into a political issue. The possibility to take part in the construction of the discourse around environmental events is, according to Hajer, then an important source of power.
In his endeavors to understand these story-lines and discourses Hajer also applies discourse analysis as a method and makes quite an interesting point when stating that in policy-making everything is not about creating solutions, but also about ´(…)creating problems that institutions can handle and for which solutions can be found.´ (Hajer 1995, 15).

### Discourse coalitions

A central conclusion from Hajer is that we today see what he refers to as *discourse coalitions*, that ´(…)develop and sustain a particular discourse, a particular way of talking and thinking

about environmental politics.´, and further that ´These coalitions are unconventional in the sense that the actors have not necessarily met, let alone that they follow a carefully laid out and agreed upon strategy.´ (Hajer 1995, 13). Still they group, or gather around certain *storylines,* according to Hajer, but nevertheless they could have different understandings of these story-lines, and align them accordingly with own interests.

### Narratives, storylines and ideas; similarity, differences and chosen terminology

Narratives, stories, storylines and ideas are used interchangeably in the literature, describing similar phenomena. Moezzi et al. describes *story* as ´something with a beginning, a middle, and end´, and that ´there is generally also a protagonist, usually a human but possibly another animate actor, an object, a practice, or an idea´. *Narrative* is described as a more general term, but in social sciences it is used to ´denote non-fiction and constructed, formal and official cases, e.g. what institutions generate and reflect in general discourse about an issue´ and further that they often appear in public, written or presented by professionals and thus more formal than stories. According to Moezzi et al., a *storyline* ´refers to the plot or bare arc of a narrative, as distinct from the detailed content´, and they refer to Hajer´s (1995) use of it in discourse coalitions, ´where the concept of storylines serves as a device to decompose discourse into simpler framings around which actors and institutions organize themselves and create meanings´ (Moezzi et al. 2017, 2-3). Béland and Cox use the term *idea* in a similar way. They define an idea as ´causal beliefs about economic, social and political phenomena´, and as ´beliefs they are interpretations of the material world, shaped as much by the material world as by our emotions and values. (Béland & Cox 2015, 429). Béland and Cox´ main point is similar to Hajer´s, that ideas are used as coalition magnets by policy entrepreneurs to advocate for certain goals and broad acceptance.

In this thesis, *narratives*, *storylines* and *ideas* have been, and will be used according to how sources, texts or data appear, but with relation to the upcoming discussion and conclusions they will for simplicity and practical reasons be treated as *ideas* as described by Béland and Cox. Their particular understanding of *ideas* as a concept, and in particular in relation to power, will be used and addressed more thoroughly later in the theory chapter.

### In general, about discourse

The most common denominator or term used to describe *discourse* as a phenomenon is *language.* Johnstone explains that discourse can be understood as ´…instances of communication in the medium of language.´, and establishes *discourse* as a phenomenon, or a structural pattern in society through highlighting it as a *mass noun,* in the same way as we use a mass noun for *music* or *information* (Johnstone 2002, 2).

Still discourse is not just about language as an abstract system. Johnstone also introduces *knowledge* as a vital component to understand discourse: ´We tend to be interested in what happens when people draw on the knowledge they have about language, based on their memories of things they have said, heard, seen, or written before, to do things in the world: exchange information (…) make things happen (…). This knowledge – a set of generalizations, which can sometimes be stated as rules, about what words generally mean, about what goes where in a sentence, and so on – is what is often referred to as "language," when language is thought of as an abstract system of rules or structural relationships. Discourse is both the source of this knowledge (people´s generalizations about language are made on the basis of the discourse they participate in) and the result of it (people apply what they already know in creating and interpreting new discourse)´ (Johnstone 2002, 3).

van Dijk describes the emergence of a new cross-discipline originating in the sixties when describing the emergence of discourse studies. More in particular van Dijk points towards – among others – the notion of mental models; ´a representation of events and situations in ´episodic memory´ (the record of all our personal experiences) – as the basis of all discourse production and understanding.´ van Dijk also, as Johnstone, points towards the ´…fundamental role of *knowledge* in discourse processing, for instance in the form of mental ´scripts´ or prototypical episodes.´ (van Dijk 2007, xxii). These examples of elements of discourse formation are interesting because they move the focus away from isolated words and sentences and move towards ´…the production, comprehension and memory of discourse in general, and of stories in particular (…), and ´…interactional moves and strategies.´ (van Dijk 2007, xxi – xxii). Also, for example *meanings* and *metaphors* are parts of this cognitive orientation according to van Dijk, and more specifically also in critical discourse studies (van Dijk 2007, xxiv).

Hyland and Paltridge, when describing discourse in general terms, categorize the phenomena as ´one of the most significant concepts of modern thinking in a range of disciplines across the humanities and social sciences (…) because it concerns the ways that language works in

our engagements with the world (…) so creating and shaping the social, political and cultural formations of our societies´ (Hyland & Paltridge 2011, 1).

### Critical discourse analysis (CDA)

This segment revolves around theoretical perspectives specifically on critical discourse analysis (CDA). A more practical oriented review regarding methodology will be found in the methodology chapter.

Wodak and Meyer refers to van Dijk when explaining the origins and development. When describing critical discourse analysis, they point out that all ´…approaches are problem oriented and thereby interdisciplinary and eclectic…´. In other words, a ´problem´ can naturally be put in the center of (almost) any question at hand. Further, they state that ´CDA is therefore not interested in investigating a linguistic unit per se but in studying social phenomena which are necessarily complex and thus require a multi-disciplinary and multi-methodical approach´. Also, they stress that by *critical* discourse analysis it is not necessarily meant that the subject of investigation have to be seen as a burden for society, consist of mainly negative connotations or valour or otherwise have somewhat *asocial* features. The function of the language serves, according to Wodak and Meyer, to constitute and transmitting knowledge in the hierarchies of social institutions or in the exercising of power, and critical theories are ´aimed at producing ´enlightenment and emancipation´. Such theories seek not only to describe and explain, but also to root out a particular kind of delusion´, and further, ´(…) CDA emphasizes the need for interdisciplinary work in order to gain a proper understanding of how language functions in constituting and transmitting knowledge, in organizing social institutions or in exercising power´.

In addition, critical discourse analysis is ´characterized by the common interest in de-mystifying ideologies and power through the systematic and *retroductable* investigation of semiotic data (written, spoken or visual)´.

Finally, Wodak and Meyer then highlights that discourses both can reproduce a status quo, but also to transform it, and this is thus important with regards to *power and ideology*, and thus can produce and reproduce unequal power relations in different social structures. This view on discourse, they say, is used very differently in different academic settings (Wodak & Meyer 2009, 2-7).

### Ideologies, hegemony and power in critical discourse analysis

As mentioned above, power and ideologies are to a great extent the ´subject of interest´ for researchers when doing critical discourse analysis. Wodak and Meyer lists four ways of looking at ideologies in critical research (Wodak & Meyer 2009):

- Power is more important than cognitions
- They are capable of guiding individuals´ evaluations
- They provide guidance through action
- They must be logically coherent

The authors also warn the reader from mistaking ideologies as being good or evil, but rather look for ideologies that are hidden, intertwined, or adapted in everyday life as ´beliefs´ or ´conceptual metaphors´ and as such establishing themselves as ideas, expectations, goals, norms, rules that people also discover to share with others, but without clearly being able to explain why. Specifically, Wodak and Meyer points out that ´critique regularly aims at revealing structures of power and unmasking *ideologies´*, and states that ´dominant ideologies appear as ´neutral´, holding on to assumptions that stay largely unchallenged. Organizations that strive for power will try to influence the ideology of a society to become closer to what they want it to be.´ When most people in a society think alike about certain matters (…) we arrive at the Gramscian concept of *hegemony.´* (8). This way, *hegemonies,* or ´ ´worldviews´ constitute ´social cognition´: Schematically organized complexes of representations and attitudes with regard to certain aspects of the social world (…)´.

Thus, ideologies struggle for hegemony, and employs power to do so. One particular concept of power is, according to Wodak and Meyer ´a systemic and constitutive element/characteristic of society´, and within CDA power is mostly conceived this way (Wodak & Meyer 2009, 8-10).

## 4.3. Environmental discourses

Dryzek (2005) addresses the conflicts, controversies and different views and interpretations that historically has arised over environment and sustainability issues, and the broad range of elements these include. Dryzek points towards many, for this thesis, relevant and examples as pollution, wilderness preservation, population growth, animal rights, species extinction, global climate change, toxic wastes, protection of whole ecosystems, food safety and genetically modified organisms (Dryzek 2005, 3). He continues by highlighting several examples of different meanings and interpretations of different phenomena related to nature

and sustainability. Also, the suggestion of earth´s probable finity is highlighted, and also the controversy around this idea. Especially this last point underlines Dryzek´s (preliminary) conclusion; that contests over meanings are present all the time, in all issues relating nature and the environment. Also, they can change to a great extent over time.

According to Dryzek any conflict arising over the environment and thus natural resources (including space, areas) ignites different sides or stakeholders to interpret the conflict at hand in different ways, and how it is solved depends on the balance between the interest parties taking part in the debate or conflict. To analyze and explain the process of these conflicts, Dryzek applies a discourse approach.

To explain environmental discourses in depth, Dryzek elaborates how environmental conflicts ´tend to be interconnected and multidimensional; they are, in a word, complex.´ Complexity refers to the number and variety of elements and interactions in the environment of a decision system.´ And, ´When human decision systems (be they individuals or collective bodies such as governments) confront environmental problems, they are confronted with two orders of complexity. Ecosystems are complex, and our knowledge is limited, as the biological scientists who study them are the first to admit. Human social systems are complex too, which is why there is so much work for the ever–growing number of social scientists who study them. Environmental problems by definition are found at the intersection of ecosystems and human social systems, and thus are doubly complex´.

Further, Dryzek argues that the great number of perspectives arriving from this complexity leads to a proliferation and diversification of these perspectives, and to make sense of this, Dryzek deploys what he formulates as ´the notion of discourse´ (Dryzek 2005, 8-9).

A discourse is in short, a shared way of apprehending the world, according to Dryzek.

Dryzek also brings in political power into the concept of environmental discourses. He writes that ´discourses are bound up with political power. Sometimes it is a sign of power that actors can get the discourse to which they subscribe accepted by others. Discourses can themselves embody power in the way they condition the perceptions and values of those subject to them, such that some interests are advanced, other suppressed (Foucault, 1980). Discourses are also intertwined with some material political realities. Governments in capitalist economies have to perform a number of basic functions whether they want or not (see Dryzek, 1992a): first and foremost, ensuring continued economic growth. Corporations can stop investing in response to government policies they do not like´ (Dryzek 2005, 9).

In Dryzek´s following classification of earth´s political environmental discourses he first highlights the origin from industrialism, and it´s commitment to growth of goods and services

and material well-being. Also, he points towards that all relevant political ideologies like Marxism, liberalism, conservatism, socialism and fascism all build on the principles of industrialism. He continues by arguing that environmentalist discourse must depart from the foundation of industrialism and rather ´depart´ through either a reformist or a radical approach. This is, in Dryzek´s classification a main dimension for categorizing environmental discourses. The second departure for the second main dimension in Dryzek´s categorization is also rooted in, and takes off from industrialism, and is, according to Dryzek either prosaic or imaginative. Still, the prosaic dimension takes, he argues, the industrial paradigm and the consequential economic-political historical framing as given. Thus, environmental issues are seen as problems, trouble or threats for the continued growth of industrial production. Imaginative departures from the industrialist tries to redefine the above mentioned given frames and thus set new rules for ´the game´. In this departure, environmental issues are seen as opportunities rather than problems or threats. Environmental concerns are seen as potentially harmonizing with economic ideas and goals, and the environmental questions is seen as a catalyst for greater societal change.
These four main dimensions form a four-piece squared map of sustainability discourses departing from the historical industrial imperative, according to Dryzek.

*Table 3: Four dimensions of sustainability discourses. The figure is adjusted from Dryzek (Dryzek 2005, 15).*

| | Reformist | Radical |
|---|---|---|
| Prosaic | Problem solving<br>• Adm. rationalism<br>• Democratic pragmatism<br>• Economic rationalism | Survivalism |
| Imaginative | Sustainability<br>• Sustainable development<br>• Ecological modernization | Green radicalism<br>• Green Consciousness<br>• Green politics |

These four departing discourses has been named *problem solving, sustainability, survivalism and green radicalism*. Within the Reformist – Prosaic dimension Dryzek defines three sub categories; administrative rationalism, democratic pragmatism and economic rationalism. Within the Reformist-Imaginative dimension he defines the two subdimensions of Sustainable development and Ecological Modernization (Dryzek 2005, 15).

### Problem solving discourse

According to Dryzek (2005), the problem-solving discourses recognize environmental problems, but address them rationally and pragmatically as any other, solvable problem that appear in the political economy of industrial society. The logic appears to be that human activity create problems and human activity can thus solve them.

Within the problem-solving discourse, three different discourse strands, or sub-discourses (Jäger & Maier, 2009) can be found. They are administrative rationalism, democratic pragmatism and economic rationalism, and their solution to environmental problems are bureaucracy, democracy and markets.

*Administrative rationalism* is defined as ´the problem-solving discourse which emphasizes the role of the expert rather than the citizen or producer/consumer in social problem solving, and which stresses social relationships of hierarchy rather than equality or competition´ (Dryzek 2005, 75). Among the administrative tools available in this discourse are resource-management bureaucracies, pollution control agencies, regulatory policy instruments, EIA-assessment, expert advisor commissions and rationalistic policy analysis techniques. Risk analysis and computer models are also according to Dryzek common within this discourse, but the analysis techniques can be blunt. The room for interpretation and departure in different directions is broad. The solution is often, according to Dryzek - in addition to delegate responsibility - ´learning by doing´ and experimentation (Dryzek 2005, 96). At the same time, a presence of a self-image on behalf of the administrators, as what Dryzek calls an ´unitary and omniscient administrative mind´, projecting ´an aura of certain knowledge and benign power´ (Dryzek 2005, 88)

*Democratic pragmatism* is explained by Dryzek as ´interactive problem solving within the basic institutional structure of liberal capitalist democracy´ (Dryzek 2005, 99). One of the basic principles of this discourse strand is learning through experimentation because the relevant knowledge for complex issues cannot be centralized into administrations, or individuals. Cooperation between various groups and flexibility are ingredients to achieve this learning. Public consultation, policy dialogue, lay citizen deliberation, public inquiries and right-to-know legislation are common tools for this discourse. In this case, a proposal for the development licenses was sent on an open hearing from the ministry. Asdal (2011) explains that difficult policy issues are often sent through the political ´technology´ of a hearing process. The hearing process is supposed to contribute to dialogue between all involved stakeholders, to gather information and opinions about policy decision and projects. Through the 1980´s and the 90´s Asdal points out, policy making has been moved out of central

political institutions and traditional hierarchical steering institutions. The hearing contributes to participation and inclusion in political processes. According to Asdal, technical object ´have their narratives (´historier´) written and rewritten´ in the hearing process. She claims that the hearing institution contributes to establish ´policy directions´ (styring) and ´power to act´ (handlekraft) (Asdal 2011, 137-138).

According to Dryzek, democratic pragmatism can be understood as a form of governance, and the reason for using it as a guiding tool for environmental management is ´that participation in democratic settings actives environmental values´, and that citizens´ preferences in this regard often leans towards collective, community-oriented values (Dryzek 2005, 113).

Sørensen and Torfing define governance *networks* as ´a stable articulation of mutually dependent, but operationally autonomous actors from state, market and civil society, who interact through conflict-ridden negotiations that take place within an institutionalized framework of rules, norms, shared knowledge and social imaginaries; facilitate self-regulated policy making in the shadow of hierarchy; and contribute to the production of 'public value' in a broad sense of problem definitions, visions, ideas, plans and concrete regulations that are deemed relevant to broad sections of the population.´ (Sørensen & Torfing 2009, 236). Thus, they add to Dryzeks explanation the notion of ´ideas´ as part of the governance process.

*Economic Rationalism,* the last of the three discourse strands within the problem-solving discourse, gains its momentum from what Dryzek claims is the most prominent perspective in modern day´s politics; the economy. One of the most central building blocks for this discourse strand is that markets for environmental goods not always exist; people don´t necessarily need to purchase a quiet walk on the beach. But if this would be the case in order to set a price on the good, the process of finding the price, how it should be delivered and consumed could be a challenge for the policy makers to design. Thus, Dryzek defines economic rationalism as the ´commitment to the intelligent deployment of market mechanisms to achieve public ends` (Dryzek 2005, 121). Applying the assistance of the market forces by politicians and policy-makers is done, according to Dryzek, along a great part of the political specter and also international institutions like the OECD (Dryzek 2005, 122) and the EU. The European Environmental Agency have even suggested a regime of environmental taxes to replace income taxation and the Brundtland Report also endorsed this principle, according to Dryzek. The main reason for why many see this option desirable is private ownership, according to Dryzek. People, in the sense of both private businesses or individuals, pay more attention to and protect what they own. Even if privatization of water is seldom, Dryzek refers to examples from Britain, where it is the rivers that are privatized and

owners of land or recreational fishing-rights can sue polluters.
However, if land or sea (or air) cannot be privatized, this discourse strand offers alternative solutions, explains Dryzek; government-managed markets or quasi-market incentives. The former means the sale of a limited number of polluting rights, sold to the highest bidder, who then can sell these rights to one another.
Quasi-market incentives, also termed *green taxes* (Dryzek 2005, 129) means not charging money for pollution rights, but fining the polluters if they surpass the defined limits. Even if the green tax could stimulate abatement initiatives from the polluter, green taxes are troublesome according to Dryzek who refers to Britain; ´Treasury interprets green taxes in revenue-raising terms, and would want to set levels without reference to environmental departments of government. This worries industry, which foresees charges rising and falling, most likely rising, in response to government´s revenue needs. Also, it worries environmentalists, for it gives government a vested interest in pollution, for the more pollution that occurs, the more revenues do government receive´. Dryzek also refer to France, Germany and the Netherlands and concludes that even if these taxes are to some degree popular among environmentalists, they are seldom strong, or effective enough to limit pollution (Dryzek 2005, 131).

### Sustainability discourse

The *sustainability* discourse consists of the sustainable development discourse strand and the ecological modernization strand.
Sustainable development contains, according to Dryzek, a promise that ´we can have them all´ (Dryzek 2005, 143), meaning ecological protection, economic growth, social justice and intergenerational equity locally, global and in all eternity. The discourse is thus described as an integrating discourse covering local-global spatiality and both economic and environmental concerns. Both the practical meanings of the discourse and if it actually can manage what it promises is, states Dryzek, questioned.
Still this discourse is maybe the most dominating global discourse, maybe because of what will be addressed more in detail later; a high valence and polyscence? There are no legitimate arguments against ´sustainability´ just as there are no legitimate arguments against ´progress´. However, it gains more credibility and concreteness through one of its original concepts of *maximum sustainable yield* (Dryzek, 2005, 145), a *strong sustainability* principle that limit how much that can be harvested from natural resources whereas the resource still can be maintained indefinitely.

The main problem with the sustainable development discourse is that it´s operational meaning has been hard to produce, according to Dryzek. Endeavors (by UNESCO) to provide uncontested scientific standards have been unsuccessful, and as Dryzek points out, as the term is ´filled´ with content, or meaning, ´astute actors recognize that its terms should be cast in terms favorable to them´ (Dryzek 2005, 146). Another side of this problem is which ecological limits the politics stemming from this discourse should address. Langhelle (2000) suggested in 2000 that relevant limits could address energy supply and climate change, but as shown earlier in the thesis, new research show that other limits, like the use of phosphorus (P) and nitrogen (N), and the diminishing of biological diversity (Steffen et al. 2015) should also be taken into consideration. The necessary change of societal courses and actions because of differing limits and goals could prove very difficult for structures and systems to cope with.
*Ecological modernization* is a discourse strand that aims even higher and seeks a more thorough restructuring of the society according to Dryzek: ´Ecological modernization addresses the restructuring of the capitalist political economy along more environmentally defensible lines (…), ecological modernization is about the search for green production technology. But this search also opens the door to intriguing possibilities for more thoroughgoing transformation, involving political change as well as technological change. As Dryzek puts it; ´although at first sight ecological modernization looks like a rescue mission for industrial society, albeit an imaginative one, it also points to political and economic possibilities beyond industrial society´ (Dryzek 2005, 144). They key in the ecological modernization discourse is that economic surplus, shareholder yield, can be gained. The promise of this discourse holds that the political-societal system does not need to be changed, but environmental criteria have to be built into plans and the system ´thinking´. This requires the business community to cooperate in the design and the implementation of the policies (Dryzek 2005, 167).
Dryzek refers to a ranking done by Yale and Columbia researchers for the World Economic Forum to find the most successful environmental policy performance in the 1980´s and -90´s (Dryzek 2005, 162). Different indicators were chosen, the most relevant for ocean policies and aquaculture was water quality, number of threatened species and democratic government on the grounds of institutional capacity. The relation to the precautionary principle is highlighted in Germany as a guiding principle for policy making. Norway is found among the top six, and Dryzek highlights efforts to incorporate environmental values in policy planning and pioneering of green taxes. Also, even if Norway is seen as corporatist, meaning important decisions is made through closed discussions and negotiations between powerful groups

(government, labor-union and business; termed ´trepartsamarbeidet´), environmental groups like the Friends of the Earth (Naturvernforbundet) according to Dryzek receive funding from the government, is represented in policy-making committees and receives funding for implementing projects. The corporatist approach towards the political-economic system with consensual relationships among key actors is drawn forward by Dryzek as the key trait and success factor for environmental policies in Norway (Dryzek 2005, 165-166).

One of the central elements of ecological modernization is the idea that pollution prevention pays. Most importantly, this means that not solving problems now, but leaving them to the future is costly for both government and business, because it is more cost effective to never emit pollution than to clean it up later. Other central ideas to the ecological modernization discourse strand is that selling green goods and services to conscious consumers pay off, and also that there are business opportunities in selling pollution prevention and abatement *products.*

This way, a successful implementation of ecological modernization would mean a decoupling of the economic growth imperative and environmental degradation, and this could according to Dryzek explain the possibility to, and motivation for including environmental concerns and organizations into the decision making in a corporatist state; the environmentalist side will have to recognize that growth and welfare can happen *within* the borders of environmental stability and safeguarding. This would also include, according to Dryzek, to guide the capitalist society into a long-term vision committing to the whole society, ´attacking problems at their origins, holism, greater valuation of scarce nature, and the precautionary principle´ (Dryzek 2005, 169).

### Discourses in norwegian aquaculture

Dryzek´s categorization have provided a solid and practically useful framework for this thesis, especially when looking in general at the historical, large-scale and future discourses analyzed from relevant actors and government. This is one of the strength´s in Dryzek´s framework, the focus on and consistency with public management discourses. However, when it comes to the more specific discourses applied in norwegian aquaculture sector, by other actors than public management (for example industry and contract research institutes (SINTEF)) Christiansen's (2017) discourse identification from debates in norwegian media and conferences complements Dryzek. Christiansen's specific discourses are (briefly and principally explained):

- *High turnover discourse* – related to the eternal substitutability of natural capital in the weak sustainability paradigm where natural capital can be exchanged into human

capital, high turnover means a short term, as effective as possible exchange of natural capital into human capital. Negative externalities can even be seen as a catalyst for more innovation and technological fix to repair pollution and diminishing biodiversity.

- *Technology optimism discourse* – related to a win-win attitude, where the only required action in society is the ones of improvement in techniques by the natural sciences, leaving human values and moralities unaltered and undisturbed.
- *First nature discourse* – the image of nature as most valuable when untouched by human activity and traces.
- *Traditionalist discourse* – relates to historic tacit traditional harvesting knowledge and skills. Misanthropic determinism (Christiansen 2017, 188) is rejected and replaced by a belief in a long-term robust anthropogenic existence. Harmonizes to a great extent with the strong sustainability perspective as conservative harvesting is seen in connection with long-term economic activities, a balance between outtake and output.

### Co-management

The term Co-management has grown out of a perspective that proposes and focuses on the involvement of *local stakeholders* and *resources* as opposed to a central (and distant) power (i.e. the state), when it comes to managing scarce, or common-pool resources (Carlsson and Berkes, 2005). Co-management is seen as an *approach* or *process*, more than a *state*, as in a *structure* or *starting point.* Carlsson and Berkes also emphasize other central sides of the concept, such as the *rights to regulate internal resources,* the *sharing of power, rights and responsibility* (centrally and locally), *accountability (to mitigate the weaknesses of the local and the central),* preferably working through *partnerships.* Ostrom (1990) have identified 8 principles for local, independent and self-governed management of common resources.
In the co-management, or adaptive management literature the role of the *entrepreneur*, and his/her strategies is also brought into relevance. For instance, Brouwer and Biermann (2011), are addressing the *policy entrepreneurs*, or *risk-taking bureaucrats*, whose goal is to change policies when it comes to resource management.
In the same way, the term innovation is introduced in the literature as a way of explaining or improving resource management. Biggs et al. (2010) are addressing a transformation towards a whole other kind of ecosystem management, using a *social-innovation framework*. This partly means to develop a capacity for *social entrepreneurship* and institutional support to *new institutions*.

### The state as industrial policy entrepreneur

In an ever-changing global economy, the national states continuously shape national industry policies to create development and innovation and arrange for trade and/or investments, and sometimes these policies are shaped selectively. Since the start of the 1990´s this process, including other actors like the corporations, have been given the term ´national innovation system´ or ´NIS` (Fagerberg et al. 2009). An example of these selective policies, that also often evolves into specific national trajectories, is the encouragement of growth clusters. According to Spilling innovation is given a growing emphasis in policy shaping because faster technological development, globalization and stronger competition creates a need for developing policies that meet these challenges, and following this Spilling defines innovation policies as a ´policy with the explicit aim to promote, development, and use of new products, services and processes in society´ (Spilling 2010, 11-12). Spilling also addresses the common *rationale* behind innovation policies, which most often is said to be market failure. This occurs when the ´market mechanisms´ do not work and an inefficient use of resources takes place. One of the most common forms of market failure, according to Spilling, is positive or negative externalities, the latter being defined as activities of a certain actor leading to negative effects for other actors without any formal transactions taking part between the actors. A common externality is, according to Spilling, pollution (Spilling 2010, 15). Further, the more precise policy mix in each nation state is influenced by factors like political and cultural complexion, the strength of institutions and interest groups and the nation´s resource endowment, both physical and human (Dicken 2007).

## 4.4. Innovation, path development and path-dependence

According to Bradford and Bramwell, innovation is a result of ´interaction among the specific components of invention, research and learning that produce, diffuse and adapt new and commercially valuable knowledge´, and this process can often be framed into a ´range of national and regional institutions that interact with social forces to shape the innovativeness of the national economy and society´, and this forms what is termed a regional innovation system. In such an innovation system, learning, described as ´the building of new competencies and the acquisition of new skills, not just accessing information´ is the most central social process (Bradford & Bramwell 2016, 294-295).

An important point in this case is the accumulative nature of innovations. According to Fagerberg et al., Joseph Schumpeter ´provided a definition of innovation as a “new combination” of existing sources of knowledge and resources´, but points out that both the

endeavors of bringing the *invention* itself to the market, and also the time frame, that innovation ´builds on existing knowledge, including past inventions and innovations, while at the same time providing the basis for new innovative activity in the future´, highlights the emphasis on the innovation systems needed to bring the innovation to the market, but also the time scale. History sets premises for processes taking place today, and processes taking place today sets the premises for the future. As Fagerberg et. al. formulates it; ´innovation is path dependent´ (Fagerberg et al. 2009, 3).

Paths can be defined as outcomes of ´multiple and heterogeneous historical processes´ (Wicken 2009, 33), and, linked to innovation, further also as outcome of historical variety creation, adaption, selection and retention´ (Fagerberg et al. 2009, 4). Self-reinforcing effects and momentum are key elements for understanding the direction and selection of paths (Christiansen and Jakobsen, 2017).

Path dependence can be described as a process of ´variety creation, adaption, selection and retention´ of technologies, solutions, inventions, and so on, where ´only those that (at the time) are sufficiently well adapted to the selection environment are likely to be applied and form the basis for continuing adaptation and improvement´. Further, this process is, according to Fagerberg et. al., taking place within a ´knowledge infrastructure´ and institutional and political frameworks, and thus these institutions and governance as well as politics are relevant to the analysis of a national innovation system (Fagerberg et al. 2009, 4).

Isaksen (1997) claims that differences in national competitiveness are related to the strength in innovation processes and technological knowledge, and that this accordingly affects the growth rate in a nation or region. Also, regional innovation processes are often stimulated by governments to create independent process, in order to replace former reallocation policies (Amdam et al. 1995). As Bradford and Bramwell, Isaksen also point towards learning as the most important process and knowledge as the most important resource for the economy (Isaksen 1997, 16). Finally, innovation (in -systems) is a *collective* process that also involves institutions, both the private and public sector (Fagerberg et al. 2009), and commonly found actors as corporations, universities and research- and development institutions, public authorities that finances, designs laws and regulations and performs activities to promote technological development (Isaksen 1997, 17).

Dahmén (1950) was, according to Isaksen (1997) one of the first addressing the development of what has later been known as ´clusters´; groups of complementary corporations belonging to different businesses with innovative capacity. According to Dahmén innovations have *structural tensions* that initiates a cumulative technological dynamic. They have a

destabilizing effect, creating an asymmetric imbalance between the actors and thus creates a battle for positions that both presuppose and brings about inequilibrium whereas the different actors have different transformative capacity (Haraldsen 1997, 32).

### The Norwegian innovation system; path transformation, creation, enabling and lock-in

Wicken have identified and defined three main historical paths (related to different and specific social groups, organizations, knowledge bases and institutional set-ups, and innovation structure) emerging from ´three major industrial transformation processes in Western history´ whereas each created a new industrial path. These paths have subsequently, through the norwegian innovation system, created the three Norwegian ´layers´ within the norwegian innovation system. The national paths, according to Wicken, are continuously, by response to the environment, linked to *path transformation and path creation processes* (Wicken 2009, 33).

Wickens (2009) categorization of these paths are:

- *Path transformation of small-scale decentralized industrialization;* The firms are typically personally, or family owned, uses to a great extent informal knowledge and are often found in primary production as agri- and aquaculture. The maintenance of these firms was usually upheld by local norms and rules, the integration in local communities and operated by self-employed owners, which also formed a political and cultural basis for a great deal of Norwegian economy, many of these elements still remaining. Their path is typically continuously transformed through application of both informal and science-based knowledge, and collaboration with other companies or universities, etc.
- *Path creation through large-scale centralized industrialization;* the most important path is the path where large-scale corporations dominate (because they also became the most common way of organized economic activity) also gaining great political support. In particular this path is characterized by large-scale companies with resources to influence and shape their environment and relevant institutions. This layer involved new social groups like engineers, scientists and managers, and their specialized knowledge. These groups became important in the learning process in this layer, and thus also influenced policies and the institutional environment. This layer has in particular been encouraged by political institutions as the preferred modern industrial enterprises. Social and political elites have supported large-scale industrial development and thus Norwegian governments have introduced various new

institutions to promote this industrial development. A central instrument established by government was the concession laws in national industry policy, regulating ownership of natural resources based on the principle that the belonged to the society. The principles were also used during the establishment of the oil and gas industry. The path has thus become the most central in norwegian industrial policy making and was reinforced by the introduction of the oil sector in Norway.

- *New path of R&D intensive enabling (supporting) sector for network-based industrialization;* as the previous mentioned layer became the main force of resource-based industrialization in Norway, a new path of R&D-intensive companies have challenged this layer, but instead of achieving a dominating position it has been incorporated in the large-scale company layer as technology producers and problem solvers, especially for oil and gas. The R&D companies developed a network-based approach, cooperating with research institutes, universities, procurement agencies, other companies and governmental organizations. Through this constellation, many became central suppliers to the natural resource-based industry.

### Cognitive and political lock-in, or path evolution

Christiansen & Jakobsen (2017) have studied the possibility for cognitive and political lock-in in the Norwegian aquaculture regarding sustainability. They claim narratives on greening criteria can affect the allocation of licenses in aquaculture farming. The licenses they address are the light-green, dark-green and development licenses. Starting with the concept of path dependency, they have identified three greening narratives, path extension, modest path renewal and strong path renewal, for new technological solutions with the starting point of the present open-pen technology. They underline that these categories are not an a-priori assessment of the actual greening potential, but rather three *narratives* presented by actors of the greening potential. Their aim has been to analyze how narratives contribute to political decisions ´on licenses, greening criteria and technology´. Further, they claim that ´ The salmon farming industry in Norway is a particularly good case for an analysis of the influence of language and opinions on political decision making, because it is political decision making that determines the number of farming licenses and the technological preconditions of each license´. Christiansen and Jakobsen takes a particular look at the concept of path dependence, or what they term the self-reinforcing effects that ´steer a technology, industry or a reginal economy along one path rather than another´.

The industry paths can either be subject to a) a lock-in, a state of rigidity and lack of ability to adapt, which in turn can be technological, cognitive or political, whereas the latter ´are self-reproducing over time and this may slow down industry renewal´ (157), or b) a path evolution. A path evolution or renewal (harmonizes with Wickens´ categorization above, but is described through the degree of technology renewal or substitution more than scale (as Wicken)), is described as either layering, conversion and recombining.

Layering means a gradual change of the industry and the institutional framework by adding of new procedures and practices, but the technological framework remains. The conversion evolution represents an introduction of technological development and regulatory changes of principles, but the overarching paradigm remains. The recombination evolution is described as the most radical, representing completely new technological solutions and completely new regulatory principles.

Christiansen and Jakobsen points out that a narrative could be more than just variations in information, but also an attempt to employ power to steer the path development of an industry (Christiansen & Jakobsen 2017, 157-158).

*Table 4: The suggested (by the actors) narratives for norwegian aquaculture and path development change dimension. Source: (Christiansen & Jakobsen 2017)*

**Table 1**
Categorization of elements from the analysis and discussion.

| | Path Extension Narrative | Path Renewal Narrative | Strong Path Renewal Narrative |
|---|---|---|---|
| **Change dimension** | **Layering:** fixes within the current, open net-pen technology, as well as some holistic practices. | **Layering**: longer smolt phases on land **Conversion**: closed Container Systems as well as attempts of deeper Ecological Salmon production | **Recombination**: offshore salmon farming as well as land based salmon farming |
| **Connection to licenses** | Old licenses and light-green licenses | Light-Green and Dark-Green | Dark-geen (maybe) and development licenses |
| **Potential greening impact** | None, low and medium | Low and Medium | Medium or high |

## 4.5. Better understanding of public policy shaping through language and power

In their conclusion, Christiansen and Jakobsen claim that market and policy priorities ´lacks a deeper understanding of the mechanism for policy-initiated renewal and its connection to narratives that reside in the language and consciousness of actors´. Thus, which technology is selected they claim, is dependent on both policy makers and following this also actors that influence policy makers. As a consequence, they further elaborate, path development is decided by language and political action. They say institutions, formal and informal, are variably strong or weak but still shape what kind of renewal will happen. Policy in practice

differs from policy in theory. They claim that narratives affecting to path development are adapted to the slow changing pace of the industry, because of cognitive lock-ins and maybe also (´or worse`) by power-holders (Christiansen & Jakobsen 2017, 162). Thus, I will elaborate more deeply into how power can affect the process of allocation of the development licenses.

### Power in public planning

Flyvbjerg and Richardson, when addressing power and public planning directs attention to the divide in planning between what should be done as opposed to what is actually done. The divide is mainly a divide between an open ´communicative´ (planning is based on an agonistic dialogue between planners and the public; stakeholders and actors) public planning process, as opposed to a more hidden power-based planning process. They claim that ´communicative planning theory fails to capture the role of power in planning´ (Flyvbjerg & Richardson 2002, 46). Flyvbjerg and Richardson further state that ´for students of power, communication is more typically characterized by non-rational rhetoric and maintenance of interests than by freedom from domination and consensus-seeking (Flyvbjerg & Richardson 2002, 49). They further claim that ´ power as unavoidable, recognizing it's all pervasive nature, and emphasizing its productive as well as destructive potential. Here, theory engages squarely with policy made on a field of power struggles between different interests, where knowledge and truth are contested, and the rationality of planning is exposed as a focus of conflict. This is what Flyvbjerg has called *realrationalität,* or 'real-life' rationality (Flyvbjerg 1996), where the focus shifts from what *should* be done to what is *actually* done´ (Flyvbjerg & Richardson 2002, 52). Their point being that power in planning is unavoidable and contributes to the shaping of *what is really done,* and thus an approach that *embraces the centrality of power*. (Flyvbjerg & Richardson 2002, 62).

## 4.6. Alternative to path development; Sustainable transitions

### Multi- level perspective; a theoretical framework to enable sustainable transitions

The emphasis on the role of technology to contribute to sustainable solutions for norwegian aquaculture have - as addressed above - been strong. Schot & Geels (2008) have addressed the interaction between, entrepreneurship, innovation, policy and technology, for sustainable transitions, and addresses what is termed strategic niche management (SNM) for policy development, and placed this into a broader context of what is termed a multi-level perspective (MLP). The main idea is that socio-technological systems consists of three levels;

niches, regimes and landscapes, normally local companies as niches, national public management, larger industry (and more) as regimes and landscapes as the macro environment, typically international structures, processes and institutions. This theory can be used as an alternative to traditional path-development studies to understand the dynamics of sustainable transitions, and because of its focus on power, policy, networks and coalitions, it is suitable for this purpose.

The approach suggests, according to the authors, that arranging for technological niches, meaning ´protected spaces that allow the experimentation with the co-evolution of technology, user practices, and regulatory structures´, can contribute for a ´sustainable innovation journey´. Promising technologies do not perform in the early adoption stage even if they represent high hopes for a ´potential to contribute to sustainable development´. To overcome this challenge, the SNM-perspective was introduced. This perspective emphasizes the interrelation between technological and social systems instead of a ´technological fix´. It is also explicitly emphasized a recognition among the scholars introducing the SNM-perspective, ´that the rise of modernity created conditions in which technology actors usually focus on developing, testing and optimizing technology, but neglect the embedding in broader societal goals, or leave it to a later stage.´ (Schot & Geels 2008, 537-538).

Further, Geels (2004) pinpoint that certain aspects of a system innovation are technological substitution and coevolution, such as changes in user practices, regulation, industrial networks and cultural meaning. The core of the concept lies to a great extent also in the ´socio´ of socio-technical systems. As Geels further states, ´the elements and linkages in socio-technical systems as the result of activities of social groups which (re)produce them. The activities of these different groups are aligned with each other and coordinated´ (Geels 2004, 33) through actors and rules carried out by different social groups, like policy-makers and politicians, institutions, culture, markets and science (Geels 2004, 35) Further Geels advocate that regimes normally promote incremental innovations, and niches to a greater extent foster radical innovations, because the niches are protected from common market selection procedures and thus more suited to protect the idea, or novelty.

Berkhout et al. follows up by arguing that certain configurations pressuring a regime will stand out as accountable for ´specific, historically-situated transformation processes´ (Berkhout et al. 2004, 66), and that transitions within a system can happen in different ways. One of them being *reorientation of trajectories*. Internal processes alter trajectories independent of apparent discontinuities ´in the actors, networks or institutions involved in the regime´ (Berkhout et al. 2004, 69). The stimulus for this trajectory change is an external

shock, but the response however, is handled or shaped within the regime. Another is *purposive transitions*, that have been ´intended and pursued to reflect the expectations of a broad and effective set of interests, largely located outside the regimes in question´ (Berkhout et al. 2004, 70), and where narratives are developed by the supporters of the alternative technology involving several technological changes, supported by some scientific, policy and industrial interests. However, interests within the incumbent regime can in such circumstance obstruct an imagined, planned and partially executed´ transition, (Berkhout et al. 2004, 70) Following this, Kemp & Rotmans (2004) underline that transitions defy control, but they can be influenced, and that this influencing can be done through markets, hierarchy and structure or institutions, whereas the latter is described as coordination based on, and ´through standard practices, trust, collective norms, networks and shared expectations and beliefs´ (Kemp & Rotmans 2004, 142). Thus, Kemp & Rotmans (2004) suggest, based on visions on sustainability, a steering philosophy of modulation; to join in with ongoing processes and encouraging bottom up initiatives. The policies should be evaluated against their contribution to explicit policy goals (pollution, integrity of biodiversity) and the policy´s contribution to overall transition process. Thus, two kinds of goals are set; content goals and process goals. Learning, maintaining variety and institutional change are important to achieve transition goals set by society. Some of the key elements in such a transition strategy involves long-term thinking, envisioning multi-domains and different scale levels, interdevelopment between these levels to try to change regime actors' strategic orientation, and an overall orientation towards system innovation.

However, according to the SNM-perspective, this is not the role the government or state should take by itself, and, it is not advocated for a governmental top-down initiating process, but rather on ´endogenous steering, or steering from within´. This steering ´can address different parts of such a process and includes adding a specific learning process or a set of demonstration projects which may redirect evolving dynamics toward a desired path.´ And as such, ´niches are not inserted by governments, but are assumed to emerge through collective enactment.´ (Schot & Geels 2008, 538), and thus the authors defines SNM as a form of reflexive governance.
Schot and Geels lists several relevant policy implications, but above all underlines that contrary to SNM-advocacy, many technology development projects (´experiments´) are organized to push for a certain technology, and neglect necessary co-evolutionary processes.

### Allures of MLP

Smith et al. (2010) have addressed the structural power in the MLP perspective and claims that resources needed to alter the path of an industry is widely distributed and that these resources stem from the membership of the prevailing regime, but that there are also resources outside the regime, for example knowledge about (technological) alternatives among niche actors, that challenge the regime. Thus, the power ´balance´ is not steady, or in equilibrium.

Smith et al. further ask, when it comes to the politics of transitions how ´agency play out in variation and selection processes? To what extent do variations and selections arise from the decisions of particular (networks of) actors?´, and claims that a broader analytical view on agency makes salient political questions about the interests and sources of power shaping selection environments and generating variations.´ (Smith et al. 2010, 446). Coalition formation, lobbies and policy processes are suggested to play a role, in the development of socio-technological systems. They claim that policies remain obscure, and that such issues as policy networks and discourse coalitions should could be further brought into light to understand how the socio-technical regimes and public policies are intertwined and develop. This understanding, the future is dependent on and research should meet this need, they state.

## 4.7. Power and ideas (narratives/storylines) in sustainable transitions

Avelino & Rotmans (2009) address discursive power in relation to long-term sustainable transitions as described in the previous chapter. They support the shift to Flyvbjerg and Richardson's perspective by trying to understand how things *are* rather than how they *should be*, by ´presenting a power-laden transition storyline´ (Avelino & Rotmans 2009, 563). They provide a definition of power, how power can be exercised, the dynamics, conditions and relations of power, and a description of how a storyline/narrative based transition could take place.

According to Avelino and Rotman there is a power struggle between clusters/niches outside of the prevailing regime where the *attacking niche regime* at one point takes over through growing power and establishes a new dominant regime, at *regime* level – *if* a transition takes place. According to Avelino and Rotman, the element of power and a conceptualization of it needs closer study to understand the interaction between the regimes better (Avelino & Rotmans 2009, 546). Thus, they advocate for an adequate framework of power to enable ´a plausible narrative´ (Avelino & Rotmans 2009, 549).

### Definition of power

Avelino and Rotmans define power as: ´the ability of actors to mobilize resources to achieve a certain goal´ (Avelino & Rotmans 2009, 550). In the definition *resources* are included. Avelino and Rotman distinguishes their use of *resource* in the direction of not so much material capital, as ´structural´ or ´discursive´ interpretations of power, and as such they see resources as persons (human, mental), assets, materials, capital, artefactual and natural. Mental resources can be concepts, ideas and beliefs. The resources possess no power source in themselves, but becomes power-laden when ´mobilized by actors to reach a certain goal.´ (Avelino & Rotmans 2009, 552). Relevant to the exercise of power is also the *capacity* to effect outcomes.

### Power exercise

Another central part of power is, according to Avelino and Rotman *power exercise*, meaning *how* the resources are exercised. They distinguish five different types of mobilization: innovative, destructive, constitutive, transformative and systemic. The innovative type is defined as an ability to discover new resources, *in concert* with others, where *visibility and plurality* are preconditions, and explains: ´A new idea or tool is powerless if it is not visible. Visibility´s condition is ´plurality´, i.e. at least two individuals must be involved´ (Avelino & Rotmans 2009, 552). Visibility and plurality creates *natality*, which in short could be explained as viability or the chance to grow and live after birth. Constitutive power is in short to *enable* the institutions and structures, where institutions is defined as social rules and agreements (laws norms and traditions) and structures are organizational and physical infrastructures.

Transformative power is defined by Avelino and Rotmans as the ability to redistribute the distribution of the resources through the institutions and structures or replacing them with new institutions or structures.

Finally, systemic power is defined by Avelino and Rotmans as the ´combined capacity of actors to mobilize resources for the survival of a societal system, i.e. a particular continent, region, nation, sector, industry or business´ (Avelino & Rotmans 2009, 553). In other words how the above-mentioned exercise of power works together. It is also an important element to highlight that it is collective interpretations of power, in order to facilitate the survival of the existing social system. Finally, systemic power means all kind of power available and used for maintaining the ´reigning´ regime. They can do so through two dimensions; nature and

level of mobilization. The nature of mobilization of power means that power through mobilization can either build something up; constructive, or tear something down; deconstructive. The level can mean either the mobilization itself or the following distribution, or channeling of power.

Different power types can be used to strengthen og weaken another type. A strengthening of one power type by another (or *each other*) is termed synergetic power dynamic, and a weakening of one type of power by another is termed antagonistic power dynamic. All kinds of dynamics between different power typologies (enforce and enable, resist and prevent), strengthen or are in principle possible. Thus, they can be used to describe relevant actors´ strategies in terms of power.

These different configurations can, according to Avelino and Rotman either represent a power plenum (power is present) where constitutive, innovative, destructive and transformative power enable systemic power, or a power vacuum; an unstable situation where the lack of power resource(s) make up a lack of condition(s) for the exercise of systemic power. The result being that the current power structure is not able to mobilize necessary resources of power to maintain the equilibrium.

### Conditions to exercise power

There need to be certain conditions present for an actor or stakeholder to be able to mobilize resources and exercise power. *Access* means awareness of, information on how to find the resource and how it can be possessed. *Strategies* refer to methods that are applied for mobilizing resources (examples propaganda, lobbying and networking are mentioned). *Strategies* also includes the way actors apply power types as a response to other actors´ actions; how they take part in the synergetic (cooperative towards same orientation or goal) or antagonistic (resisting, opposing each other's) ´play´. Skills means the human properties needed to employ the strategies and willingness means the desire, compared to the option of not, to act out the power an actor can exercise.

### Power relations

These *conditions* can be employed through empowerment and leadership. Empowerment means the control over the conditions, which can happen actively or passively. One can thus obtain control, or receive control and as such, empowerment. Leadership is another central and important element for employing conditions to exercise power. Leadership is defined by Avelino and Rotman as the ´capacity to influence and convince other actors in terms of

determining the goal for which power is exercised by increasing (or decreasing) the willingness of other actors to exercise power for that specific goal´ (Avelino & Rotmans 2009, 558).

### Knowledge to employ power

Lastly, Avelino and Rotman includes knowledge as a type of power. They define knowledge as ´the mobilization of mental resources (information concepts ideas and beliefs) to reach a specific goal, which is (by definition) an exercise of power´. Continued, they claim ´by constructing and communicating knowledge, one is exercising power´ (Avelino & Rotmans 2009, 558) both on behalf of one ´s own resources and how other actors mobilize resources. Further, they argue that knowledge about the resources is necessary in order to mobilize them for a specific goal, but also, knowledge relates to how to employ the conditions of power; access, strategies, skills and willingness.

### The process of power struggle and phases of a (sustainable) transition

The power struggle in a specific (sustainability) *transition* could be the confrontation between the ´regimes´ and the ´niches´. The niche can focus and invest in resources that are needed for change, disruption and destabilizing an equilibrium while the regime needs to invest in the stabilizing of it. However, as Avelino and Rotman points out, power exercise, relations and conditions can manifest between any ´participant´ at any level and as such the power battle can also take place *within* the regime.

This power struggle in transition processes can, according to the writers, be employed in a process where the starting point is the anticipation of a power vacuum; the existing system is losing system power and the state of equilibrium is unstable. Networks of actors form, both in the regime and the niches. The niche actors can, in this stage of the process, form networks and cooperations and such employ natality, visibility and plurality. In this state, or phase, two things can happen. The regime could try to withstand the innovative powers that are mobilized through absorbing them, and stabilize the reigning regime, a lock-in, or ´reverse transition path´ occurs, according to Avelino and Rotman. The alternative is if the niche initiative is not absorbed. Then it become an antagonistic threat to the equilibrium state of the existing regime, or distribution of resources, and works as a catalyst for a transition. A power vacuum occurs, and the take-off stage takes place.

The take-off stage is described as one of imbalanced power relations and struggle: ´the regime tries to survive by increasing the dependency of others on the regime, and/or there is a highly

antagonistic dynamics between niches and regimes, in which innovative and destructive power are exercised to disrupt constitutive power and vice versa.´( Avelino & Rotmans 2009, 561). This could lead to a setback for the take-off and transition; a ´back-lash´ or a second ´reverse transition path´.

If the existing regime do not succeed in disrupting the niche initiative, the acceleration phase is the next part of the process, according to Avelino and Rotmans. It is characterized by transformative power, where resources are redistributed, and old resources are replaced by new. If the niche initiative continues to gain momentum and can increase the degree of transformative power, they become a *niche-regime*.

The last phase, if the process still continues, is termed the stabilization phase. In this phase the niche-regime-actors can exercise constitutive power to establish a new distribution of resources and forming a new regime. This can happen because there is a synergetic interplay between constitutive and transformative power exercise. They both work in harmony and the same direction, enabling the establishment of a new resource distribution.

Finally, if the previous transition phases are successful, so to speak, a reconfiguration phase, consisting of the old surviving regime actors and the new niche-regime –actors take place, and a new regime is formed. The power vacuum is no longer an issue, and a new state of equilibrium has been reached.

### Power and sustainable transition management

This review of power enactment by actors in (sustainable) transitions have, according to Avelino and Rotman the purpose of describing the long-term non-linear process where various forms of power should contribute (be exercised) to a replacement of an old regime with a new (more sustainable) regime at a societal level as opposed to a (lower) niche level. According to Avelino and Rotman transition management involves balancing, or ´adjustment and adaption of power relations´ (Avelino & Rotmans 2009, 562), and thus ´redefine transition management as a governance model that aims to enable the attainment of resources, strategies, skills and willingness (empowerment) and to influence the willingness of actors to exercise power for a specific goal (leadership), this goal is being ´a more sustainable societal system´; one of the most important tasks for public management is to empower niche-actors and linking them together ´so they can form a broader and stronger network´ (Avelino & Rotmans 2009, 562).

Avelino and Rotman sums up by describing transition management as a governance model with the task, or purpose to influence the direction and speed of a transition process, and as especially focusing on empowerment of niche actors; creating ´space´ for innovative ideas and actors, enabling them when it comes to resources and innovative power and coupling these actors to each other, so they can form a broader network, a *niche-regime* that can enact *transformative power*.

## 4.8. Ideas as coalition magnets

Béland & Cox (2016) suggest that a very common way to influence policy outcomes is through the facilitation of the construction of a political coalition, and ideas with the features and strengths for this to happen could be labelled *coalitions magnets*. Ideas are described as ´causal beliefs about economic, social and political phenomena´, and as ´beliefs they are interpretations of the material world, shaped as much by the material world as by our emotions and values´ (Béland & Cox 2016, 430). As *causal beliefs,* Béland and Cox look at ideas as positing ´relationships between things and events. It is what they describe as informal expectations for instance from governments that can be identified as *´informal causal* relationships that constitutes ideas as emergent phenomena´ (Béland & Cox 2016, 430). They argue that ideas cannot be reduced to material manifestations. But when it comes to more concrete approaches to ideas, what Béland and Cox term *goodness or badness* of the idea, the quality of the idea become important only when the idea is ´considered in conjunction with the power given it by political actors´( Béland & Cox 2016, 430). What is often described as ´successful ideas´ in reality is an idea that have gained power and thus lead to political change. Béland and Cox further states that coalition magnets could open paths for policy reforms and that that the multiple meanings of an idea are a necessary feature to make it interesting to pursue for groups that otherwise would have different interests. Also, such a concept (coalition magnet) needs the power of a policy entrepreneur who employs the idea in *coalition building efforts* (428). Further Béland and Cox underlines that the institutional environment and normative frames must facilitate or contribute to the ideas´ viability in the environment it is belonging to, the must address what is perceived a critical issue, and that power is a critical issue.

Following this, a coalition magnet is defined by Béland and Cox as *´the capacity of an idea to appeal to a diversity of individuals and groups and to be used strategically by policy entrepreneurs (i.e., individual or collective actors who promote certain policy solutions) to*

*frame interests, mobilize supporters and build coalitions.´*( Béland & Cox 2016, 429). The coalitions can be of different types, for instance formal or informal.

### Intrinsic qualities of an idea

Béland and Cox argues that ideas with intrinsic qualities; that are ambiguous and polysemic, meaning that they can have different meanings for different people, have a greater potential to gain momentum and acceptance for coalition builders.

Valence, or more precisely the level of valence, is in addition put forward as another important property of an idea. Valence means the attractiveness of an idea and can be said to be either positive or negative, and high or low in intensity. Ideas with high, positive valence have greater attractiveness for more interest groups, stakeholder or actors, and then greater potential as a coalition magnet. This is important because the ideas can – at one point – work as a tool for the policy entrepreneurs to create new coalitions that can change the existing power structure regarding a case or issue.

One such idea is the idea of sustainability, which initially was, according to Béland and Cox, constructed by environmentalists as an effort to find common ground between environmental and economic or financial concerns. It is originally associated with environmental issues but later other areas og societal interests like economy, working places and local livelihoods have been actualized as part of the term. The goal was to show that the somewhat opposing stands for environment and economic growth could be harmonized, Béland and Cox summarize.

### Ideas, power and discourse

The relevance to this thesis is to address Béland and Cox´ view on ideas and power and discourse: ´At the broadest level, both ideas and power are informed by subjective and intersubjective interpretations of the world and, more specifically, of the interests of actors´, and that (…) one way ideas and power interact is through discourse, which constitutes a coalition building device.´ Ideas can thus ´function as a vehicle for collective action and coalition building´ (Béland & Cox 2016, 431) if they are ´communicated among people, through concrete and typically strategic framing processes´ and thus framed so that the actors use their ideas and their power to influence discourse (Béland & Cox 2016, 432). They can do this because it is the valence of the idea (in this case sustainability) that appeal to the broad coalition of stakeholders, and not the existing power relations in themselves. Framing is the process by which actors use their ideas and their power to influence discourse´ (Béland &

Cox 2016, 431 -32). Through this framing process, Béland and Cox argues, actors present their ideas, attempt to connect their ideas to important values, and strive to persuade others of the validity of their particular interpretation of ideas. The right combination of ideas and power gains, Béland and Cox concludes, a privileged position over other ideas, and ´skillful actors use the right ideas, the coalition magnets, to advance their own policy preferences. To do this, Béland and Cox also point out that the policy entrepreneurs are parts of expert networks.

However, as part of their conclusion, Béland and Cox raises a central point and question; ideas as coalition magnets can be said to have a certain life-cycle, and as passing through the different stages, the original intended content change and the ideas´ meanings deviate from its original purpose. Then Béland and Cox ask; can a coalition magnet (and highlight sustainability as a concrete example) ´stretch to the point of uselessness` (…) and become so general that it has no meaningful content? And if ideas cease to function as an idea for sustainability, what are they then?

## 4.9. Summary

In general, in an over-arching view, hegemonies and power have a great impact on the directions of societies, and in this case; norwegian industry and specifically the aquaculture industry. Hegemonies can contribute to create unconscious acceptance of how industry and nature is related at a societal level. Actors can further apply power, various discourses, narratives and ideas through coalitions, governance and networks to affect certain processes and steer them in desired directions, according to their own goals, interpretations and values. Regarding the development licenses, this could lead to various path-developments, that can be described in categories as lock-in or path-evolution, or sustainable transition.

In the two following chapters, the findings and the discussion I will address the process that led to the finalized development licenses, and what the outcome can be described as.

# 5. Findings

The findings from the data collection will be presented with accordance to the last section of the theory chapter. This means they will be presented through a lens of different power exercises, relations and mobilizations. The application of power will be studied, consistent with theory presented, through the formulation of ideas – as coalition magnets – with the purpose, according to the actors, of contributing to sustainability. The concepts *narratives, storylines and ideas* will be used interchangeably in this chapter in order to be as precise as possible. But, as they have great resemblance with each other, the concept of *ideas* will be applied as the main concept in the discussion chapter, as it has been most thoroughly elaborated theoretically. Further, the findings are studied through the application of critical discourse methodology. The main conclusions from these findings will be further addressed in the following discussion chapter.

The findings will be addressed chronologically as the thesis is built on theoretical framework assigning an evolutionary perspective (Schot & Geels 2008; Avelino & Rotmans 2009; Béland and Cox 2016), and a transition is thus typically divided in phases, starting with an *equilibrium*, or a preliminary established power balance among actors.

The chapter is divided in 6 parts. These parts follow the chronological course of events and the subheadings are used to indicate the main theoretical characteristics of each part.

In the beginning of part 5.3 a principal depiction of the most central actors are presented.

## 5.1. Part one: Systemic and constitutive power mobilized by the prevailing regime enabling equilibrium and power plenum. Sustainable development discourse hegemony.

In this period, 2008-10, the ´red/green` (AP, SP, SV) government is ´in office´ in Norway, and as addressed in the introduction new industries and innovation is on the agenda.

### Document review

#### *Department of Trade and Industry: (2008/-09) Et nyskapende og bærekraftig Norge*

December 2008 the department of trade and industry releases the government's main respond to the structural macro-changes that takes place as the oil sector is predicted to slowly diminish the white paper *Et nyskapende og bærekraftig Norge* (Regjeringen 2018). The white papers´ main issue is innovation – an in addition the environment - and it states that restructuring is needed in industries and regions all over the nation. Two elements of the

strategy that are relevant for the coming years are a dedicated strategy for SMB´s (`Små- og mellomstore bedrifter´) and innovation in clusters and networks. Sustainability and the marine sector is also addressed explicitly. The over-arching target is stated to maintain the high level of national welfare whereas ´our needs are covered without obstructing the same needs for future generations´, and in addition to shape policies that contribute to increased sustainability.

Further it is stated that value is created either by using more of a resource or by using resources in better ways, and that studies show that only a limited part of growth comes from increasing the input into production. Following this the white paper recognizes that the earth´s natural resources like ecosystems are under pressure, among several reasons because they can be over exploited in non-reversible ways. It is referred to the Stern-review, who according to the white paper, highlights that it probably is easier and more cost effective to decrease emissions now than to adapt to climate change later, and that technological development is needed to meet these challenges.

When it comes to special areas of interest the marine sector is one that is highlighted, and the well-suited conditions for aquaculture is put forward first. Norwegian export value of seafood is underlined together with the need to meet the demands from the great grocery chains. Following this, market driven innovations that contributes to meet preferences in the big chains needs to be improved at the smallest seafood producers. The white paper thus follows up by introducing a program for stimulating to increase market- and strategic competence in the industry. In addition, it is stated that the goal is to sustain the position as a leading supplier of seafood through innovation and aquaculture science.

The White paper can be seen as the first attempt (in this setting) to establish a collective symbol, and thus a strategic framing towards Norwegian economy and welfare, with restructuring as a use of topoi. The discourse strand of sustainable development is also introduced as the introduction applies the meaning of sustainability from the Brundtland report. However, the focus on improving processing instead of (natural) resource extraction and the emphasis on vulnerable ecosystems and cost effectiveness of action now instead of later is more similar to the ecological modernization discourse strand. To address both SMB´s and clusters can be a way of creating two different narratives/storylines for the further development of norwegian economy. The emphasis on market driven innovation and thus development of knowledge signalizes a further strategic framing because it draws attention towards creating value through knowledge more than what could be a more straight-forward industrial approach of acquiring more (natural resources) as input in the production process.

Through the emphasis on innovation and especially technological development a technology optimist discourse strand is also visible. However, stability is not a long-term asset.

### Innovative power mobilized within the regime, impeding power vacuum. New narrative og economic growth and global demand evolve:

#### *SINTEF: (Aug. 2012) Verdiskaping basert på produktive hav i 2050*

SINTEF is an independent contract research institution with customers from industrial and public management sectors. In addition, the institution cooperates with NTNU, the University of Oslo and other research institutions (SINTEF, 2018). August 2012 the report *Verdiskaping basert på produktive hav i 2050* was released by SINTEF (SINTEF 2012). SINTEF is part of the prevailing socio-technical regime in Norway, and it can be assumed that the report creates initial interest within the *regime*. The fisheries minister from 2013, Elisabeth Vik Aspaker, refers to it in the interview, and highlights its importance for the policy of the government:

*«Så kom jo rapporten fra SINTEF om potensialet for en femdobling av lakseproduksjonen i Norge. Rapporten var et viktig incitament i forhold til å virkeliggjøre ideen om utviklingskonsesjoner. (...) SINTEF-rapporten peker på muligheten for en seksdobling innen marin verdiskaping totalt sett, når man tar med alt som kan høstes fra havet; tang, tare, ulike alger, enzymer, osv. osv.».*

Thus, the former minister initially signals a high turnover strand, by addressing the potential for increase in volume. Specifically, she also addresses the *idea* of development licenses, and thus shows an interest in this concept as an idea suitable as a *coalition magnet for policy entrepreneurs for coalition building and power relations*.

The SINTEF-report is a sequel to two former reports; *Norway´s possibilities for value creation within aquaculture* from 1999 and *Exploitation (utnyttelse) of biomarine resources – global opportunities for Norwegian expertise* from 2006. The content and conclusions in the report has been subject to public critique, for instance in the magazine *Harvest* (2017); the consultant company PwC claim the growth ratio in the SINTEF report is unrealistic because of the traffic light system and lower positivity among the managers in the industry. Professor at NTNU and macro economist Anders Skonhoft criticises the report for misusing economic terms and thereby creating an exaggerated impression of the profitability in the industry. Still, as will be addressed the SINTEF report is referred to by (almost) all other strategic

documents/white papers. This way the publication of the report can be said to be a *collective discursive symbol*, as will be discussed below.
The SINTEF document was published 16th of august 2012 and thus chronically is the first of the documents reviewed for this thesis.
The report is published by SINTEF and Karl A. Almås, the managing director of ´*SINTEF Fiskeri og Havbruk´* has been the leader of the working group behind the report. Other members of the group were recruited from central relevant Norwegian institutions and industry.

**The mandate** for the group is addressed and is introduced with a *prerequisite*; that the ocean needs to be exploited more and is continued by the statement that logically then this represents a considerable potential for development.
The report contains elements of a high turnover discourse strand; the oceans´ resources are to be exploited and turned into economic capital. At the same time, the narrative that the world needs food is accentuated in the report. Further, it is pointed out that the mandate is that the groups are expected to suggest solutions to how this can be done without overloading the environment; a modification of the high-turnover discourse. In addition, a discursive position (ideological) and recurring sub-topic is that we, Norwegians, wishes to maintain our high standard of living, the social goods, low unemployment rates and a spacious national economy. But, it is stated, we need to uphold these standards in a sustainable manner (´bærekraftig vis´). This is an expression of a ´win-win´ economic idea, and a *weak sustainability* hegemony; natural resources are super-abundant and substitutable with man-made capital. The precautionary principle is not addressed. Thus, a further strategic framing based on a narrative of national welfare is also visible.

**The title of the report indicates that an imperative focus is on economic *value creation***, and the need to maintain *productive* oceans; this is a continued rhetoric move that could be interpreted towards both a high turnover and technology optimist discourse. This is because the term *productive* is commonly used in economic terminology and thus for a weak sustainability hegemony, but can also be applied to describe eco-/biological processes, and the on behalf of environmental sustainable ideas. Value creation, however is *specifically defined* as sales revenue later in the document (SINTEF 2012, 13), which can then be seen as a further strategic framing towards both a high turnover and technology optimist discourse strand. It can also be seen as a strategic framing towards Dryzek´s problem solving discourses; the

terminology and measures of productivity are further defined through economic terms, and barriers or problems needs to be solved. It is however important to note at this point that this could, unlike the motivation behind strategic framing and deliberately arguing for their case through misuse of economic terms, also be seen as *overdetermination*; unconscious and undeliberate framing towards a certain discourse. Still, as the article in *Harvest* refers to; professor in macroeconomy at NTNU and experienced in natural resources economy, Anders Skonhoft states it´s ´a scandal´ that the science academies in Trondheim have ´signed´ the report. He continues by stating that he sees the report as *ordered* by the aquaculture industry and was *´directed´* (regissert) by SINTEF and the science academies. He concludes, as pointed out above, by stating that the ´value creation´ term is misused by the report (Harvest 2017). In economic terminology *value creation* is not the same as gross sales (which is how is it used by SINTEF), but should be gross sales, *all costs* in the production process *deducted*. Value creation is thus deliberately or undeliberate used as a rhetorical mean suited for the weak sustainability hegemony and the high turnover, technology optimist, and problem-solving discourse strand. An important premise for the recommendations, the report states, is also the potential in taking advantage of Norway´s *comparative advantage* connected to increased value creation (…). This is another example of using economic vocabulary for rhetorical purposes, in favour of a further strategic framing of the case, towards the same discourse strands as mentioned above.

The report (SINTEF) also refers to work done by Torger Reve, a professor in strategy and industrial competitiveness from Norway´s School of Management (BI), pointing out that the seafood industry is an important global knowledge clusters, out of only three that Norway can commit to. Another topoi appears. The above point is one of the most central points. In the Harvest article Reve speaks about the report and it´s use of his theories. Reve states that SINTEF has removed his prerequisite that ´everything should be based on open ocean production (´kystanlegg´) (…), then one enters industrial aquaculture. One uses offshore technology and creates factories for production of salmon out in the ocean.´ Reve continues by stating that he sees no problem by using engineered solutions this way (Harvest, 2017). This way, the SINTEF report further uses economic *special/science discourse* together with previously mentioned discourse strands to further establish a collective symbol and coalition idea with the needed polysemic character and high valence. Further, the argumentation is put together in a way that allows for the *regime* to *leave the problem* (with making offshore aquaculture actually possible) *to the experts*, as the administrative rationalism discourse strand describes.

The report is, summarized, mostly articulated and put together through rhetorical arguments, discourse strands and ideas of economic, strategical nature. The generic issue ´problems´, or ´challenges´, like the environmental challenges and sustainability, are typically termed as ´threats´ which is a term used in economic strategy analyses as part of a *SWOT-analysis* (Strength, Weaknesses, Opportunities, Threats). In the same way, *opportunities* are used. *Technology* is also addressed, and it is pointed out that there is no technology strategy for the exploitation of marine resources. For a socio-technical regime this represents another opportunity to *leave a problem to the experts* to solve, and of course it is a clear-cut expression of a *technology optimist* discourse strand.

**Environmental sustainability and climate change are addressed explicitly in the report as a review of global trends.** The chapter refers to the UN, IPCC; The Millennium project and Rio +20, and address the same issues as earlier as for instance the need for more food to a global population, and an ethical obligation to do so. In this way the SINTEF report introduces the global demand narrative and by referring to the UN, a weak sustainability hegemony. However, this appears as (deliberate) strategic framing, because these points are followed only by mentioning in a subdued manner that probably the poor part of the global population won´t enjoy Norwegian farmed salmon, but rather the growing middle class. Finally, it is expected that the industry itself is shows an offensive attitude towards the reducing of the environmental footprint. it is specifically advised that the industry (´itself´) needs to invest in research and development and become a demanding ´customer´ (´bestiller´) of science. This argumentation also has similarities with economic rationalism discourse strand and appear as a further strategic framing towards this discourse strand.

**In chapter 7 it is specified and emphasized that a *prerequisite* is that the industry and science can solve the environmental challenges**. The introduction to the chapter describes it as a description of what the marine industry *can* represent in 2050. It is an *opportunity scenario*. The scenarios, as they are argued for, represents both a high discourse and a technology optimist discourse strand. But also, great expectations from actors (the industry) within the economic rationalism discourse strand and the special discourse of science as they are expected to solve decisive prerequisites for the scenarios presented. This can be understood as a rhetorical strategy to apply another topoi; a warrant for the final goal. Thus, lice, challenges related to health and so on is merely pointed to at this point. Plans, goals and limitations are not presented.

These are also examples of rhetoric on its way into a *double bind* situation, inevitable contradictions based on promises, because the report both addresses economic growth from the oceans and the solving of environmental problems, a win-win economic view, without arguing for how it actually can be done.
Throughout the report a consistent ranking of the argumentation is also visible; First, the economic imperatives are addressed, secondly the environmental.

## Synergetic power balancing narratives

### *Strategy group established by Stoltenberg Government: (Nov. 2012) HAV21 – FoU-Strategi for en havnasjon av format*

Chronologically, or discursively diachronically, the next document published is the Hav21 report (Forskningsrådet 2012). It is the result of the work of a broadly represented strategy group established by the government and the fisheries- and coastal ministry in 2011 to present a suggestion for a complete *research,* and thus special discourse, *strategy* for the whole of the marine academic field. The Hav21 report is intended to focus on the issues of research and science related to the marine management/policy area. The sub-title of the document is ´FoU-strategi for en havnasjon av for*mat; mat* highlighted). Immediately a similar strategic framing towards the global narrative and industrial hegemony is visible.

**The goal is presented as ´creating a more targeted, comprehensive and coordinated national R&D-effort in the marine area – to promote a sustainable (environmental, economic and societal) management and exploitation** of marine biological resources, and thereby contribute to the international knowledge development about the oceans. This is a strategic framing towards the special (science) discourse, and in a combination with sustainable development discourse strand, a further hegemony of weak sustainability by addressing the three ´pillars´ equally.
The report also applies (strategic) framings from the collective discursive symbol the SINTEF-report is about to become, and thus also builds a diachronic consistency between the reports. The symbolic argumentation is also visible as this is a report about *science* and the (SINTEF) reports´ editor/producer is highlighted as not being SINTEF but Det Kongelige Norske Vitenskabers Selskab and Norges Tekniske Vitenskapsakademi. As such, a *discursive knot* appears as proponents of natural, technological and scientific (special) discourses are used to legitimize economic growth. Further, a problem-solving discourse can be recognized.

Both Reve´s analysis and the potential for economic value creation and goals are also highlighted with concrete figures (in the *text surface)*, as more collective symbolic rhetoric appears (Wodak and Meyer, 2008). Further, it is stated that the norwegian economy is mainly based on value creation connected to the ocean, to marine resources and maritime possibilities. Thus, the diachronic aspect and consistency of the history, present and future are further strengthened. Most important is the continued ´misuse´ of the term *value creation,* even if it was used, or *interpreted,* in a (social) scientifically inacceptable way.
The *ordering* of the arguments in the SINTEF-report is also found in this report. Value creation is imperative; *and after this, also* the ocean represents important management issues related to climate, environment and resources.

One of the most interesting symbolic findings is the illustration and thus the *text surface* in the introduction, depicting the division of responsibility among the actors, and thus a further strategic framing, categorized into either public or private responsibility.

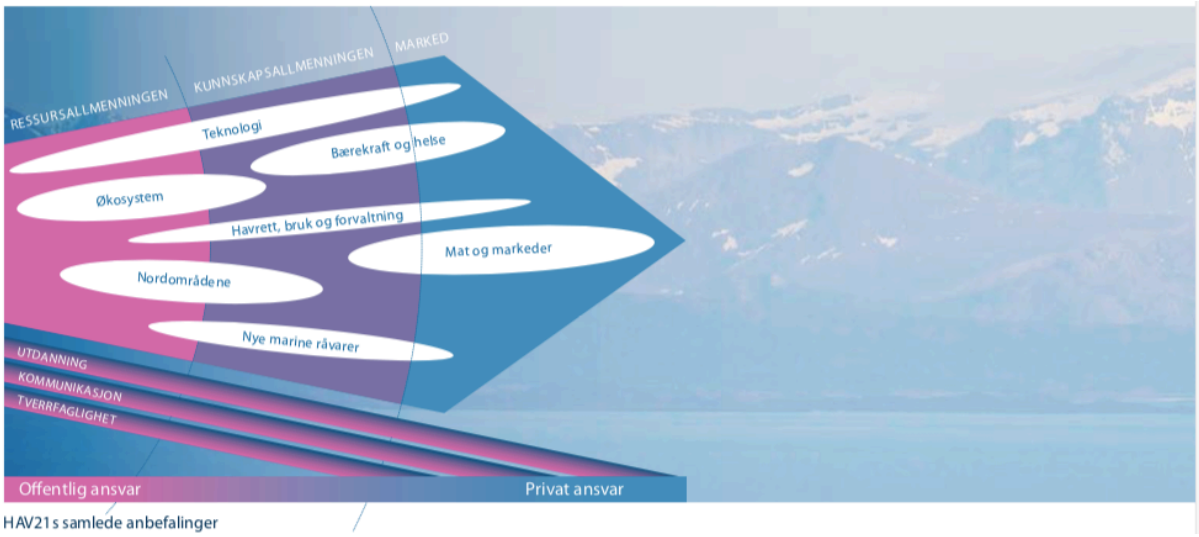



*Figure 11: Illustration from the HAV21-report of the sharing of responsibility for the managing of the oceans. Source: Forskningsrådet 2012.*

The *areas of* responsibility are divided into the resource *common* (allmenning), the knowledge common and the market.
The *ecosystems* are placed as a *public-management responsibility*, and *sustainability* is seen as the responsibility of the *knowledge common and the market*. Technology is presented as the responsibility ´of all´. This is a strategic framing towards the, all *problem-solving*

discourses according to the categorization by Dryzek. The role of the technology appears to be presented as hegemonic as everyone should advocate and promote it.

## Mobilizing constitutive power to further stabilize

### *Stoltenberg White Paper (March 2013): Verdens fremste sjømatnasjon*

22.03.2013 The Stoltenberg II Government (´rød-grønn´) published their white paper titled *Verdens fremste sjømatnasjon* (Regjeringen 2017). The White paper was written (solely) by the fisheries- and coastal department.

Initially it is important to observe that this white paper is written before, and not by, the (then) newly elected government that announced the development licenses. It thus represents the discursive (ideological) stands of the government in office, and as such also represent a certain hegemonic view on sustainability that might deviate from both the reviewed SINTEF-report and the upcoming white paper from the Solberg government. Still, it was referred to by the current Ministry of Trade, Industry and Fisheries during the interviews, and, quite interestingly and importantly, shows that discursive strands and hegemonies, and even discursive *strands* could be subject to interdiscursivity. This means that certain arguments, goals and strategies could be used by ´proponents´ of different discourses to affirm their view and goals. As such, the value of ideas as coalition magnets, and their polysemic character and valence for policy entrepreneurs appears even more strategically significant.

**The Stoltenberg white paper is presented as dealing with how Norway can develop its position as the world´s foremost seafood nation**, and a prerequisite is *profitability* in the whole value chain in the whole seafood industry. An economic rhetoric used for strategic framing towards what could both be a high turnover and technology optimist discourse, but also ranging from the problem-solving discourse, to the sustainability discourses presented by Dryzek. The Governments' vision is that *Norway shall be the world´s foremost seafood nation,* a vision that suggests a further industrialization hegemony. The white paper highlights the aquaculture industry and value creation based on renewable marine resources. Thus, discursively, in the introduction there are further traces of a *technology optimist discourse strand,* but also a framing towards sustainability discourses and *strong sustainability*. The industrial strength is highlighted and also in the paper the report from Torger Reve, *A knowledge-based Norway*, and the SINTEF report, Value Creation based on productive ocean in 2050, including figures with scenarios (Regjeringen 2017, 7), is referred to. Other Reports

from SINTEF; *Betydningen av norsk sjømatnæring 2004-2010*, emphasizing the economic potential, and the HAV21 report is also referred to.
In this way, the previous documents can be seen to be used for strategic framing, and thus accumulate discursive strength (diachronic consistency) for a future strategy and hegemony for sustainability. Again, both the SINTEF-report and the others contribute to the diachronic aspect and consistency of the strategic framings, despite their weaknesses (i.e. ´value creation' used wrongly, lack of actual solutions to environmental problems, transfer of responsibility to other areas/sectors of science).
Initially, the white paper from the Stoltenberg government has the same discursive and strategic direction as the previously reviewed documents.

**However, the white paper also deviates from the previous reports and documents** through more emphasis on sustainability on environmental terms, and also less on international trade but more on international development on the terms of the receiving countries. Thus, in this paper takes a hegemonic turn towards (but not necessarily *into*) a strong sustainability hegemony, and also what could be termed an *ecological modernization discourse*.
The report highlights explicitly what is termed central principles, and then underlines this turn towards sustainability discourse and hegemonies. These are the *precautionary principle*, the *ecosystem-based approach* and *maximal sustainable yield*. But they are also moderated by a referral to the Brundtland-report, and the *three pillars of sustainability*, leading to a balanced policy between economic, social and environmental sustainability. This last principle is, in the report, taken from the (at the time) UN commission for sustainable development.
The report also to a greater extent than previously reviewed documents, points towards international agreements and processes. The regional fisheries management organizations (RFMO´s) are mentioned in this respect, and also food safety, lack of agreement around common rules and respect for these rules, and their consequences, like uneven competitive frames.
There is also a whole chapter dedicated to the aquaculture industry. Growth and value creation within environmental sustainable limits are highlighted. Still, another ambition is to also be an international leading producer of aquaculture products and technology. Thus, this element of this white paper highlights the interdiscursivity and double binds that appears to be ´in play´ between different discursive positions (ideologies) and thus also takes places within different hegemonic views on sustainability (weak and strong).

**Further it is referred to 32 measures the government has proposed and** pointed out that the Auditor General in Norway has stated that there is a need for considerable change in the aquaculture management for it to be sustainable. To address this expectation, the white paper discusses in detail a *production capacity system (MTB)* and how it ca be developed through organizational measures based on biological and ecological knowledge and parameters. This could appear to be a typical move of an administrative rationalism, problem solving discourse.

The White paper also addresses what is considered the most important environmental challenges, lice and escapes. Central tools suggested are *zone compartmenting of the coast, indicators, limit values (grenseverdier), and measures (tiltak) if the limits are reached and surpassed*. This can still be seen as a turn towards an administrative rationalism, relying on *regulatory policy instruments*.

**Development of new technology is also addressed** with regards to new cage/pen solutions. The white paper mentions concrete examples; closed pens in the sea, land-based facilities and offshore facilities. These solutions could form the basis of future export income, it is stated, but they should be technology neutral, as the allocation of licenses was in 2013 (light and dark green licenses). This white paper thus connects export opportunities with the development of sustainable aquaculture farming.

Throughout the white paper traces of what can be understood as strategic framings towards strong sustainability initiatives like the precautionary principle and socio-economic systems can be identified.

### New economic view on nature introduced by the Ministry of climate- and environment, but lack of capacity to mobilize resources and affect outcomes

August 2013 a public formal report, NOU 2013: 10, called Naturens Goder – om verdien av økosystemtjenester was published by the ministry of climate and environment (Regjeringen 2018). The report refers to the Millennium Ecosystem Assessment by the UN from 2005, and further to the concept of TEEB, the Economics of Ecosystems and Biodiversity, which is said to be a follow up of the MEA. The fundamental idea behind TEEB is to highlight the negative economic effects from the degradation of the environment. The norwegian report highlights the message from the MA and TEEB, that ecosystem services provide vital value of different kinds (both monetary and non-monetary) for human beings and societies, and also the

economy and the corporations using natural resources in their value creation process. The group behind the NOU states that there is an effect from economic activity on the oceans and marine ecosystems, that aquaculture gives negative environmental consequences through pollution, infection of wild fish by salmon lice and the mix of farmed fish with wild salmon stock. The group recommends better surveillance of norwegian ecosystems and especially the coastal zone and the state of biological diversity. The report recommends making the economic impacts of degrading the ecosystems more visible to decision makers also in Norway, and especially points to frameworks, incentives and instruments and suggest a range of these tools to be applied in norwegian management.

The report suggests a new way of addressing nature; a strong sustainable, precautionary principle-based approach. It would shift the economic thinking from short-term to long term-basis. However, this NOU seems to have lacked the capacity to affect the outcome of environmental politics, as it was not mentioned in either the Stoltenberg white paper addressed above or the Solberg white paper addressing aquaculture released in 2015:

## 5.2. Part two: Innovative power mobilized through natality, visibility and (growing) plurality, initiating a new power plenum. New narrative of economic predictability and global demand appearing in concert with problem solving environmental discourse

### Solberg White paper: Forutsigbar og miljømessig bærekraftig vekst i norsk lakse- og ørrettoppdrett

The next central document (Regjeringen 2018) released from the government is after the election in 2013 and released by the Høyre and FrP-coalition (supported by KrF and Venstre). This means the regime have been altered through a new governing body with other (discursive and ideological) positions and the ability to alter constitutive and transformative power in public management through strategic framings of discourses, hegemonies and the formation of idea coalitions both within and outside the public administration.

The white paper is named ´Predictable and environmentally sustainable growth in Norwegian salmon and trout farming´. Thus, the title carries elements from both economic sustainability ideas and environmental sustainability ideas. But, as will be addressed shortly, *predictability* is used on behalf of the industry´s economic potential for economic *growth*, which is another key word in the title. In this manner the white paper takes a solid turn away from the Stoltenberg sustainable development discourse strand and performs a strategic framing

towards a high turnover and technology optimist discourse, and expert problem-solving discourse strands, and thus aligns more with the SINTEF-report. In this manner this white paper can be defined as contributing further to the diachronic consistency established earlier. The fisheries minister at the time, Elisabeth Vik Aspaker elaborates how the emphasis on sustainability is put in the white paper in the interview:

*" (...)det er fokusert på dette med bærekraft, du kan ikke ukritisk ekspandere hvis det ikke skjer på en bærekraftig og miljømessig forsvarlig måte. Men også fiskehelse, og vi har jobbet en del med rekruttering i min statsrådstid. Tilgang på kompetent arbeidskraft er avgjørende. Men bærekraft var et overordnet hensyn når stortingsmeldingen ble laget; herunder innføring av produksjonsområdene, og krav til hvordan selve anleggene og produksjonsmåten også kan forbedres. For å få et mindre fotavtrykk miljømessig».*

This way, the minister takes a turn away from the high turnover discourse strand, and draws on the environmental degradation narrative, by addressing what can happen by ´uncritical expansion´, and also animal health. She also, without preconditions, emphasise that that the industry should diminish the environmental footprint, a further signal of an environmental degradation narrative, and what could be interpreted as a technology optimist discourse strand. This statement also contains elements of sustainable development discourse. Expansion should happen on the premises of sustainability and the environment and the footprint should be reduced.
However, when addressing more explicitly eventual priorities between different sustainability discourses and thus hegemonies, a *weak sustainability* hegemony appears, and also economic industrialization motives (to export the technology), and also a *global demand* narrative:

"*Det er en kombinasjon av det der. En kombinasjon av mer bærekraftig produksjon, ny teknologi og det å se på denne anledningen til også å utvikle en ny norsk eksportvare, dvs. havbruksteknologi som kan brukes også andre steder i verden. Norge kan spille en viktigere rolle i matproduksjon til verden. Oppdrett av fisk vil være et viktig svar på matbehovet som verden vi ha når vi blir 9-10 mrd. mennesker. Potensialet er stort både når det gjelder produksjon av fisken og teknologen som kommer ut av utviklingslisensene. ".*

A priority in the white paper seems to be on the industrialization perspective by the rhetoric use of economic arguments, and thus *problem solving* (administrative rationalism, democratic pragmatism and economic rationalism) discourses and a *technology optimist* discourse strand: The white paper is introduced by Professor Atle Guttormsen at the Norwegian University of Life Sciences. This move, to present this content in the introduction of the paper appears as another *strategic framing*, with the goal of establishing a discourse position (economic sustainability ideas) because Guttormsen is a scientist, referring to a Nobel laureate. Guttormsens main message is that farmed salmon is healthy and thereby and that the international price regime signals a high demand for farmed salmon in the future; a further emphasis on the global demand narrative, and this way Guttormsen connects the global demand narrative and the opportunity for Norwegian national economic growth in the same manner as the previously reviewed documents. As the main rhetoric argumentation, Guttormsen refers to the norwegian Nobel laureate in economy, Finn E. Kydland that prescribes predictability as the most important contributor to economic growth. He continues the rhetoric argumentation, by also referring to previous governments plans, strategies and measures, and what he describes as ´anything but predictability´ and ´a display of wishing well and a solid dose of creativity´ (Regjeringen 2018, unnumbered) because of emphasis on local activity and cooperation, and female ownership. Guttormsens introduction can then be seen as a critique of the previous sustainability and technology optimist discourses (Stoltenberg government), and he continues by strategically framing the issue (as seen before) through economic terminology and rhetoric towards a high turnover discourse by saying that the industry is *being limited* on their home field (as opposed to the world market) by *challenges* related to sustainability (*´threats´*). He continues by proposing / recommending a clear and predictable policy for growth that could be able to release creative and good investments for a future directed industry the increases the competitiveness and solves environmental challenges. Predictability is *especially important* on behalf of *investments and the development of new technology*, according to Guttormsen. This, as shortly will be addressed, fits well together with the idea for sustainability that the proposed coalition and policy entrepreneurs is about to construct.

Regarding the precautionary principle, and its discursive position, the white paper address it explicitly as an argument toward the membership organization FHL that states that arrangements and regulations should not be introduced before science undoubtedly states a causal relationship between economic activity and pollution. But the white paper still uses, as an argument for their point of view, the same (as FHL) approach by stating the proximate

pollution (close to the cages) and effect on wild salmon is doubtable, but the *overall* effect is beyond doubt. In the same manner they state that if, ´in the future other undoubtedly demonstrable (´beviselig sammenheng´) causalities arise with an environmental footprint as salmon lice have today, indicators for such diseases can be included in a rule of action´ (Regjeringen 2018, 55). In other words, they use the precautionary principle as an argument for the opposite; a discursive knot is visible.
Other principles drawn forward from the Stoltenberg white paper regarding ecological and biological sustainability are also abandoned.
The potential for growth is also pointed to, and quantified through the symbolic weight the SINTEF report have achieved, as it also is referred to in this white paper.
The white paper further heads towards a weak sustainability hegemony as it initially addresses environmental sustainability through referring to the UN´s three pillars of sustainability, but also an explicit strategic framing. The following discussion appears somehow logically unclear, by stating that a priority between the pillars (sectors) must be done, but when it comes to preconditions for growth, the prioritized pillar is environmental sustainability (Regjeringen 2018, 40) as the most important precondition for regulating further growth in the aquaculture industry. This is another sign of discursive entanglements / knots. The biological boundaries, and thus environmental sustainability ideas are expressed explicitly to be prioritized but (only) because of economic sustainability framings based on predictability.

**Reve´s analysis and conclusions are also put forward in this white paper, and it is quite similarly to the Stoltenberg white paper, used as a foundation and legitimization to aim to build a knowledge-based *supercluster***. No-one includes the precondition of ocean-based farming at this point. This is another example of a rhetorical and collective symbolic argument used for strategic framing towards a high turnover and/or technology optimist discourse. As in the Stoltenberg white paper, knowledge is regarded highly strategically central. The emphasis for the Solberg government is to alleviate risk on behalf of economic growth. This way, in the Stoltenberg and Solberg white papers, the *special discourse* of science is used on behalf of two different *discursive positions* (respectively global discourse and special discourse) and thus strategic framings are apparent.
**As shown, the Stoltenberg paper discusses and initiates a system for monitoring and managing the pollution or externalities (risk) from growth from aquaculture**. This system, today commonly known as the traffic light system, for managing risk is also

discussed thoroughly in a dedicated chapter in the Solberg white paper. The development licenses are excepted from the traffic light system and thus it is not of central importance here.
However, the economically founded *need for predictability* is still underlined in the Solberg white paper, and thus the white paper suggest that a system is established based on (only) one rule of action and in this way gives the industry predictability by knowing which rule of action that needs to be fulfilled to be allowed to increase growth. It is suggested that an *indicator should correlate with the production capacity of an area.* Even if the report mentions many different kinds of pollution or negative loads, only lice is chosen as indicator. This is a further strategic framing towards *economic,* and *administrative rationalism*, trusting the market and the public administration, in practice, to steer the management or regulation of the regime. The systems´ rule of action is based on what is termed ´acceptable load´. This load is based on modelling and estimates of probability (Regjeringen 2018, 8).
Sjømat Norge, an interest organization for both fisheries and aquaculture and thus a considerable *policy entrepreneur*, working for specific *ideas* for sustainability, presents an interesting view on the traffic light system, through the interviews:

*"Vi er IKKE enig i hvordan naturvitenskapelig grunnlag brukes for hvordan lysene skrus av og på, der mener vi at kunnskapsmangel hindrer 100% treff. Vi er ikke enige i at hele områder blir lyslagt, men heller bedrifter. Når jeg sier naturvitenskapelig er vår oppfatning at man tar en usikkerhet i en modell og en ny usikkerhet og enda en og multipliserer de og får så en sikkerhet. Det er feil synes vi".*

**In chapter 11.5 and 14.2 of the white paper the development permits are mentioned.** The development licenses are introduced in chapter 11.5 as a solution to what is presented as unreasonable; that a farmer should be forced to reduce production if the reduction will not contribute to reduce one or more of relevant environmental challenges. With this reasoning the white paper states that the authorities should be able to make exceptions from the action rule (´handlingsregelen´) of the traffic light system. The condition for being exempted is if it can be documented that the operation of the relevant license do not affect the environmental challenge that trigger a reduction in the production capacity in the area, and it is further referred to chapter 14.2.
As the Stoltenberg paper, the same technological narratives/ideas for greening potential, semi-closed, offshore-, and land-based constructions are mentioned. In addition, it is suggested that

new areas can be used for farming. The main alternatives to farming within the fjords are, according to the white paper, further out, ´offshore´ or on land.
This is a fine example of the problem solving administrative rationalism Dryzek have described. Regarding risks, he further elaborates that for the administrative rationalist mind the focus on overcoming risk pragmatically means ignoring the alternative, which could be to not pollute (and risk environmental effects) at all. This is because administrative rationalism, in the words of Dryzek ´assume that nature is rightfully subordinated to human problem solving´ (…), and that people are subordinate to the state whereas the managers of the state have their own dominant place, and base their problem-solving capacities on reassurance, agnosticism and self confidence in the name of industrial society.

### Innovative power through policy entrepreneurship

The interest from the policy-makers for the project is acknowledged by Salmar and (samfunnskontakt) Alf Jostein Skjærvik, in the interviews done for this thesis:

"*politisk så tenner de så pass mye på ideen, også forvaltningsmessig, og det er det løpet der vi kommer frem til et høringsbrev om tillatelse til utviklingsformål.».*

Also, Sjømat Norges respondent, Knut A. Hjelt (regionsjef havbruk midt), states that they had a dialogue with the department:

*"Vi var vel tett på departementet hele tiden. Hvor mye vi påvirket på forhånd tør jeg ikke si, men svaret vårt bygger stort sett opp om høringsnotatet fra departementet.»*

However, Skjærvik added that other projects than just theirs talked to the authorities about the desire to lift the industry technologically, and that this is the normal way to do things in the aquaculture industry:

"*Men hele utviklingen av norsk havbruk siden 80-, 90-tallet bærer preg av samarbeid og tett dialog mellom forvaltningsmyndighet på alle nivå og næringen, og som har gjort at vi har kunnet få til den utviklingen vi har hatt. Den har vært tett hele veien, gjerne med felles målsetting».*

## 5.3. Part three: Transformative power shaping a new power plenum: Ideas as coalition magnets shaping. Narratives further evolving. Hegemony reconfigured to problem solving environmental discourse.

### Relavant actors

At this stage, it is of relevance to get an overview of the main actors involved in the concrete process of shaping the regulation for the development licenses. Below is a principal map showing the centrality of the actors. The red line indicates the coalition for Salmars Ocean Cage.

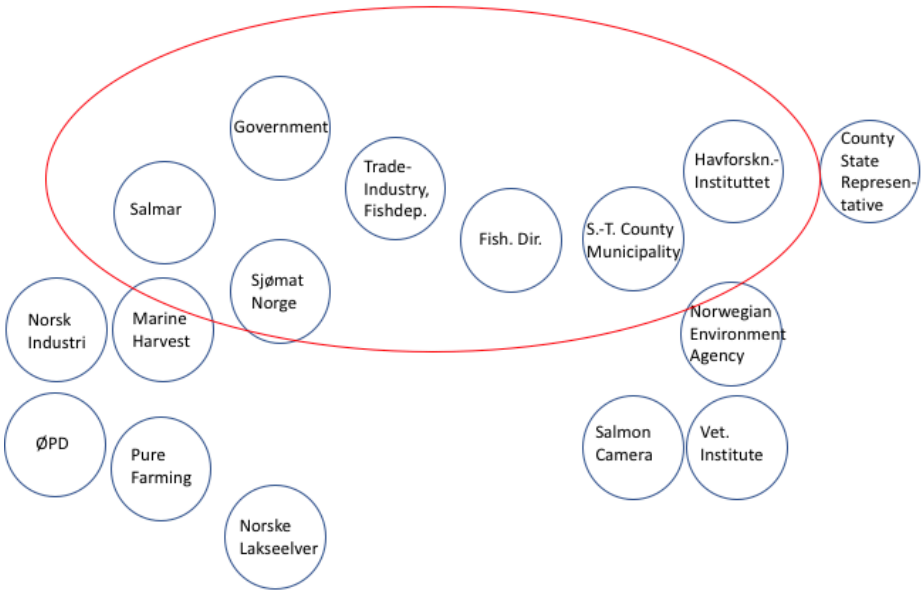



*Figure 12: Principal illustration of actors taking part in the shaping of the development porcesses.*

### The hearing process for the development licences

The hearing process started formally with a hearing letter from the ministry of fisheries and industry the 12th of June 2015 (Regjeringen 2015). The deadline for responding to the letter was 20th of august same year.

**The initial hearing letter from the ministry of trade and fisheries** reflects mainly a *technology optimist discourse strand*, given that new technological ´development´/´considerable innovation´ are presented to solve "the area and environmental problems the industry is facing". Through the formulation "solve the area and environmental problems" it is also formulated with a *problem-solving* discourse strand approach. And in

addition, since this is a public hearing process, *democratic rationalism discourse strand* is also apparent.
It is also interesting to note that it is stated that the licences (management tools) should first and foremost compensate for market failure. Thus, the ministry signals a cost-benefit and risk-analysis attitude which is another property of the administrative rationality discourse. The Salmar representative, from the interviews, underlined this expectation also:

"*Hovedpoenget er egentlig at hvis du skal ha en teknologisk utvikling av størrelsesorden havmerden, som innebærer en så stor økonomisk risiko så kan utviklingstillatelser være en rimelig måte for staten å bidra til å ta ned risiko i slike prosjekter. Det er jo hovedessensen i dette. Da slipper den norske stat å bidra med penger a la Innovasjon Norge og andre støtteordninger.".*

Also, in the interviews, the ministry uncovered a conscious uncertainty about the effect of the policies:

*"Det kan bidra til at hvis man tar i bruk teknologien som forhåpentlig gir bedre bærekraft, vil det gi økt bærekraft. Men vi har ikke evaluert ordningen og sett om den faktisk har bidratt til det, det er for tidlig, så vi kan ikke si noe nå. (...)"*

A further step towards *technology optimist discourse strand* as the implicit statement is that technology is needed to solve the environmental problems. In the hearing letter it is explicitly suggested, diachronically in line with the Solberg white paper, that ocean cages further out at sea and land-based instalments can use former less suited areas for farming in a way that limits the spreading of diseases and parasites and gives lower emissions. The results from the technology development projects should be shared with the industry and thus a *democratic rationalist discourse* strand is apparent; public management to create cooperative problem solving for the good of the people.

**Sjømat Norge**, the before mentioned interest organisation for fisheries and aquaculture (Sjømat Norge, 2018), have Salmar as one of their members.
The hearing answer (Regjeringen 2015) from Sjømat Norge states in the opening paragraph that they are positive to the suggestion from the ministry (hearing letter), because it would be an important arrangement that will contribute to a more sustainable development of the

industry through technology development and improvement of ways of operating (´driftsformer´). With this opening statement, Sjømat Norge joins the same discourse strands, technology optimist and economic rationalism, as the ministry, and as will shortly be addressed, their member Salmar.
In the interviews, the representative from Sjømat Norge (Knut A Hjelt) address their own sustainability strategy. The three-pillar principles are mentioned, but the definition of environmental sustainability is labelled as uncertain:

*"Det er et mål å bli mest mulig bærekraftig; både samfunnsmessig, sosialt og økonomisk(...)selv om miljømessig bærekraft har vært mest fokusert på de siste 10-15 årene, uten at en har en omforent definisjon på miljømessig bærekraft."*.

However, the following answers from the interview further signals both a *strong sustainability* approach with their ´zero-vision´ combined with a desire to use (´utnytte´) the natural resources, not exploit (´utnytte´) them, and thus signals a *maximum sustainable yield attitude*:

"Alle tre pillarer; vi er klare over at matproduksjon setter fotavtrykk. Vi sier at vi skal jobbe for å minimalisere fotavtrykket miljømessig gjennom drift, biologi, teknologi, samarbeid. Bærekraft miljømessig har veldig mye godt på lus og rømming, Det er de miljøparameterne som ofte er oppe. Læring, rømmingskommisjon, knaing av denne informasjonen, tett samarbeid fiskeridirektoratet er vår vei til en nullvisjon. Det er det samme som vi har innen trafikk i landet hvor noen hundre dør hvert år. Det godtar vi men vi jobber samtidig mot et mål om null drepte. Men vi er på vei nedover. (…) Jeg vil si at vi ønsker å utnytte de naturresurser vi har, - bruke de og ikke forbruke de.»

However, this approach seems to be somewhat limited towards self-interest, because it focuses to a great extent on if the *farming industry itself <u>is affected</u>* by the pollution, or if the *industry itself <u>affects</u>* the degree of pollution:

*"Beste eksempelet er fra lenge siden. Vi var aktive i å stoppe utslipp fra Sellafield. (...) Sjøen er vårt grunnlag som produksjonsmedium. Vi må kunne produsere mat der. Punktforurensning som går i sjø liker vi ikke, vi liker ikke tankfart i mellom merdene heller for å si det sånn. Alt det prøver vi å påvirke. I Møre og Romsdal, hvis noen ønsker et*

*giftdeponi, den typen synes vi ikke går sammen med matproduksjon. Det prøver vi å påvirke og stoppe. Hvis du spør hva med egen forurensning så mener vi at med fortynningsgrad og det vi slipper ut av fôr og feces, feces går alltid ut, så vil det ha null effekt, p.t. Men i en god lokalitet som er som en ørken næringsmessig så er det ikke noe problem".*

The degree of acceptance of other uses and interests in the ocean is to some extent, but not always, welcomed:
"Havstrategien former vel en fremtid som ikke bare går på laks, ørret, men der vår bruk av havet tredimensjonalt vil bli mer utvidet, og det støtter vi. Noe av det vil være vanskelig samtidig med matproduksjon i samme område, f.eks. gruvedrift, det ønsker vi ikke i samme område. Vi vil få en bredere bruk av både bunn, søyle og overflate både til industri og matproduksjon. Vi må vel regne med at det også kan komme industri som utfordrer vår videre utnyttelse av sjø som egner seg som medium for matproduksjon."
The main target for Sjømat Norge seems to focus on strong sustainability principles, as long as it affects their ability to produce in the areas they use. However, the precautionary principle is not mentioned and with this in mind Sjømat Norge seem to have an industrial technology optimist approach quite similar to the Solberg government.

### Strategic or undeliberate framing through constitutive power?

**Going back to the hearing letter from the ministry, one of the most noticeable choices the ministry does is defining *Research and Development-activities for development purposes*, as *development*** through the norwegian SSB and the OECD handbook, the *Frascati manual,* which is a handbook for statisticians. This definition is a *low-key* definition of innovation, towards a meaning of incremental innovation rather than disruptive, radical, let alone *system* innovations. In the interviews, the ministry claimed this is a relevant and often used definition:

"(…) *dette er en kjent og akseptert definisjon på utviklingsarbeid."*

Also, Sjømat Norge, when it comes to the strategic framing of the nature of development or innovation contribute to the coalition idea - which by that time is ´under construction´ - by defining development as SSB does. In the same fashion as the ministry a definition used by statisticians to assess a more general development is used instead of what could be more relevant terminology when otherwise terminology as ´considerable innovation´ is used.

In the interviews, when asked about the innovation height for the ocean cage, the Salmar representative states that the concept consist of mostly known technology, and that everyone can copy it:

"*I havmerdkonseptet så bruker vi ikke så mye som ikke er kjent men vi setter det sammen på en ny måte. Alle kan kopiere det.".*

In the guidelines for the assessment of the development licenses, it is required that to get a license it requires ´considerable innovation´, which is something else than ´development´. And, even more interesting, it is further stated in the requirements that what should be viewed as *considerable* innovation, should be subject to *discernment* (skjønnsmessig vurdering), but the management (forvaltningen) should use the definition of ´development´ as a starting point. The ministry explained this choice in the interviews:

*«Litt vanskelig å gi en kort definisjon (…) det betyr at (…) det ikke er helt fastlagt akkurat hva som skal til. Man har et visst rom for å vurdere det konkrete tilfellet, om det faller innenfor eller utenfor den definisjonen som er lagt eller det kravet som stilles. Det ligger i hele begrepet, en vanlig språklig forståelse.»*

This appears as constitutive power used for *strategic framing* towards certain *ideas.* The selection of definitions, and the varying use of unharmonized terminology creates situations of double-binds because in reality almost everything and anything could fit the description. The interviews with the representatives from the ministry also strengthen these impressions of aligning *ideas*, and a problem-solving discourse strand, as they highlight the importance of dialogue between institutions, problem solving techniques, technology as the pre-decided centre of the solution (to maintain work places and value creation), and in addition also contribute to environmental challenges. They also, by emphasising technology orient themselves mainly toward a modest, or strong path renewal narrative, and administrative rationalism. The response in the interviews underline this:

« *(…) det er i hvert fall miljøutfordringer i næringen som gjør at man vil finne løsninger, og utvikling av teknologi er viktig for å løse utfordringen og bidra til vekst. Det gjelder jo (…) teknologiutvikling som retter seg mot lus og rømming og det å legge til rette for utvikling av nye areal. Det er poenget med utviklingstillatelsene – å bidra til teknologiutvikling."*

**With regards to a possible increased negative load on the environment from the development projects the idea of exception from the traffic light system is prolonged** and one of the reasons, according to the interview with the ministry, is uncertainty about the outcome:

*«Vi antok når vi laget ordningen at noen av konseptene ville få konsekvenser på miljøstatusen i det gjeldende produksjonsområdet. Det er jo avhengig av mange aspekter, og vi har ingen erfaring med å kunne si noe om det enda.»*

Also, the hearing letter from the ministry is confident that the risk for negative loads to the environment is low: ´(…)*should be arranged for a system where the risk for it to happen is small because of the securing of the quality of the application is thorough and the projects should be watched closely´*, and that this is a limited effect since the license needs a locality clearance. ´It is then made an assessment of the sustainability of relevant authority´ (Regjeringen 2015, 10-11). This is an even further strategic framing towards *administrative rationalism* and the expert qualities they are expected to possess in different parts of the assessment and regulation process. And as the end goal, to solve the problem at hand. But they are not that easily solved. However, the interview with the Salmar representative shows that some incontestable biological facts requires a great deal of pragmatic problem-solving approach and allowing for a learning-by-doing approach and experimentation familiar in the administrative rationalism discursive strand, from the public management:
(my question highlighted with bold):

> ***Mange mener at økt produksjon og flere individer på begrenset område logisk gir mer lus eller sykdom?***

*"Joda, man kan ikke bestride det. Det er jo sånn biologien fungerer. Det er sånn det er. Så er jo alle på en vis husdyrproduksjon – så er det å finne balansen på et vis mellom det som er mulig og ikke mulig og balansen mellom god og dårlig fiskevelferd. Da er det det som er suksessen egentlig, for havbruksnæringen i Norge å finne metoder som gjør at du håndterer vaksineutvikling, som er den aller største nyvinningen som ble gjort på tidlig nittitall. Og at myndighetene har en pragmatisk tilnærming for at du kan gjøre dette på en effektiv måte."*

### Constitutive power through disaggregative and omniscient problem solving

The fisheries directorate confirms this in their interview, that they did not see it as their main task to assess contributions to environmental sustainability in their work:

*" (…) jeg tror det er viktig at du legger(…)det er viktig å forstå hva som er vår oppgave og hvilke vurderinger som hører hjemme i en klareringsfase. Den konkrete vurderingen av om etablering er problematisk i.f.t. naturmangfoldsloven, det er en vurdering som alltid skal gjøres, og i.f.t. alle tildelingsvedtak så skal det fremgå, og rent konkret er det slik at for disse tillatelsene (…) vi gir et tilsagn i.f.t. rammene i ordningen, altså teknologi. Prinsippet om at det skal være bærekraftig er en grunnforutsetning. Basisstruktur. Det å ta stilling til de ufravikelige (…) prinsippene i naturmangfoldsloven vil bli gjort i klareringsfasen som Fylkeskommunen har ansvaret for. Her er det Mattilsynet kommer inn og man forholder seg til planreguleringene. Fylkeskommunen har en utvilsom plikt til å synliggjøre sine vurderinger. Den konkrete vurderingen på den spesifikke lokalitet ligger ikke til oss. Det vi skal ta stilling til er om søknadene faller innenfor ordningen og kan anses som tilstrekkelig innovative og kan sees som betydelig innovasjon og betydelig investering. Og de andre tingene som står i retningslinjene. Det er litt andre vurderinger som vi gir tilsagn om, og oppstiller kriterier for. Det du spør om hører mer hjemme i klareringsfasen.»*

This disaggregation of responsibility and problem solving is maybe even more apparent when the manager in the directorate is explaining the different consideration that needs to be done related to economic ideas for sustainability and environmental ideas:

*«(…) i klassisk litteratur har bærekraftbegrepet tre bein. Økonomisk, sosial og biologisk bærekraft. Det er klart at et stykke på vei så kan man jo diskutere - jeg tror det finnes like mange forståelser av innholdet i økologisk bærekraft som det finnes folk. Men samtidig må du huske at vi har en lov som har som formålsbestemmelse at vi skal drive bærekraftig. Vi skal ikke gi tillatelse dersom det ut fra en helhetsforståelse (…). Kravet om bærekraft kom inn i 1988, og har ligget der som en grunnpremiss hele tiden. Men grunnen til at man kanskje skrev(…) i den versjonen jeg har, som ikke er den siste, så sier vi ikke så mye om økonomi. Men det er klart at dette er en ordning som peker hen til de store prosjektene, det ligger i sakens natur at staten skal inn med risikoavlastning. Men det må vel være en balanse i slike vurderinger. Vi så vel ikke helt for oss hvordan noen av de søknadene helt ville bli. Det er ikke helt enkelt å drøfte dette med økonomisk bærekraft. Det er alt annet enn enkelt.».*

The faith in their (the directorates´) problem-solving capacities is also recognizable from the answers to the interviews. Both technological, economical and biological expertise is drawn upon, and this way the administrative rationalist discourse strand, to leave the problem to the rational experts, appear strong in the actual assessment process:

"*Rent konkret, i praksis, så er det det å si at hver søknad får tildelt både en jurist og en ingeniør som ansvarlig for saken, og disse samarbeider jevnt og trutt hele tiden, avhengig av bærende elementer i de ulike søknadene som omsøkes. Vi supplerer med økonomisk kompetanse for å se på basiselementene, og i tillegg med biologi avhengig av problemstillingen. Teknologene tror jeg nok også har mye diskusjonsmøter seg i mellom der de diskuterer i plenum og lager en skriftlig oppsummering på hvilke resultater de har gjort i.f.t. søknaden. Dette er dokumenter som blir lagt til saken og så er det slik at det skal lages et vedtak og der er det primært juristene som har ansvaret. Men det vedtaket er et bred anlagt dokument (...) Om teksten i vedtaket der det er mange som er inne og leser formuleringen for å sjekke om vi har tatt høyde for det og det? Stemmer det med andre avgjørelser? Det er et stort felt å skulle kalibrere i forhold til. Det er mange hoder som er inne og bidrar før man konkluderer."*

### Dark side of power

**To this point it has seemed that the responsibility for the environmental sustainability has been set aside, leaved for later or other arenas or institutions.** In this way, the administrative/managerial process of addressing environmental sustainability has in practice been given responsibility for to the county municipality. As have been shown earlier in the thesis, the locality clearance process is complex, but the county municipality is responsible for coordinating it. This means that the final decision on clearing a locality for aquaculture or not, based on the assessment of the sectorial authorities, is made by the county municipality. In this respect, it is relevant to consider that the county municipality also is responsible for industrial development at the county level. In other words, they have roles and responsibilities that in many cases could be conflicting.

**The county municipality first answered** through one respondent that wanted to be anonymous, but this respondent later withdrew the answers. Another possible respondent was invited to take part as a respondent but rejected initially. The managing director in the county municipality with responsibility for *planning and industry* was also invited but has not

responded. Thus, the County municipality has not been accessible for interviews with regards to this thesis.

**Considering the central role of the county municipality, but their rejection to answer, makes it relevant to continue**, from here, to the hearing letters (Regjeringen 2015) from this authority, and then further to the relevant sector authorities for assessing locality clearances with relations to the Norwegian pollution act; the State County representative (Fylkesmannen).

**The county municipality** states briefly that new technology and new operational systems can be important contributions to accommodate the industry´s challenges both when it comes to sustainability and shortage on available area. They signal a *technology optimist* discourse strand. They agree that there is a need for a new type of licences that can contribute to arrange for technology development and forwarding of new ways of operating within the salmon industry and hope that an arrangement with development licences can be in place as soon as possible. This last element could be understood as displaying elements of *high turnover,* and *economic rationalist* discourse strands.

Salmar´s representative, in the interviews, interestingly stated that their dialogue with the county municipality and the municipality is good:

"*Da har kommuner og fylkeskommuner interesser på disse områdene spesielt som planmyndighet. Det fungerer godt.".*

Also, the county municipality refers to the reply given by Seafood Norway and supports all comments, suggestions and viewpoints in the statement.

### Transformative power redefining deprecation and salmon lice to finalize new hegemony

**The county state representative (Fylkesmannen), in their hearing letter** (Regjeringen 2015) overall display a *special (scientific) discourse position* through a positive attitude to an arrangement that facilitates solutions that drives the industry further, especially with regards to solving the environmental challenges the industry is facing. In addition, and contributing further to the *special discourse*, the county representative advocates that it should be a criterion that the project is successful, and that it contributes to solving the environmental challenges.

The institution also underlines that they see it as necessary that possible licenses for research/development purposes are given solely to projects that aims to reduce the environmental effects of the aquaculture industry.
The county representative uncovers a strong advocacy for natural science (as a *special discourse*) and sustainability discourses in their hearing letter.
However, in the interviews the respondent informed that in the case of assessing locality applications related to the pollution act, they had been instructed to not see lice as a biological load on the recipient:

*"Per i dag regner vi ikke lus som organisk belastning i resipienten. Det er foretatt en rollefordeling mellom departementene om hvilket regelverk lus skal forvaltes etter. Det er der klargjort at lus ikke skal forvaltes etter forurensningsloven."*

When asked specifically about the Salmar Ocean Cage, and their role of either allowing or rejecting it, the respondent answered that the county representative had initially given a conditional deprecation (fraråding):
(question highlighted with bold)

> **Nå vet jeg at du kanskje ikke kan svare når gjelder spesifikke søknader, men var det ting ved Salmar sin søknad som måtte vurderes ekstra nøye?**

*"Den havmerden er jo spesiell ved at alt samles i en merd, det blir mer laks i et mindre område enn til vanlig. Samtidig er den plassert i et ganske strømsterkt område. Det er kanskje det som er mest spesielt forurensningsmessig sett kan du si. Vi har gitt en betinget fraråding til den søknaden. Det gikk på problemer med lakselus og rømming, og at man tillater økt produksjon i området vårt. I utgangspunktet har det ikke vært noen nytildeling på andre tillatelser, så utviklingstillatelsene kommer i tillegg til den produksjonen som er fra før. Så vi har sagt at hvis det ikke innebærer noen økt biomasseproduksjon og dermed luseøkning i området så aksepterer vi det. Hvis ikke frarår vi det. Og det har sammenheng med lusepress i området. I forhold til trafikklyssytemet er vi jo i et område det ikke tillates vekst i utgangspunktet."*

In other words, with relations to the pollution act, the county state representative depreciated the application from Salmar, but still a locality clearance was given by the county municipality.
(question highlighted with bold):

**Så dere har gitt en betinget fraråding, men de har fått tillatelse likevel?**

*« Ja, etter forurensningsloven er ikke lus tatt med, for vi har to roller. Så har du uttalelsen som vi gir til fylkeskommunen der vi fokuserer på naturmangfoldsloven, og hensynet til anadrome laksefisk. Lus er jo et stort problem for laks og sjøørret.*
*Og i den perioden der var det ekstra ille.».*

## 5.4. Part four. Antagonistic, enabling and synergetic resource mobilization for power vacuum and power plenum. The special discourse of Science´s role

Science is already addressed as an important element in general in societal questions and especially when it comes to environmental policy and management issues. This is also the case with the development licenses. Among the scientific organizations sending a hearing reply (Regjeringen 2015) was the Norwegian Food Safety Authority, the Veterinary institute, Havforskningsinstituttet and the Norwegian Environment Agency.
The main message in their content was quite similar with an initial positive attitude towards technological development in the industry, but with an emphasis on scientific methods in the development process and also the importance of prioritizing animal welfare, other biological risk that can be considered a negative load or effect on the environment.
The interviews uncovered a consistent attitude towards the intention of development licenses from most of them.
For instance, the Norwegian Environment Agency, through senior advisor Atle Kambestad states:

*"Det vi er bekymret for er økt produksjon. Økt produksjon gir økte problemer. I det minste måtte det være et formål å finne nye løsninger som reduserer miljøbelastningen. Vårt formål har altså vært å sette redusert miljøbelastning i fokus.»*

Regarding economic vs financial gains, he sees the arrangement to a great extent to have (mostly) economic and technological motives:

*"(...)så langt som vi forsto ordningen, så var den laget for å kunne gi næringen finansiell mulighet for å utvikle seg teknologisk. Målet med det er slik vi forstår det først og fremst økonomisk vekst, og ikke miljømessig bærekraft. Det er likevel slik at noen av prosjektene som gir uttelling innenfor ordningen vil ha helt eller delvis formål om å finne bedre miljømessige løsninger.»*

But he does not see Salmar´s ocean cage as a solution for environmental sustainability:

*«Salmar sin havmerd er jo ikke bygget for havet, og den er lagt i den viktigste utvandringsruten til landets viktigste laksefjord som allerede i flere år har vært utsatt for store tap. Det har ingen miljømessig hensikt.»*

Atle Lilleengen, project manager biosafety at the Veterinary institute, signals some hesitation when it comes to exempting the development licenses from the traffic light system:

*"Det er jo en beslutning, vi ga vår mening i høringsrunden og mener at den totale produksjonen bør være regulert og klart definert, og regelverket har ikke tatt høyde for det. Det er en beslutning som er tatt og vi er ikke enig.»*

However, during the process of shaping and announcing the requirements and allocating the licenses, the attitude of some seems to have a more neutral view: Terje Svåsand, research and program manager at Havforskningsinstituttet for the aquaculture programme, initially emphasizes their position related to the trade and fisheries ministry:

"*Vi er jo som jeg sier et institutt under Nærings- og Fiskeridepartementet og vi får årlige tildelingsbrev og styringsdokumenter, og mye av oppgavene våre blir jo (...) gjenspeiler de strategiene som departementet har lagt opp. Slik at vi skal jobbe med de hovedproblemstillingene som ligger i stortingsmelding 16 og det er klart en sammenheng mellom de strategier som departementet har laget og oppgavene som havforskningsinstituttet er satt til å gjennomføre.»*

Svåsand reflects a somewhat positive attitude to the development projects:
(question highlighted with bold):

> **Den overfor nevnte rapporten (Havforskningsinstituttets ´Risikorapport norsk fiskeoppdrett 2017´) sier i kapittel 11 at det man kaller havoppdrett vil bidra til mindre smittepress fra lus. Er dette en forventning man gjengir eller er det en faglig basert prediksjon?**

" *Der går det kapitlet på fiskevelferd. Det man skriver er at det er større avstand mellom anlegg, men likevel vil du spre lus om det ligger ute i havet så en løser ikke problemet om en tar ut anlegg langt ute fra kysten. Man får et annet spredningsmønster, men om det ligger spredt vil avstanden være stor og det vil sånn sett være mindre smitte. Men det er sterke krefter i sving ute i havet og en får testet ut en del konsepter som blir interessant, blant annet hvordan er lusepåslag og fiskevelferd ute i havet. Det er spennende og nyttig forskning som vil komme opp og det er for tidlig å konkludere om utfallet.*

Svåsand also thinks the applications are assessed thoroughly enough when it comes to possible problems with challenges with salmon lice:
(question highlighted with bold):

> **For å spørre på en annen måte: er det et faglig sikkert kunnskapsgrunnlag for å tildele utviklingskonsesjonene, slik de er utformet, med tanke på risikoen for økte utfordringer med lakselus?**

*«Kriteriene for utviklingsløyvene er jo (…) du skal teste ut ny teknologi, og jeg har ikke vært inne i vurderingen av de ulike løyvene, men det er jo en grundig vurdering som gjøres i forhold til hvor nyvinnende den ulike teknologien er. Og har du et lukket anlegg så har du jo kontroll med luseutslipp og rømming. Men det er ulike typer teknologi som brukes og det er både åpne anlegg i havmerder, du har jo det store anlegget oppe i Trøndelag, det er mange typer anlegg som testes ut og noen av de er vi involvert i for å dokumentere kanskje spesielt det som går på fiskevelferd. En del av utfordringen med ny teknologi (…) det er utfordringer knyttet til fiskevelferden og en må dokumentere at nye løsninger har god fiskevelferd og det er en av kriteriene for å drive oppdrett».*

## 5.5. Part five: New power plenum and equilibrium established. Economic predictability narrative established and problem-solving environmental discourse hegemonic.

The new regulation for development licenses was released November 2015 (Lovdata 2018). In chapter two it was shown how the new regulation was shaped. The main point was:

- The main imperative was to initiate a technology ´lift´
- The directorate was given authority to assess the applications
- *Discernment* could be used to define degree of ´development´ or ´innovation´
- High degree of investments is required
- A general, but not specific, expectation to contribute to contribute to sustainability was stated.

As of today, of the three applicants selected for study only Salmar have received development licenses. Welfare Fish Farming has received final rejection, and The Donut still a preliminary rejection.

## 5.6. Part six, epilogue: the lack of capacity to mobilize resources to affect outcome

Avelino and Rotmans have defined power as an ´ability of actors to mobilize resources to achieve a certain goal´ (Avelino & Rotmans 2009, 550). However, in addition they underline that this definition could be adjusted: ´everything that needs to be said about power can be said by using the idea of the capacity to affect outcomes´ (Avelino & Rotmans 2009, 550). This thesis has focused on *how* the process ending up with the development licenses took place, and thus how actors *managed to affect* outcomes. However, several actors did not achieve their goals during this process. I will briefly address

### Juridical interpretation contributes to national industrialization narrative: lack of antagonistic power because of lack of access to resources

Salmon Camera have sent a formal complaint about the allocation of development license to Salmar and referred to norwegian jurisdiction, and more precisely the act on biodiversity (Naturmangfoldsloven), the norwegian constitution and the aquaculture act. However, the response from the authorities has been that they are not juridically representative because they are assessed to be a local organization and not national. And according to the authorities, this is a case of national matter (Einnsyn 2018). The chairman of the board, Rune Jensen, elaborates:

"*Vi måtte bruke revisor for 10 000 kroner for å vise at våre medlemslister var korrekt. Da vi fikk svaret gikk det relativt kort tid på grunn av våre lave medlemstall ble det sagt at vi ikke var representative.» (...) Vi klagde videre til sivilombudsmannen som skrev: -selv om sivilombudsmannen anser det som en veldig streng avgjørelse kan ikke sivilombudsmannen se noen formaliafeil ved avgjørelsen til direktorat og departementet.»*

### Lack of innovative power to achieve plurality and polysemi for ideas of sustainability

Erik Sterud, chief adviser (`fagsjef´) in Norske Lakseelver, a member organization for landowners arranging for wild salmon fishing, unveils a good dialogue with many of the stakeholders and actors in the aquaculture sector.

"*Ja, vi prøver jo å ha en dialog, jeg skal til Cermaq på fredag, jeg hadde Aarskog i Marine Harvest på besøk før sommeren. Vi prøver å ha en dialog med alle oppdretterne. Jeg sitter også i en arbeidsgruppe om fremtiden i norsk havbruk. Jeg snakker også med Trond Willliksen i Salmar, Harald Lerøy. Vi har den dialogen med alle de store når sjansen byr seg. Vi har også snakket med Norsk Industri som organiserer Marine Harvest. Men vi har et anstrengt forhold til Sjømat Norge, det må vi si. Vi synes at hvis du leser høringssvaret til Sjømat Norge i forbindelse med Stortingsmelding 16, så sier Sjømat Norge at det ikke er slik at lakselus fra oppdrett påvirker villaksen. De har mange sånne benektelser for at lakselus påvirker villaks og sjøørret. Hvis du ikke aksepterer forskningskonsensus så mener vi det er helt feil. Hvis du ikke gjør det så blir et samarbeid vanskelig.»*

However, regarding the Solberg white paper on sustainable and predictable aquaculture, he thinks it has been difficult to achieve an understanding for their view of the content, premises and result of the white paper, in other words, in this case what the traffic light system could do:

"*Jeg konsentrerer meg om stortingsmeldingen bærekraftig havbruk. Vi var egentlig de som i utgangspunktet, i motsetning til oppdrettsindustrien, varmest støttet opp om trafikklyssystemet som er innholdet i stortingsmeldingen. OG vi synes tankene var kjempegode. Men så ser vi at fra den første skissen ble laget og til implementering er det gjort en rekke endringer og unntak som gjør at vi er helt i mot det som er implementert. Vi har stått på vårt hele tiden, men Nærings- og Fiskeridepartementet har endret innholdet hele tiden og resultatene nå er*

*noe helt annet enn det vi så først. (…) I utgangspunktet var premissene at oppdrettsindustri kan vokse i områder der de ikke har mer påvirkning på villaks og må tas ned der de har påvirkning. Formålet stemmer godt overens med vårt syn og vår strategi, men slik som det har blitt stemmer er det overhodet ikke.»*

Pure Farming, with their Welfare Fish farming concept, did not get a license. They could be said to have the same problem with lack of innovative power to achieve plurality and polysemy for their idea to affect the outcome for their application, in this case how the regulation for the development licenses was shaped. The directorate have, according to Per Gunnar Kvenseth, project manager of the Welfare Fish Farming concept, admitted that they could solve the problem with lice, but also that the solution still wasn't ´innovative´ enough:

"*På oss virker det som en skinnbeslutning. Vi mener vi har oppfylt alle vilkårene men den koster ikke nok og det er ikke nok ingeniørtimer. Når argumentet er at dette kan mest sannsynlig løse problemene med lakselus, men ikke er innovativt nok går de i ring og skyter seg i foten. Hvis noen finner en løsning som nesten ikke koster noe så må jo det være den mest innovative løsningen som finns. De leter nok etter løsninger som er mest mulig utenfor. Og så er det kommet det med lukket etter hvert. Vi mente dette var ferdig utviklet men ser at andre får konsesjoner som vi allerede er kommet langt med og jobber med. Men det var en feilvurdering for oss.»*

Pure Farming had meetings with several of the policy-makers:

"*Ja, vi har hatt møte med fiskeriminister, statssekretær og departement og direktorat.»*

However, it is a question it would have helped. The solution does not represent large-scale industrialization opportunities, and as stated in the interview, even if the directorate agree that they could solve the lice problem, other requirements, in this case necessary amount of invested capital was not high enough.

### The Donut: Patented, closed cage not polysemic enough to mobilize transformative power

ØPD, inventor and supplier of technological solution to Marine Harvest, the applicant for the Donut had similar experiences. Nils Johan Tufte, head of business development at ØPD explains their application was sent April 2016, and their application was (only) temporarily

rejected. According to Tufte, the solution is patented, which means that they can earn income from licensing the technology, and in addition it solves most of the environmental issues (according to Tufte):

"*Den løser jo veldig mange sånne målekriterier, som luseproblematikk, fiskehelse, fiskevelferd, vekst, muligheten for kontrollert overvåking og monitorering. Kan samle opp slam og utslipp. Foreløpig kommer vi til å bruke utslippstillatelsene, men den er også forberedt for oppsamling. Den har strøm som mosjonerer fisken og gjør den mer muskuløs som in en elv. Summen av dette gjør at den tradisjonelle brakkleggingen av merdene, den finnes ikke hos oss, vi bare spyler og desinfiserer på mye kortere tid. Nå er den laget for stor fisk, opp til 5,7 kg. Begrenset endetid kontra størrelse på fisken gjør at du får en ekstrem biomasseproduksjon enn tradisjonell merdteknologi. Summen er at vi blir kost-/ nytte effektiv, og gjør at vi kan slå gjennom. Begge deler trengs, miljøvennlighet og kost-/nytteeffektivitet. Så er det selvfølgelig det at vi kan gjenvinne materialer. En miljøprofil på det. Også designet for ganske bra bølge- og strømningsskifter.»*

However, Tufte is of the opinion that the department did not approve of their solution, specifically the number of licenses. According to Tufte, the directorate have not understood the technology of the concept:

"*I utgangspunktet søkte vi 8 tillatelser, Vi var søker nr. 14 eller 15, det var noen før oss. De før søkte om 14, 23, veldig mange tillatelser. Vi hadde jo da et møte med fiskeriministeren hvor vi fikk beskjed om at vi måtte søke om akkurat det antall som måtte til. Da la vi oss på 8 tillatelser. Da får vi tilbakemelding om at vi går gjennom nåløyet og vil få tilkjent én eller flere. Så går det et halvt år og vi får avslag på alt utenom en, men avslag på fire. Da er man nede på et lite pilotanlegg. Tanken her er å kjøre et fullskala prøveprosjekt. For å ta unna biomasse på slakteri er det nødvendig. Og de begynner å blande seg inn i hva som er nødvendig. Jeg mener de ikke har forstått konseptet vårt. Så har de hengt seg opp i pilotanlegg; Salmar og vårt er pilotanlegg begge deler. Samhandling mellom kammerne som er nødvendig å teste har de ikke forstått. Når vi kommer med tilbakemeldinger og klagde fikk vi møte; vi påpekte misforståelser som vi regnet med at gjorde at de forstod det. Men vi fikk automatisk videresendt dette som em klagesak til departementet. Og det er skuffende at vi ikke får en detaljert redegjørelse for hvorfor.»*

In addition, Tufte unveils that they did not have any access to the ministry or directorate when the regulation was designed:
(question highlighted with bold):

> **Har det vært mulig å få delta i prosessen (utformingen av forskriften) slik dere har ønsket?**

*«I utgangspunktet ikke. Vi var også lovet at vi skulle ha en aktiv dialog og når de så på søknaden vår skulle vi bli innkalt til møte for å eliminere misforståelser. Da de så på den la de om praksisen og ingen fikk komme til møter. Allerede der kunne vi avklart misforståelser og økt effektiviteten. Det var veldig synd.*
*Nå fikk vi etter hvert mulighet til å møte de men det var alt for sent i prosessen.»*

Tufte also explains that waiting this long is not good for the economic viability of the project:

> **Av den offentlige dokumentasjonen fremgår det at dere har ønsket å møte fiskeridirektoratet ved noen anledninger, og ønsket så rask behandling som mulig. Hvorfor er dette viktig?**

*«For det første så er det viktig for å sikre arbeidsplassene og alt som er lagt inn for å utnytte den posisjonen vi er i. Vi har investert i folk og utstyr og rigget oss for dette. Jo lenger tid som går dess mer risiko. Så er det viktig for næringen, vi har egentlig ikke tid til å vente med å løse problemet. Viktig for oss og Marine Harvest å få demonstrert den beste løsningen først. Førstemann til mølla som viser noe bra har større sjanse for å lykkes enn de som kommer senere. Først i søkergruppa betyr også ønske om å være først i sjøen. De som er tidligst i sjøen med best resultat vinner det kommersielle løpet. Det blir vanskelig å ta igjen.»*

Following their withdrawal from Sjømat Norge, Marine Harvest entered the interest organization Norsk Industri, that subsequently published the document *Roadmap for the ocean farming industry* (Norsk Industri 2018) with the main goals of a) using technology that eliminates the problems with salmon lice, stops escapes, and conserves the value of particular matter, b) to export salmon for more than 200 billion NOK in 2030, and c) the supplier industry to the ocean farming industry shall through a commitment to research and innovation

be a substantial contributor to the development of Norwegian ocean farming. These goals should, according to the roadmap, be achieved through *healthy growth.*
The roadmap continues by stating that there is a need increase the production of food from the ocean, but also a need for considerable changes in the industry. Technology is considered essential to reach the vision, but also, the industry has to accept that the growth cannot happen before environmental challenges as salmon lice is solved and under control.
The roadmap emphasizes that he whole industry is ´in the same boat´ (common), and that one individual actors´ actions and statements can affect the rest of the industry. The roadmap refers to the UN´s 17 sustainability goals and attitude that the industry needs to be precautionary to problems before they arise is found. In a press conference the Managing director of Norsk Industri, Stein Lier-Hansen summarized that ´…the industry has to accept that the growth cannot happen before challenges as salmon lice are solved and under control. The industry needs to have a proactive approach to avoid that problems occur, instead of using great resources to handle things in the future. We have to look before we leap (´føre var ikke etter snar´)´, Buer-Hansen declared.

### Summary

The SINTEF Report released in 2012 pointed towards significant opportunities for value creation through aquaculture in the future. It has both received critique but also been consistently referred to in later public planning documents. The Stoltenberg-government initiated a turn from the oil and gas-based economy in 2008 and following this both committed to technological development in the aquaculture for environmental sustainability and better ways to monitor possible negative externalities. Sustainability discourses, but also a willingness to bargain for priorities, and elements of strong sustainability have been identified. However, the TEEB initiative (NOU 2013: 10) was not included in the Stoltenberg plans, and was also not followed up in the Solberg white paper. The Solberg white paper put emphasis on predictability for the industry and on technology for economic growth. It also to a greater extent applies problem solving discourses and weak sustainability principles. Science is given a clear role in all documents. In the hearing papers the initial hearing letter strengthens the impression of plans mainly oriented towards technological growth. Scientific recommendations are presented and mainly pointing towards scientific methods and animal welfare. The interviews also strengthen the choice of direction from the Solberg government; to test new technological solutions for growth, and also a formation around certain ideas for this. The focus on technology and financial size has later stood firm in the assessment

process. Several actors and stakeholders in the process did not achieve their goals. Salmon Camera was not recognized as nationally representative and Norske Lakseelver at least in this case struggles to break through with their view. The scientific community seems to some extent to have differing view on possible negative effects of the development licenses. The Welfare Fish Farming project seem to have a working solution for the problem of fish lice, but struggled to achieve interest for their solution because of lack of technological scale and finesse. The Donut project is temporarily stuck in discussions about how the technology should be understood.

A further discussion of these findings will take place in the next chapter.

# 6. Discussion

## 6.1. Hegemony

The justification of this study addressed how central societal actors like corporations and governments address and apply hegemonies to pursue primary goals like economic growth and welfare. The industrialization of the oil and gas sector was legitimized through the national ownership to the resources by the norwegian people.

When it comes to aquaculture, the historical development was different. Policy for aquaculture was treated as a tool for regional policy making and –goals. However, with the documents reviewed and analyzed, it appears the same quest for hegemony – to nationally industrialize aquaculture through the legitimacy of national well-being goals – is observable. The data points to a great extent in the same direction. When it comes to achieving a hegemony for the view on how we relate to nature and more concretely the oceans and aquaculture, from the SINTEF-report and throughout the papers addressed in this data analysis, there is a consistent endeavor from both the governments that have been in office to establish a view that the existing and emerging ocean industries needs to contribute to the national value creation and well-being. This turn can be concretely observed in different ways. At present day, the fisheries minister addresses the possibility to create income not only from the resource itself, but also from the export possibilities of the technology developed. Also, as pointed out, the necessity of technology and it´s different designs and choices at a societal level has achieved its own hegemony. With both oil and aquaculture, technology is argued for as an undisputable and inherent feature of economic development. This need to apply technology into the societal development prevails also in this case.

The absence of the TEEB principles addressed in the NOU is noticeable in both governments´ white papers. This can also be seen as a choice by both governments that substantiate the hegemonic view of the necessity of turning natural capital into economic capital.

## 6.2. Power mobilization

Power is suggested as a dominant force to achieve various goals. The data shows signs of what can be described by different kinds of power exercise, mostly innovative and transformative power. A central property of the process has been innovative power starting with SINTEF and a new way of looking at aquaculture as a national, industrialized industry. Transformative power has been exercised by the new Solberg Government through defining the principal scope of the department of industry and fisheries to *technological development*,

augmenting the authority to assess and decide on the allocation of development licenses to the fisheries directorate, and restricting the juridical integrity of the County State representative to assess lice according to the pollution act.

Transformative power also appears through other findings. According to the master thesis *Utviklingskonsesjoner i havbruk – norske myndigheter som entreprenør og innovasjonsfremmer* (Hårstad, 2017) the Havmerd1 project had close dialogue with both the ministry and the directorate after the rejection of the green licenses and was encouraged to apply for the new development licenses.

In the period from the SINTEF-report (2012) to the publication of the finalized development license, the data suggest there has been a varying degree of power vacuum and power plenum, but within the consistent exercise of systemic power to maintain the prevailing system, which can be said to be industrialization for national welfare and well-being.

But arguably the most interesting thing is to notice that there doesn´t seem, to a very great extent, to be a struggle between niches and the prevailing regime, but rather within the regime. Whereas both the Welfare Fish Farming concept and the Donut concept can be seen to represent different niches; respectively (WFF) the small-scale, rural development with some elements of land-based production, and (The Donut) R&D Network innovation, global demand CCS-technology that unarguably could contribute to a sustainable transition (WFF reported that the fisheries directory themselves said their solution probably had solved the lice problem but didn´t represent the right technology or sufficient investments, and the Donut is a patented closed system but the controversy is about understanding of the technology), it appears they could not mobilize sufficient innovative power through visibility and plurality.

As have been addressed in the theory chapter, ideas need coalitions to promote them and both these ideas (Welfare Fish Farming and Marine Harvest) could seem to lack support and other *conditions* to exercise power. On the other hand, Salmar seems to have access, strategies, skills and willingness to the needed resources to shape the idea as they wanted. Salmar idea had support from their interest organization and suited the expectations from the ministry. This way Salma's concept worked as an idea that appears as a coalition magnet.

When it comes to Welfare Fish Farming, the access to resources could be said to be limited as there is no evidence of the backing up from strong member organizations as Sjømat Norge. And when it comes to Marine Harvest, the leaving of Sjømat Norge, the reasoning for doing it and the subsequent publishing of the roadmap for norwegian aquaculture by their new membership organization Norsk Industri could relate to both access to resources, strategies to mobilize them, skills to apply the strategy and possibly the willingness to do so. Marine

Harvest stated explicitly that the view on sustainability was incompatible between them and Sjømat Norge, and thus one can suggest that they did not possess the same conditions as Salmar to achieve majority within the organization for their view on sustainability. A reason for this could of course be the properties of their niche solution (R&D), requiring higher costs and risk, and in addition promoting stricter policies when it comes to externalities – which would not be easy to follow up by the majority of the other members.
Another interesting element in this case is of course the role of the SINTEF-report, which is referred to by more or less all actors in the process and thus used to legitimize different hegemonies, storylines and discourses.

### 6.3. State as innovation entrepreneur, governance and co-management

In a small country like Norway the state needs to participate actively through, as has been the case in Norway, national or regional innovation systems. This active participation could either take place as various forms of governance, or co-management. Governance, in principle can, according to literature, address environmental problems, and also more explicitly *ideas* of sustainability, and as pointed out by Christiansen and Jakobsen, should not be executed too strongly or too loosely. However, governance theory principles apply mostly to a national policy making level, and thus could be compared with the regime level of the MLP. The data show an example of this when the Havmerd1 project was appealed with a complaint from Salmon Camera, but the access to complaint was rejected at all levels because, as the fisheries directorate initially stated, the organization was not representative at a national level, and this case (development licenses) was of national interest.
Maybe an outcome of such a conflict of interest would be different through a greater emphasis on the principles of more local (stakeholder) sharing of power and the management of local scarce common pool resources, which are some of the focus points in co-management. In this perspective, the risk-taking bureaucrats, or the policy entrepreneur, with the goal to change policies in resource management plays an important role. But as the findings show, the county state representative (Fylkesmannen) was instructed to interpret the law in a specific way, that in this case, favored the Havmerd1 concept and according to the county state representative opened the way to an acceptance of the application which would otherwise be closed due to the pollution act.
The co-management principles are also to a great extent conflicting with the principles of predictability on behalf of the industry promoted and highlighted in the Solberg white paper.

As addressed, the introductory chapter by prof. Guttormsen explicitly criticized the local emphasis on aquaculture policies that had prevailed for a long time.
The data shows that the fisheries directorate have been dependent on dialogue with other actors which is important for both governance and co-management principles, and that policy entrepreneurship has been taking place. The outcomes of this entrepreneurship can be difficult to handle later in the public management process.
In the master thesis referred to above, Hårstad (2017), found that the fisheries directorate only addresses the requirements (`vilkårene´) when assessing the applications.
Further, Hårstad´s findings imply that the fisheries directorate initially had too little competence to assess these kinds of applications, and that they were also inspired by the offshore industry and their attention towards predictability, quality and documentation. The fisheries directorate have, according to the thesis, stated that they ´know their limits when it comes to competence and experience´ (Hårstad 2017, 40), and that because of this it is important that the arrangement is dialogue based. The quality of the application for the Havmerd1 project, and the previous cooperation with actors in the offshore industry was said to be one of the main reasons for receiving the licenses because it raised the probability for the success of the project. This shows a great dependence on former paths and trajectories and is an example of path dependency and the expected development along the same path in the future.
The former minister of fisheries, Elisabeth Vik Aspaker, pointed out that the new technologies could also become an export opportunity themselves. Blind (2010, 226) states that the ´best-analyzed link between administrative or institutional regulation and innovation is the impact of Intellectual Property Rights (IPRs), especially patents and copyrights, on innovation´, and that there lies within this a dilemma of invention and diffusion. Strong patent regulations favor innovation, but on the other side weak regulations is a catalyst for rapid diffusion of inventions (226). In other words, strong regulations are needed for inventions to take place, but restricts the spreading of them in one or more markets. In this case the regulation of the development license did not favor patents in any particular way. The only patented technology among the cases (the Donut) is still waiting for their final answer. The hearing letter interchangeably mixed different expressions like ´considerable innovation´, R&D and ´development´. Alternative requirements for the applications could have been set, like acquired patent(s). However, maybe the desire to create further economic growth through export of the technology led to a pragmatic level of expectations regarding this element.

## 6.4. Environmental discourses, narratives and storylines.

The environmental discourses that have been visible in the data in this case are mainly from the problem-solving discourse strand, and the sustainability discourse strand, when comparing to Dryzek´s (2005) categorization. When comparing to the more specific categorization by Christiansen (2013), the discourses applied by the regime and the most powerful actors harmonizes first and foremost with the high-turnover and technology optimist discourse strands.

The report being used as a foundation for the other reports and white papers, the SINTEF-report (2012) signalizes maybe the most apparent element of problem solving discourse as it just treats environmental challenges as threats for economic growth that needs to be solved by the administrative experts. Still the goal of economic growth, or *´value creation´* presented is embraced by both governments issuing white papers in the coming years. Also, the focus on technology and it´s hegemonic position addressed above, from the SINTEF paper, is adopted by both governments in their white papers.

Thus, both governments could be said to lean towards technology optimism, and by ´agreeing´ on this discourse also contributing to the hegemony of using technology to design the national economic interaction with nature. However, when studying the documents, the high-turnover discourse is mainly seen in the Solberg government white papers. This is underlined through the use of the introduction by Professor Guttormsen, the absence of the precautionary principle, the adaption of the traffic light system to be predictable to the industry (and not the other way around), the exception from the traffic light system of the applicants receiving development licenses, and last but not least through the relatively low expectation to the level of innovation and the access for the fisheries directorate to apply ´discernment´ to assess the applications. On the other hand, it is important to note that the former fisheries minister Vik Aspaker underlined the emphasis on sustainability in the interviews and that the white paper also refer the use of the UN´s three pillars for sustainability. But still all these choices appear more as elements of negotiation on behalf of economic growth than measures taken to preserve biodiversity and ecosystems for their own integrity´s sake, as for example the Stockholm Resilience Centre (2018) advocates through their seven principles.

However, regarding the environmental discourse strands (Dryzek 2015), there is a clearer divide between the two governments in office in the period up until the announcement of the development licenses. As shown in the findings, the Stoltenberg government address more explicitly the precautionary principle, an ecosystem-based approach and maximum

sustainable yield. Also, by addressing the international relations and policies, through a greater emphasis on solidarity and development, the discourse appearing in the Stoltenberg papers have a stronger direction towards sustainability discourses, and especially through the international solidary aspect, the ecological modernization discourse strand.
However, also the Stoltenberg government legitimize their views through referring to the UN´s three pillars of sustainability and thus signals a willingness towards a negotiating attitude when it comes to the different meanings of sustainability. Also, the rhetorical means of addressing Norway as the ´world´s foremost ocean nation, the emphasis on profitability in the whole value chain, the use of the ´value creation´ term (indirectly connecting to the SINTEF-paper), and the reference to Reve´s superclusters creates somewhat a confusion regarding which direction the government are heading. This signals a sustainable development discourse strand.
As the findings have shown, the strategic framing is a highly apparent strategy. Both governments use the well-being of the people as collective symbol to frame their argumentation towards. Another example is the preference of both sides to employ technology as a solution fitted to their own strategies and discursive arguments. A last example could be the use of the UN´s three pillars of sustainability which, according to what discourse the documents represent or value, is given different meaning.
The appearance of discursive entanglements; that different discourses apply the same topics, but with different weighing are observable on both ´sides´. This leads in turn to a number of discursive knots, where topics are used strategically and rhetorically on behalf of different political goals and strategies. ´Value creation´ is maybe the best example where it according to Professor Skonhoft is used wrongly by the SINTEF paper (proposing a direction towards high turnover industrialization of the oceans), and on the other side, by the Stoltenberg white papers, but emphasizing profitability in the whole value chain (a more commonly accepted use of the term).
The TEEB principles and the precautionary principle are recommendation and legal national legislation that to a modest extent is emphasizes and prioritized. The former seems to have been marginalized by both governments, at least explicitly, and the latter by the Solberg Government in their white papers. As the findings address, both the precautionary principle, an ecosystem-based approach and the principle of maximum sustainable yield are present as important building blocks in the Stoltenberg white paper.

## 6.5. Science

Science´s role in addressing environmental issues seems in this case to align with the decicionist model where the policy makers define the end goals and the scientific environment presents options to get there. Even if the development licenses are preliminary exempted from the traffic light system, the system itself is policy oriented through the use of the criteria ´acceptable load´. Havforskningsinstituttet is the only, of the science institutions sending hearing letters and being interviewed, that has remained a somewhat positive attitude towards the development license. Supporting this, other findings show that the system have received critique from varying stakeholder and actors for weaknesses both when it comes to the scientific foundation for claiming a causal relationship between lice in the sea and the mortality rate of wild salmon, an also the system´s real ability to regulate production volumes due to mechanisms for flexibility and rules of exception (Nicholls, 2017).
Also, the requirement of an expert advisor commission that normally are part of the regulations for special licenses has in this case been replaced by the fisheries directorate that, as the interviews show, had to establish a whole new pool of competency. This employment of administrative rationalism draws attention to what Dryzek (2005) address as the administrative rationalism in crisis, because ´relevant knowledge is dispersed and fragmentary´ (Dryzek 2005, 93). The expertise and knowledge needed to assess precisely and relevant is assumed to be found in different parts of the organisational hierarchy. But this ´disaggregation´ of the assessment can be problematic. According to Dryzek then there is no problem solving, but a great deal of problem displacement (Dryzek 2005, 94).

This is one of the core findings of the thesis. All the way from the creation of the regulation, through the ministry, directorate, the county municipality there seems to be a consistent displacing and disaggregation of responsibility. And when the State County Representative (`Fylkesmannen`) has been instructed to not assess lice load in accordance with the pollution act, the emphasis on environmental sustainability is postponed and dissolved.

Administrative rationalism seems to have taken over the role from the science environment to some degree. From the hearing letters a uniform expression from the scientific environments was the recommendation to apply scientific methods in the development process of the technology. However, according to the ministry, the whole intention of the licenses was, according to them to experiment and learn from the results. This willingness to approach a

problem with inhibit uncertainty of the outcome is a property of the *omniscient mind* within the administrative rationalism discourse strand, according to Dryzek (2005).

## 6.6. Coalitions

As stated by Hajer (1995) and Béland & Cox (2016), discourses and ideas ´need` a network, or coalition to manifest, and to be ´put into play´. Also, according to Avelino & Rotman (2009) innovative power; the ability to create new resources, is dependent on the ability to act ´in concert´, and plurality and visibility are causal (the former a precondition for the latter) necessary conditions.

What idea ended up as the preferred idea for sustainable technological development and worked as a magnet for coalitions and power? This can both be read from the public documents and from the smooth and quick assessment by the fisheries directorate. Salmar open offshore based solution with technological features from the experienced supply industry of the oil and gas sector was sufficient for a coalition to take place. Salmar complained legally that they didn´t get the green licenses and also stated in their hearing letter that they had both been working on a particular technological solution and that they confirmed that the special licenses of the time were not sufficient for testing new technology and new ways of operating. Also, Salmar referred to the hearing reply from Sjømat Norge and endorsed this fully. Other central actors and institutions did the same, more precisely the County Municipality in Sør-Trøndelag and Frøya Municipality.

From the findings it is clear that several actors have wanted this direction; towards an industrialization of the industry with new technological solutions, and the use of other areas. However, and most importantly, in this case, the findings also reveal that specific actors, or policy entrepreneurs, have enabled this development.

Hårstad describes a process of finding ways to shape the concept so it could be realized was discussed, and part of the catalytic effect was the desire of the government to increase the amount of farmed salmon, and that the industry needed other kinds of licenses if the ambitions were to be fulfilled. This cooperative process took place because of a ´highly ambitious state secretary (´statssekretær´). This way, the application for the Havmerd1 project was described as more or less ready when it was opened for the new licenses in November 2015, and that 23rd of December an answer was given that the application would be positively handled (Hårstad 2017, 38).

As Avelino and Rotman advocate, Innovative power can be manifested like this, whereas a synergetic power dynamic takes place (actors mutually enforce and enables each other). In this case, the actual catalyst could then be the antagonistic actions of Salmar, or the long-term expectations from the industry. Either way, it seems like a new government at regime level was the last piece in a synergetic power dynamic needed for an altered and reconfigured power plenum within the regime, and thus enable systemic power.

But for this to happen, the coalition needed an idea to gather around.

In the theory chapter I used theory to discuss the concepts of discourse, narratives, storylines and ideas, and following this I tried to reason for a pragmatic approach further on, with an interchangeable use of the terms as the most important thing is not if there is a collective gathering around the *discourse, narrative, storyline or idea*, but that there is a collective gathering, which was addressed earlier, and a framing of interests, and what the actual properties of the phenomena is.

Empirically, from the cases selected, it is known that the Havmerd1 received license in a short time. The other cases have received a final rejection (Welfare Fish Farming) or is waiting for a new decision after an initial ´preliminary rejection´. Logically then there is - especially as the findings have showed that there was a close dialogue between the Salmar people and the ministry and directorate – some kind of connection between the Havmerd1 project and the final regulation and requirements for the development licenses.

According to Béland & Cox (2016) the idea needs to connect things and events and meet informal expectations from government. Thus, the data shows through the interviews with the Salmar representative and the Hårstad master thesis, that this have been the case here. Further, what they describe as ´successful´ ideas are ideas that have gained power within the institutional environment, and lead to political change. The *findings* chapter and the paragraph above describe how power can be seen to have changed and be mobilized, and the required efforts from the policy entrepreneur have also been documented in this case.

One of the most consistent elements of all the actors´ arguments are sustainability. However, all the actors have been careful to not define it too narrowly, and mostly emphasizing it´s secondary role to economic growth. This way, the idea of sustainability suits well into the necessary degree of polysemic characteristics. Combined with the properties of technological development, including the important stakeholders of the supplier industry, as a catalyst for further economic growth, the idea has mobilized sufficient power to be realized.

## 6.7. Weak or strong sustainability

The idea summarized above have – in principle - clearest resemblance with the weak sustainability view reviewed earlier in the thesis. The main reason is the investment element (high degree of financial investments) that is supposed to turn natural capital into man-made capital, combined with the expectance of the technology to contribute to a higher rate of transforming natural capital to man-made capital. Finally, by exempting the projects from the traffic light system, a system that already primarily was designed to contribute to predictability on behalf of the industry, another sign of weak sustainability is visible.

Dryzek uses Britain as an example of the practicing of administrative rationalism, whereas science is expected to prove the harm to nature the pollution is doing, before any actions should be taken. And this is, as Dryzek points out, ´the exact opposite of the ´precautionary principle´ applied in countries such as Germany and the Netherlands, which specifies that scientific uncertainty is not a good reason for delaying action´ (Dryzek 2005, 80). The precautionary principle is an element of strong sustainability. In this case, the ministry in the interviews explained that the experiment approach was applied (another typical trait of administrative rationalism), and other scientific measures to secure environmental sustainability is abandoned. This is another example making it hard to argue for seeing a strong sustainability approach in the case of the development licenses.

## 6.8. The ´losing´ side

In such cases, as the initiation of new regulations for resource management, ´winners´ and ´loser´ will appear. The winners have been thoroughly described during the whole thesis. The ´losers´ to a much lesser extent. However, it seems like even the best cases for sustainability (Marine Harvest with their closed system and Pure Farming with the directorate agreeing they could solve the lice problem) can face other challenges greater than problem solving technology. Both parties seem to – in this case – have lacked sufficient resources to mobilize power, and not gained any momentum in networks or coalitions for their *idea.* They represent a local, small-scale industrial case (WFF) and an R&D network innovation (the Donut), and with the outcome of the decisions so far in mind, it seems the large-scale industry path should be the preferred one. NGO´s (Salmon Camera) and land-owners with income from wild salmon catch, also seems to not be able to mobilize power to change the course of events.

## 6.9. Path development or sustainable transition?

Path development in the norwegian aquaculture industry can be subjective to cognitive and political lock-in, as theory reviewed suggest (Fløysand & Jakobsen 2017). This is based on the suggestion that what technology is selected is based not only on the functioning of ´the market´ but also on policy makers and the ones who influence them. Narratives, and their impact, or power, can create cognitive lock-ins with the policy makers. And, as Christiansen & Jakobsen (2017), remarks, money can be a form of narrative. Their description of an ´old institution in disguise´ fits the findings in this thesis suggesting that the battle in this case have happened within the prevailing regime and not between an unstable regime and emerging niches. For the policy-makers small changes in path trajectories might be perceived as greater either because of a cognitive lock-in or constructed narratives by those in power.

In the theory section, Geels´ (2004) proposition of transition phases was described. Already in the first phase, often the technologies at hand are emerging within existing regimes to solve local problems and remain ´alive´ in a functioning symbiosis with older technology. However, in later phases, according to Geels, incumbents provide resistance in several ways, for example through lobbying. This can be said to be the case here by Salmar agency and the state secretary.

In the process of developing the development licenses things seem to have been done in a ´business-as-usual´ manner. The necessary dialogue between the public policy makers and the public domain (business, stakeholders, science) seems to have been strongly characterized by the existing narratives anchored in traditional industrial development thinking. Other actors and stakeholders, including the scientific environment have not mobilized the needed resources to employ antagonistic power; the ability to resist the innovative power mobilized by both the policy entrepreneurs, the (new) government and the membership organizations (Sjømat Norge).

The new regulation for the development licenses do not contain measures from the government as prescribed by Kemp & Rotmans (2004). Also, the ministry stated themselves that it is not possible to know if the Salmar Havmerd1 project will contribute to sustainability. The arena needed for a sustainable transition with its added traits and functionality cannot be spotted in this case. Instead a traditional industrial path development, possibly a cognitive lock-in, based on narratives anchored in a mix of high turnover, technology optimist and problem-solving discourse strands is more visible.

Also, the position of the authors of the SINTEF-report could have contributed to a lock-in. Spilling, (2010, 27) explicitly points towards SINTEF and their dominant position as a

research institute, and by this could contribute to a negative lock-in due to a unidirectional channeling of research funding.

Christiansen & Jakobsen (2017) suggest a two-fold role for governance is needed for a more sustainable path transition. But this is difficult: Too strong intervention could allow for the creative destruction of the prevailing industry/regime, but also biological environmental improvement. On the other side, too weak intervention could lead to the retention and maintenance of existing industry structure like knowledge, competence and know-how, but then risking the environmental issues to be left out of focus. They suggest policy makers should neither be too weak or too strong but promote pluralism *and* retention (Christiansen & Jakobsen 2017, 162).

In their conclusion, Smith et al. (2010) suggest more knowledge is gathered on processes and mechanisms for accelerating the unlocking of socio-technical regimes, and that a related issue is the role and strategies of particular actors in these processes because of a ´reluctance to seriously consider how to unsettle and unlock established regimes´. They further suggest that ´the politically contentious, coercive dark side of sustainability transitions´, are putting pressure on the regimes, and ask how shifting alliances of actors alter power balances that strengthen or weaken a given regime (Smith et al. 2010, 445-446).

In this case, and with the cases studied it seems the chosen governance strategy by the governments have been one sided and too weak related to Christiansen & Jakobsen (2017), and attempts to find a balance have been vague or even absent. Following Smith et al. (2010), the dark side of sustainability transitions in this case have worked in unusual ways as the stronger sustainability approach advocated by the previous Stoltenberg regime has been weakened through the transformative powers employed when the Solberg regime created opportunities for new alliances and coalitions.

# 7. Conclusion

Relating to the main research question, I wanted to explore how power was applied through discourse and ideas. A precondition in the research question have been that hegemonies and power are conditions that are intertwined and that especially powerful groups in society struggle for a certain hegemony that are in their own interest. Through the findings and discussion, it has been demonstrated that the both the ocean industries and aquaculture industry is used by ´those in power´ to establish a new hegemony for economic growth and industrialization by accessing the resources in the oceans. Technology has a hegemonic position as an unalterable element in this process. Regarding the development licenses, a weak sustainability hegemony for how we approach natural resources have been apparent.
To achieve this hegemony actors, mobilize various sources of power in various ways, and through different constellations. The most important elements of power found in this case was systemic, constitutive, innovative and transformative power.
The main discourses that the actors and groups in power applied was identified and can, when it comes to general environmental discourse be summarized as *problem solving* (Solberg government) and *sustainability* (Stoltenberg) discourses. When it comes to the more specific discourse for norwegian aquaculture the high turnover (Solberg government) and the technology optimist (Solberg government and Stoltenberg government) has been most visible.
The concrete idea that achieved the ´status´ of a coalition magnet in this case was the Ocean cage applied for by Salmar.
The coalition bringing this idea forward was mainly Salmar, Sjømat Norge, the Solberg Government and the Ministry of Trade, Industry and Fisheries.
At the same time, this idea does not seem to contribute to a sustainable transition but rather a further path-development into the norwegian large-scale industry dominated today by the oil- and gas industry. This can to some extent be the result of a cognitive lock-in.

## 7.1. Recommendations for further research

Power is an abstract and often disguised element of society. It is not illegitimate to seize power – it is one of the most profound mechanisms in society. However, it appears to have been of central importance in this process. Important elements of sustainable transitions are also abstract, like learning, cooperation, creating of agendas and arenas and sharing of knowledge. The allocation of the development licenses involves assessing almost 100 applications. They probably have great variations among them. The process is also new to the

fisheries directorate and ´they learn as they go´. Other parts of public management are also participating in the process.

The allocation of the development licenses has had the goal of contributing to a more sustainable aquaculture but this study shows there is still room for improvement. Still the process is important for other industries to learn from as it is expected to contribute to national income and welfare.

The other applications; how they are assessed, how the locality clearance is done, how they are proposed to contribute to sustainability should all be studied closer in order to find better pathways for sustainable transitions in the ocean industries.

# 8. Literature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# 9. Appendix

Appendix 1, example of interview guide for the telephone interview:

**Elisabeth Aspaker, tidligere fiskeriminister**

**<Bruk *probing og prompting* når nødvendig>**

*(Formuleringer i parentes) og påminnelser i < > er ment som ulike stikkord til meg selv mer enn nødvendigvis å skulle leses opp for respondenten.*

INNLEDNING; noen nødvendige formelle forskningspoeng:

- (Kort om meg selv (navnet gitt ved oppringning)); Jeg er mastergradsstudent ved geografisk institutt og tar master i naturressursforvaltning. (Jeg viser til) tidligere samtale og avtale, og invitasjonen sendt pr. e-post.

- Kort intro om invitasjonen: (*Informert samtykke*, inkludert rett til å avslutte intervjuet eller trekke seg senere). Tema; Utviklingslisensene i et bærekraftsperspektiv, og samarbeid og allianser. Det betyr at jeg ser på; (...) hvordan oppstår nye, eller forsterkes eksisterende oppfatninger av hvordan akvakulturnæringen påvirker omgivelsene sine og vice versa.

- (Konsekvenser:) Dette er en oppgave med resultater som jeg vurdere å ha *minimale, eller ingen* konsekvenser for de som deltar. Den er rettet mot den organisasjonen eller institusjonen respondentene jobber eller har jobbet i, ikke respondenten som privatperson. Hensikten er likevel å finne *ulike meninger og motivasjoner* hos ulike aktører.

- Svarene dine blir fortløpende notert på min PC av meg og de vil deretter blir renskrevet rett etterpå for mest mulig sannferdig gjengivelse og sendt til deg for tilsvar. (Måtte ellers inngått en datalagringsavtale med datalagringsstedet, dvs Apple (komplisert!)).

- Først; hadde du satt av omtrent 1 time? **<lytt til svaret;** (Jeg tror vi skal klare oss) på ca ½ time til ¾ time>.

FAKTASPØRSMÅL

- Hvilke typer (kort oppsummert) mest relevante roller hadde du før du ble fiskeriminister?

  *SVAR:*

- Har du selv noen annen (enn jobb) personlig knytning til hav, kyst, fiske, oppdrett, etc.?

  *SVAR:*

<INNLEDNINGSSPØRSMÅL> om planer og strategier

- Havstrategien som regjerningen presenterte nylig, Stortingsmeldingen (<16; forutsigbar og miljømessig bærekraftig vekst i norsk lakse- og ørretoppdrett>) om bærekraftig havbruk, og rapporten Hav21 danner slik jeg ser det et grunnlag for fremtidig strategi for havbruk. Er det andre viktige dokumenter du brukte som grunnlag i din tid?

  *SVAR:*

  <hadde disse god konsistens / sammenheng for en god og enhetlig politisk strategi>?

- Hvilke tema, fokusområder eller problemstillinger mener *du* at de i hovedsak *løfter frem*, som *viktig?*

  *SVAR:*

  <bærekraft, næring, matproduksjon, teknologi, forskning, nye næringer etter oljen?>

**<Påminnelse: Probe, prompte, vise interesse>**

OVERGANGSSPØRSMÅL

- I Stortingsmeldingen (16; forutsigbar og miljømessig bærekraftig vekst..) nevnes utviklingslisensene, men veldig kort, som siste del i kapittel 14.2. Kunne de vært løftet mer frem da?

  *SVAR:*

  <I den nevnte stortingsmeldingen nevnes i samme kapittel som kapitlet som omtaler ny teknologi, også multitrofisk akvakultur?>

  <I høringsbrevet og forskriften er ikke multitrofiske løsninger tema. Hvorfor ble de ikke det?>

  (<Ift naturens bærekraft, ift lokal/sosial bærekraft, ift innovasjonsbegrepet; noe nytt>)

- Var det andre interne eller eksterne interessenter som var *spesielt* sentrale når det gjaldt utformingen av videre planer og strategi for fiskeri- og akvakultur (<som i stortingsmeldingen>), i din tid som fiskeriminister?

  *SVAR:*

  *<Eks. jeg tenker på alt fra: FN (de henviser til FN´s bærekraftsmodell i stortingsmeldingen), interesseorganisasjoner, andre statsråder og departementer,*

*virksomheter (; Salmar nevner jo selv i sitt høringsbrev og nevnes av andre at de har tatt initiativ, og Nordlaks ser ut til tidlig å ha vært "klare til start" så å si)?>*

*<Hvilken rolle spilte Salmar, Nordlaks eller andre og hvordan foregikk dialogen med de?>*

**<Nå er vi nesten halvveis i spørreskjemaet>**

Da vil jeg gå videre til selve initieringen av utviklingslisensene

- Hvordan foregikk denne prosessen, fra ditt ståsted som minister (<tenker på prosessen som ledet til høringsbrevet>)?

  *SVAR:*

  <I pressemeldingen om saken omtales ordningen som å legge til rette for ´grønn teknologi´; hva la man i den formuleringen?>

  <I pressemeldingen uttaler du også at du er opptatt av at forskning og utvikling skjer i Norge, og at utviklingslisenser vil styrke konkurransekraften til både oppdretts- og leverandørnæringen?>

  <hvilken hovedhensikt hadde utlysningen og utformingen av lisensene? (Bærekraft, industri, økt produksjon, teknologiutvikling?)>

  <hvilken sammenheng med "de grønne" lisensene eller trafikklyssystemet så man?>

  <I høringsbrevet skriver de at de drøfter to alternativer; det ene er videreutvikling av forskningslisensene, det andre er en ny utviklingslisens. Men de grønne lisensene blir ikke nevnt?>

  <andre i regjeringen/departement som var involvert/involverte seg, for eksempel miljøsiden (dep. / -minister)?>

- "Areal og miljøutfordringene som næringen stor overfor.." er en formulering som går igjen: hva legges i denne formuleringen?

  *SVAR:*

  *<er det vekstproblemene for næringen man tenkte på eller er det miljøforurensningene som næringen skaper?>*

**<Påminnelse: Probe, prompte, vise interesse>**

- Regjeringen Stoltenberg, før dere tiltrådte, utlyste i juni (2013) de "grønne lisensene". Hva var den nye regjeringens syn på disse?

  *SVAR:*

  <Hadde den svakheter, feil prioriteringer, for lite fokus på teknologi?>

  <I disse var det bl.a. innløsning av eksisterende lisenser, risikoreduksjon, teknologiske eller *drifts*messige løsninger (med formål å redusere miljøutfordringene), forpliktelse til antall lakselus, faggruppe for vurdering, osv.)>

  <Kom det noen signaler også fra andre interessenter om disse lisensene (grønne) og denne forskriften?>

- Ble utviklingslisensene drøftet noe særlig offentlig, i media eller andre arenaer, slik du husker det?

  *SVAR:*

**<Nå er vi over halvveis i spørreskjemaet>**

<u>NØKKELSPØRSMÅL om selve høringsbrevet</u>

- Hva var det viktigste for deg som minister når det gjelder departementets rolle og det videre arbeidet med høringsbrevet og den nye forskriften?

  *SVAR:*

  <I.f.m. utformingen og gjennomføring av høringen, høringsbrevet, og utformingen av den påfølgende forskriften, …>

  <hvor mye involvert var du i høringss<u>*varene*</u> og innholdet i de?>

  <det ble sendt ut på sommeren, (da mange kanskje har dårlig med tid til å svare?)>

- Det er lagt ganske stor vekt på havmerder i høringsbrevet fra departementet, og Salmar – som lenge hadde planer om en havmerd - sier jo selv i sitt høringssvar at de har gitt innspill om dagens ordninger (de grønne lisensene de fikk avslag på)?

*SVAR:*

<prosjekter med høyere kostnader, finansiell risiko>

<ikke en grense for antall tillatelser og anledning til å konvertere>

- Både Salmar og Sør-Trøndelag fylkeskommune henviste til Sjømat Norges høringssvar i sine svar. Fikk Sjømat Norges høringssvar noen annen betydning siden de også henvises til av andre?

  *SVAR:*

<Andre opplevde i mindre grad at de ble hørt og at vurderingene ble hensyntatt?>

<Salmon Camera, Villaksalliansen, offentlige faginstanser>?

*SVAR:*

**<Påminnelse: Probe, prompte, vise interesse>**

<Videre mener dere i følge høringssvaret at konvertering bør gis mulighet til uavhengig av suksesskriterier. Noen vil jo kunne hevde at det på denne måten stilles veldig lave krav til miljømessig bærekraft?>

*SVAR:*

**<Nå er vi straks ferdig>**

<u>KOMPLISERTE OG SENSITIVE SPØRSMÅL</u>

<Hvorfor var høye investeringer et krav for å få lisens?>

<Dersom man kan gjøre et slikt skille; skulle ordningen med utviklingslisenser være *først og fremst* for å fremme teknologi, næring, miljømessig bærekraft eller kan man påpeke eller formulere andre ting som var høyest prioritert? >

SVAR:

< I høringsbrevet påpekes det først og fremst at relevante fylkeskommuner skal klarere lokalitet og dermed vurdere lokal bærekraft. Også mattilsynet skal inn i bildet med tanke på endelig klarering. Hvor viktig er det for en minister som øverste myndighet, og forvaltningen, at disse institusjonene er til å stole på i sine vurderinger?>

< Til sist; i siste avsnitt påpeker dere konsekvenser ift. områder langt ute i kystsonen og andre legitime brukere og arealkrevende brukerkonflikter. Kan du gå mer i detalj om hva du tenker på?

AVSLUTNING

- (Har respondenten videre kommentarer, utdypninger eller spørsmål?)

  SVAR:

- (Har jeg selv noen uklarheter?)

- Takk for bidraget og tiden og spør om jeg kan ta kontakt igjen hvis jeg trenger ytterligere informasjon)