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Co-existence in Norwegian ocean areas

The challenges and possibilities for marine spatial planning in Norwegian ocean areas.

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Abstrakt

Norge har et stadig større ønske for diversifisering av fornybar energiproduksjon for å kutte klimagassutslipp. I møte med dette har det blitt åpnet for havvind-utbyggelse i Norske havområder. Som en hittil ukjent teknologi i norske farvann, skaper implementeringen av havvindparker usikkerhet rund dens påvirkning av miljø og økologi, samt på virkning på andre havnæringer. Denne studien ser på de transdisiplinære utfordringene ved en eventuell utarbeidelses- og implementeringsprosess av marin arealplanlegging i Norske havområder, og prøver å finne svar på i hvilken grad implementering av MSP kan hjelpe bærekraftig sameksistens.

Gjennom refleksiv tematisk analyse av interessents-intervjuer, avdekkes det sentrale temaer knyttet til deres oppfatninger av utfordringer og muligheter i møte med MSP implementering, samt ending av dagens forventinger i møte med bærekraftig sameksistens. Funnene understreker behovet for transdisiplinært samarbeid og økt interessents involvering i en planleggings- og implementeringsprosess. Behovet for overordnet regjeringsansvar for lovgivning, implementering og planlegging blir også tydeliggjort.

Konklusjonen er at implementering av MSP vil kunne ha innvirkning på bærekraftig sameksistens i den norske konteksten, hvis det utarbeides og implementeres transdisiplinært.

Abstract

Norway has an increasingly strong desire for diversification of renewable energy production to reduce greenhouse gas emissions. In response to this, offshore wind development in Norwegian waters has been initiated. As a previously unknown technology in Norwegian waters, the implementation of offshore wind farms creates uncertainty regarding its environmental and ecological impacts, as well as its effects on other maritime industries. This study examines the transdisciplinary challenges of a potential development and implementation process of marine spatial planning (MSP) in Norwegian waters, aiming to determine to what extent MSP implementation can facilitate sustainable coexistence.

Through reflexive thematic analysis of stakeholder interviews, central themes related to their perceptions of challenges and opportunities in the face of MSP implementation are uncovered, as well as the transformation of current expectations in the context of sustainable coexistence. The findings emphasize the need for transdisciplinary collaboration and increased stakeholder involvement in a planning and implementation process. The need for overarching government responsibility for legislation, implementation, and planning is also highlighted.

The conclusion is that the implementation of MSP could have an impact on sustainable coexistence in the Norwegian context if developed, and implemented in a transdisciplinary manner, with a greater focus on stakeholder engagement.

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Abbreviations

GIS- Geographic Information System

MSP- Marine spatial planning

NINA- Norsk institutt for naturforskning

NVE- Norges vassdrags og energi departement

Translations

Havenergilova- Ocean energy Act

Havressurslova- Ocean Resource Act

NVE- The Norwegian Water and Energy Directorate

Petroleumsloven- The Petroleum Act

Plan- og byggningsloven- Planning and Building Act

1. Introduction

This master thesis looks at the topic of co-existence and the use of Marine spatial planning (MSP) in Norwegian marine areas. I put a particular focus and consideration on stakeholder views on MSP development and implementation. I will specifically explore to what extent marine spatial planning can help support sustainable co-existence in the Norwegian context. I will provide some background and clarify central concepts such as the Norwegian ocean areas and governance borders, marine spatial planning, co-existence, and sustainability, inter- and transdisciplinarity, the EU marine spatial plan directive, and the current process for offshore wind implementation today. Firstly, I will give a brief introduction as to why I chose this topic for my master thesis.

Scholars around the world have affirmed that we are now firmly situated in the Age of the Anthropocene (Steffen et al., 2011, p. 842). Social and political awareness of the dual climate crisis (Pettorelli et al., 2021, p. 2385) and biodiversity crisis (IPBES, 2019) has increased with the increasing warnings from scientists (Pettorelli et al., 2021, p. 2385).

To mitigate greenhouse gas (GHG) emissions that contribute greatly to climate change, Norway has pledged through the Paris Agreement that they will reduce their GHG emissions with 55 percent by 2030, compared to GHG numbers from 1991 (Miljødirektoratet, n.d.). However, in the same time period the energy demand in Norway will increase to 153 TWh (Miljødirektoratet et al., 2020, p. 378). To cover the energy demand while keeping the pledge of reducing emissions, there is a need to diversify the energy sources and increase the use of clean, renewable energy technologies. One of the most important renewable energy sources in Europe is wind energy. The goal set by the EU is 300GW by 2050, production from offshore wind, however, the installed capacity in 2020 was 25GW (Ramírez. et al., 2021, p. 9).

In regards to installed renewable energy capacity, Norway is lagging behind the rest of Europe (Ramírez. et al., 2021, p. 10). While other countries like Denmark started their offshore wind journey as early as 1991 with the offshore wind park Vindeby (Braendstrup, n.d.). Norway's first offshore wind production did not happen until Hywind Tampen was in operation in August 2023 (Equinor, 2023).

In Norway today, though, there has been a greater focus than before on developing renewable energy, offshore wind, to diversify and make our energy production more sustainable. The

current goal is 30GW of installed capacity by 2040 (Office of the Prime Minister et al., 2022). In a speech on May 11, 2022, Prime Minister Jonas Gahr Støre announced:

> "*Today, we are launching a major offshore wind initiative. Our target is to open up areas for offshore wind power production that will generate 30 000 MW of power in Norway by 2040. This is nearly equivalent to the amount of electricity we currently produce in Norway. Over the next 20 years, we will go from having two offshore wind turbines in operation to having around 1 500 turbines.*"(Office of the Prime Minister et al., 2022)

But, with the increasing development of offshore wind there comes a myriad of new challenges and unknowns. Challenges involve conflicts with fisheries, shipping routes, recreational use and tourism, and these challenges are heightened by the uncertain environmental impact these types of developments may have. As of now, Norway does not have a holistic legislation to regulate these developments and challenges. But European countries do, and have implemented Marine Spatial Planning (MSP) in their ocean territories which is based on the EU Directive 24/89/EU (European Parliament & European Council, 2014). In this thesis I will look at what challenges and opportunities there are to offshore wind development regarding co-existence and sustainability and place these considerations into an MSP framework within Norway.

2. Background

2.1.Norway's different maritime ones and governance boundaries

The challenge of co-existence in marine environments is a particularly important one in Norway. I will explain why in this section.

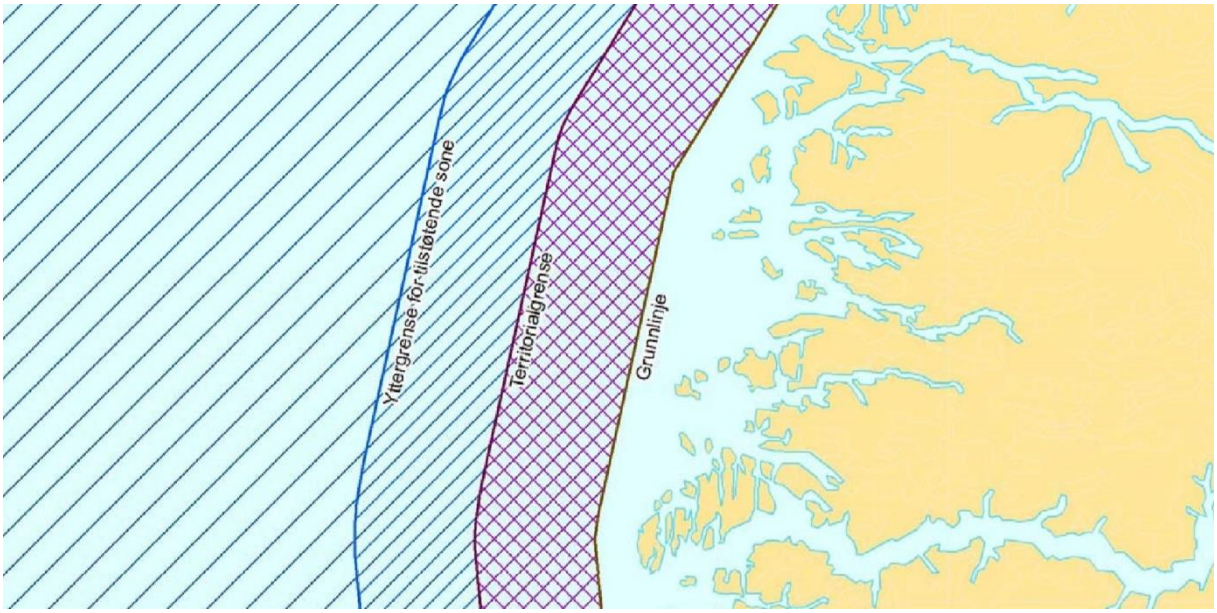

Figure 1: The maritime zones for Norway. (Kartverket, 2012).

To get a better understanding as to where the co-existence debate is relevant, let us look at the different maritime zones of Norway, illustrated in Figure 1. The zone closest to shore is called the "baseline" (Figure 1). This zone should follow the coastline in an even way, but due to Norway's many inlets and skerries it has been pushed outward at the furthest points of these and drawn in between these points. This is also the line that creates the basis of the territorial border for Norway. The territorial border lies 12 nautical miles out from the baseline and stretches as a belt around the coast (Barentswatch, 2012). Within this zone Norway has full sovereignty, meaning that Norway has all rights to govern this zone as they please (Barentswatch, 2012). The baseline touches on the adjacent zone: in this zone Norway doesn't have full sovereignty, but does have sovereign rights to the natural resources both in and on the sea bottom as well as the overlying sea areas (Plan-og byggningsloven, 2008).

The area within the baseline is usually referred to as "internal waters" and the territory that stretches from the baseline out to the territorial border is known as the 'sea territory' (Barentswatch, 2012). Next up there is the 'Norwegian economic zone' (Figure 1). This zone

reaches from the territorial border and out 200 nautical miles (Barentswatch, 2012). The exception is where there are less than 400 nautical miles to a neighbouring countries baseline. Norway also has the continental shelf which is areas on the sea bottom that stretches out from the mainland (Barentswatch, 2012). Legally the continental shelf is described as the sea bottom that reaches 12 nautical miles from the territorial border from mainland Norway, Jan Mayen, and Svalbard, until it meets the outer border for the continental shelf or an agreed upon border to a neighbouring country's demarcation line (Barentswatch, 2012).

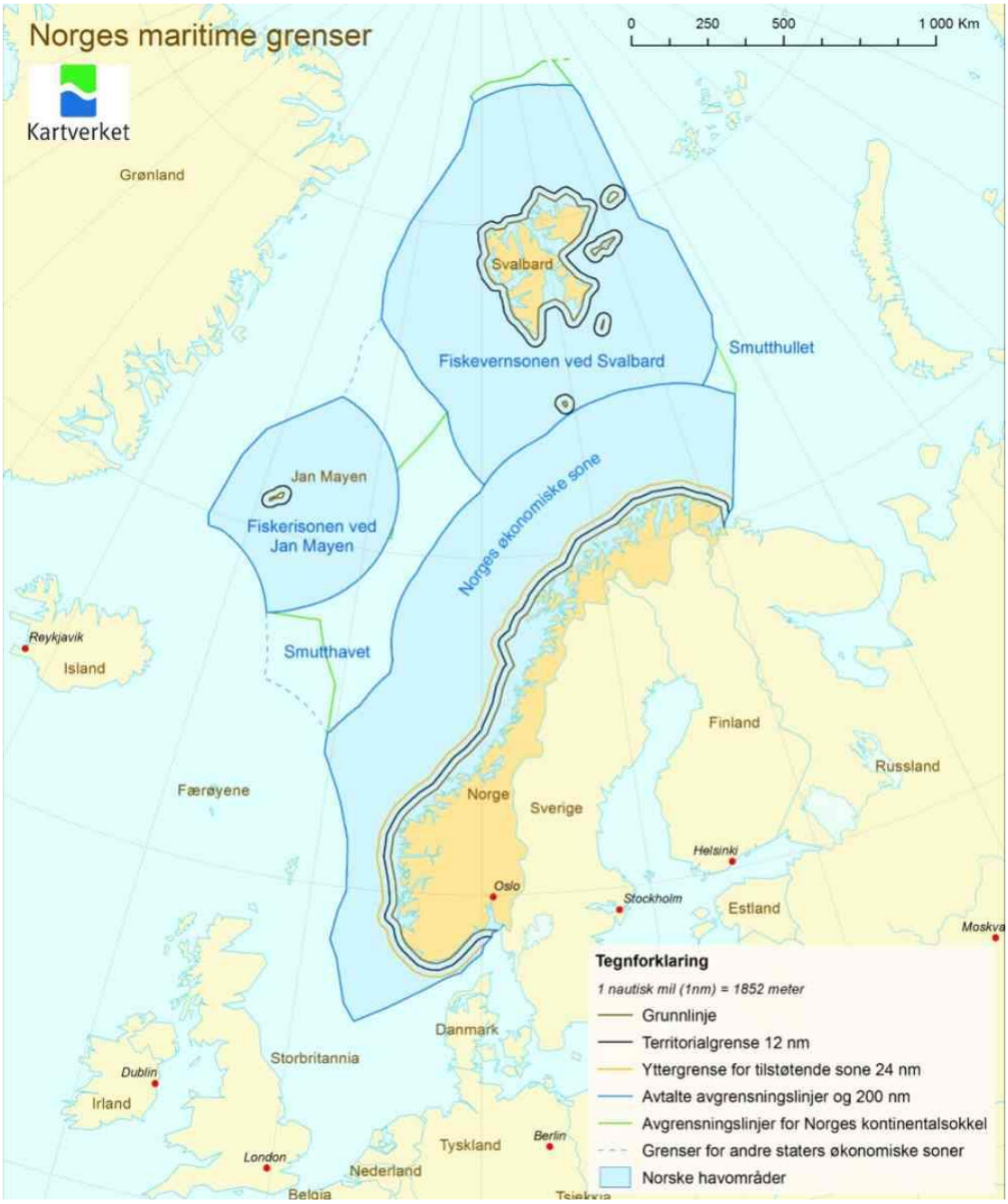

Figure 2: Norway's maritime borders(Kartverket, 2015)

Development of wind energy within the baseline areas are covered by the Ocean Energy Act and is regulated through the Planning and Building Act (Plan-og byggningsloven, 2008), whereas the areas outside the baseline, and for the sea territory, wind energy is regulated by the Ocean Energy Act (Havenergilova, 2010). To regulate the use and extraction of resources in these areas, Norway hasn't yet developed a marine spatial plan (MSP). This might be due to large ocean areas, allocation of funds for research, lack of knowledge, or maybe all of the above. The Ocean Energy Act does regulate the planning, development, and production of offshore windfarms (Havenergilova, 2010). However, the Ocean Energy Act does not take other industries (fisheries, shipping, petroleum) or mechanisms (fish migration, ecosystems, habitats) into consideration. Fisheries are regulated by the Ocean Resource Act and shipping is regulated by many different laws, none specifically just for shipping. So far, the different sectors of activities (fishing industry, offshore wind energy, shipping, petroleum) have been regulated independently from one another by different regulations. We can therefore see how difficult it is to try and think in terms of an integrated MSP, as it will demand to assemble all these acts and regulations, as well as balance the different interests and priorities of these different sectors. An MSP will also need to take natural resource management, habitat, and species conservation as well as possible pollution into consideration(Offshore Norge et al., 2023).

Offshore wind in Norway is mainly regulated by the "Ocean Energy Act", except for Hywind Tampen which was regulated by the Petroleum Act due to its close ties with the oil rigs (Equinor et al., 2019). Hywind Tampen fell under the delimitation authority in section 1-2, sixth paragraph, of the Ocean Energy Act (Equinor et al., 2019).

The Ocean Energy Act outlines the possible challenges when developing offshore wind farms. One of these challenges is multiple actors, having different (and sometimes conflicting) interests, wanting to conduct activities in the same areas (European Commission et al., 2019, p. 16). In addition, the deep uncertainties around the impacts of offshore wind on other activities and the environment are great and can hinder constructive dialogue and commonly agreed actions among the different actors (Jørgensen & Madsen, 2021). Some of the uncertainties can be ecological impact, impact on migrating fish, or impact on climate. We also don't know how a changing climate will impact the ocean installations.

2.2. Marine spatial planning

Marine spatial planning, MSP, is a process that aims to regulate and organize human activities in coastal and marine areas to achieve economic, ecological, and social objectives sustainably (Zaucha et al., 2019). Among other things, marine spatial planning involves the systematic allocation of marine space and marine resources to different uses, such as fishing renewable energy development, conservation, recreation and tourism, and shipping, while still considering biodiversity conservation and environmental protection, and the needs of nearby coastal communities (Morf et al., 2019).

The key aspects of marine spatial planning include stakeholder engagement, data collection and analysis, adaptive management, and regulation and zoning (Zaucha et al., 2019). When it comes to stakeholder engagement, MSPs typically involve extensive collaboration and consultation with stakeholders, including industry representatives, government agencies, environmental organizations, local communities, and indigenous groups (Zaucha et al., 2019). The input from the stakeholders is essential for identifying priorities, ensuring that the plans reflect the needs and concerns of the stakeholders, and to balance interests. To ensure sustainable use of the area, extensive data collection and analysis is needed to assess marine ecosystems, map human activities and uses, identify areas of ecological significance, and evaluate potential conflicts among different uses (Banela et al., 2024). The data should be based on different stakeholders uses as well as data collected from third parties. Spatial planning tools like geographic information systems (Stelzenmüller et al., 2020) are often used to analyse and visualize spatial data. Adaptive management goes hand in hand with data collection and analysis (Gormley et al., 2015). As the MSP is an ever-changing process that involves ongoing monitoring and evaluation based on the data available, adaptive management is needed to ensure that the plans remain effective as well as responsive to the changing environmental conditions, stakeholder needs, and socioeconomic trends (Gormley et al., 2015). With adaptive management it allows for flexibility and adjustment over time based on feedback from stakeholders as well as new data and information(Gormley et al., 2015). MSP zoning and regulations is based on the analysis of ecological, social, and economic factors. It aims to establish zoning schemes and regulatory frameworks to guide the spatial allocation of marine activities and resources. MSPs may designate areas for different uses, set guidelines and standards for development and conservation activities, and establish buffers or no go zones to protect sensitive habitats (Gee & Mikkelsen, 2023).

MSPs are a framework to help countries sustainably use marine renewable resources, while considering different stakeholder needs. In this sense, MSP has a direct relationship to the topic “co-existence” which is a declared priority of the Norwegian Government, particularly between Norway’s important energy and seafood sectors.

Some of the key stakeholders in Norway have already observed the government’s priority of offshore co-existence and have taken pro-active measures for dialogue. For example, Norway’s largest lobby group for offshore industries, “Offshore Norway” and Norway’s largest fishing representatives “The Norwegian Fishermen's Association” and “Fiskebåt” have collaboratively developed a manual for co-existence between fisheries and offshore wind (Offshore Norge et al., 2023). The recommendations in the manual can help illustrate the relevance co-existence have to MSP.

> *“Plans for co-existence can include information related to spatial efficiency (installed capacity per area, anchoring, cable routes, etc.), emergency preparedness, HSE (health, safety, and environment), environmental monitoring, knowledge gathering, facilitation for cleanup and restoration after operation, and potential R&D collaboration.”(Offshore Norge et al., 2023, p. 6)*

Figure 3: Representatives from Offshore Norway and Fiskarlaget and Fiskebåt in June 2023, announce their co-existence playbook for good co-existence between fishing and offshore wind. (Sire & Offshore Norge, 2023)

2.3. The need for co-existence and its link to sustainability

Where there are several different actors wanting to operate in the same area there is a possibility of conflict (Banela et al., 2024). Norway has a history of neglecting participation from stakeholders in the development of energy productions that require natural resources. One example is the Alta case it was a political conflict that stretched from 1968 to 1982 where a large development of hydropower in inner Finnmark went against Sampi and local interests (Berg-Nordlie & Tvedt, 2024). The Norwegian government was found in direct violation of the conservation resolution of the Màze, but still found to be a legal project (Berg-Nordlie & Tvedt, 2024). The disregard for stakeholder engagement in direct conflict with local interests is not only in the past: as recently as 2021 the Norwegian Supreme Court ruled on the Fosen case to be in direct violation to reindeer Sámpis right to practice their culture founded in the 27th Article in UN's Convention of civilian and political rights (Skogvang, 2024). However, the Norwegian Supreme Court did not rule on whether or not the development of the wind power was to be discontinued (Skogvang, 2024). Therefore, the wind park has continued to be utilized and is currently producing energy, much to the dismay of hundreds of Sampi and other protestors, including the Norwegian actor Ella Marie Hætta Isaksen (Figure 4) and famous climate activist Greta Thunberg(Skogvang, 2024).

Ella Marie Hætta Isaksen og fosenaktivistene i fjor. FOTO: TERJE BENDIKSBY / NTB

Figure 4: Fosen-activist and actor, Ella Marie Hætte Isaksen, in a demonstration against the Norwegian Government for not dismantling the Fose wind turbines that are in direct conflict with the Sampi reindeer herders land rights(Bendiksby & NTB, 2024).

It is not only on land that the Norwegian government have had lack of stakeholder engagement issues. The development of Hywind Tampen created large, uncomfortable issues with local fishermen and has been criticized for the lack of communication between the fisheries and Equinor in both the planning and development phases (Austrheim et al., 2022).

One of the main topics when discussing co-existence is resource conflict. Several different actors want to use the same area and the resources found there(Banela et al., 2024). Offshore wind is one of the actors that can be high resource-use as the structures can not only stretch from the ocean bottom to the ocean surface, and everything in between, but also has a high areal-usage. Offshore wind parks can require large areas, and Hornsea 2 Offshore Wind Farm stretches over 462 km^2 (Orsted, 2022). The sheer size of the wind parks can create conflict with other actors such as fisheries or shipping.

These conflicts highlight the need for co-existence. By looking into how the ocean area can be divided and optimally used there can be a higher probability of obtaining a more sustainable use of the ocean and possibly finding a way to minimize harmful behaviour. One way to do this is through a marine spatial plan supported by clear procedural direction and rules grounded in sustainability concepts that cover the social, ecological, and economic pillars of sustainability.

2.4.Co-existence and Sustainability

The word sustainability has been in many instances used as a fashionable buzzword. Every industry is conducting their business "sustainably", they have "sustainable" vendors that only supply "sustainable" materials, and their customers can get "sustainable" shopping bags that will outlast themselves. Even Equinor's sustainability homepage displays:

> "*To us, sustainability is at the core of everything we do. Our journey to develop as a broad energy company is founded on a strong commitment to sustainability, and our strategy – always safe, high value and low carbon – is applied in everything we do."* (Equinor, n.d.)

Which seems contradictory to the fact that they produced 233 million marketable standard cubic meters oil equivalents in 2023 and that their raw oil, natural gas, and condensate made up 73% of all total Norwegian goods transported in 2022 (Norsk petroleum, n.d.).

However, sustainability is a real and critical concept that should be considered. So, what is sustainability? Sustainability can be defined in various ways, but for the purpose of this thesis, I have chosen to define it using the United Nations Brundtland Commission definition of sustainability from 1987 (Brundtland, 1987).

> *"Meeting the needs of the present without compromising the ability of future generations to meet their own needs."(Brundtland, 1987)*

I think this definition does address this thesis well, in that it focuses not only on what we currently have, but also acknowledge the need to adequately manage our resources for the future. The Brundtland Commission report was in part the catalyst to the sustainability pillars that are most used today. Where we can divide sustainability into environmental-, social- and economic sustainability (Hogset et al., 2022). Environmental sustainability focuses on just that, the environment. Climate, climate change, ecosystems, species, environmental impacts, and pollution. Social sustainability looks at how to manage social systems and infrastructure, and how to specify and manage both negative and positive impacts that activities, organizations, processes, and systems have on people (Assefa & Frostell, 2007, p. 65). Economic sustainability looks at how to maintain economic growth and stability (Assefa & Frostell, 2007, p. 65). Although the different categories of sustainability in theory have different focus areas, it is important to see them as a whole. Obtaining sustainability within one of the pillars might cause a hindrance of sustainability in the others. Economic sustainability does often go hand in hand with social sustainability in that economic growth does give the opportunity for increased financial aid to education, healthcare, job creation and similar endeavours (Arestis & Sawyer, 2023, p. 178). However, it often collides with environmental sustainability which often focuses on preservation and degrowth (Warner, 2020, p. 232). I often see that the three pillars are set as equal importance within literature, but in reality, one is usually chosen to be set above the rest, to promote the importance of the issue at hand. To obtain true sustainability, I think it is important to secure the environmental

sustainability first. I find that to be most pressing as it is the foundation which upon the other pillars rest.

Another view on sustainability is whether sustainability can be categorised as weak or strong, as displayed by Hartwick and Solow's work (Solow, 1993, p. 165). A parallel can also be drawn to the approach of deep and shallow ecology (Næss, p. 7), but for the purposes of this thesis, I will focus on weak and strong sustainability.

Weak sustainability suggests that natural resources, or natural capital, can be replaced by or substituted with man-made capital without having significant impact, or loss, to the overall sustainability (Ang & Passel, 2012, p. 253). This means that technologies and infrastructure can replace water, biodiversity, or forest, without any significant loss to the overall sustainability (Ang & Passel, 2012, p. 253). Weak sustainability usually have a larger focus on economic growth. The view is that economic growth can continue even if some natural resources are degraded or depleted, as long as other forms of capital can compensate for the loss (Ang & Passel, 2012, p. 253). It relies on the idea that technological innovation as well as market mechanisms can mitigate resource scarcity, environmental degradation and depletion (Ang & Passel, 2012, p. 253).

Strong sustainability is on the other side of the scale. It highlights that there are some critical ecological processes and natural capital stocks that cannot be substituted by manmade capital or technologies without undermining the well-being and prosperity of future and current generations (Ang & Passel, 2012, p. 253). It emphasises the importance of maintaining essential ecological functions and preservation of ecosystems in recognition that human prosperity and well-being does depend on healthy natural systems (Ang & Passel, 2012, p. 253). When it comes to economics in strong sustainability, economic growth and development is seen as constrained by ecological limits, and it promotes policies that will protect and restore natural capital (Ang & Passel, 2012, p. 253).

The main difference between weak and strong sustainability is their view of what can be substituted (Ang & Passel, 2012, p. 254). The weak sustainability view allows for capital substitution, while strong sustainability view does argue for the restoration and preservation of natural capital. Weak sustainability tends to be more anthropocentric, where it focuses on economic growth and human well-being, whereas strong sustainability tends to have a more eco-centric view, where it recognizes the intrinsic value of biodiversity and ecosystems (Ang

& Passel, 2012, p. 254). These differences are important to keep in mind when drafting policies, as it can have a great impact on the scope of the policy.

I would argue that the problem discussed in this thesis could fall within both weak and strong sustainability. As it ultimately does try to find what stakeholders would like an MSP to include, as well as how they view co-existence. Their views can impact if it would fall under weak or strong sustainability. I came into this thesis with a strong sustainability viewpoint but have seen through interview data that the problem might be seen in a weak sustainability viewpoint. I will however argue that the thesis does have a strong sustainability standpoint based on the choices I have made to data collection. The interview guide focuses mostly on what the interviewees would ideally want, what is important in order to promote sustainable plans and approaches. The questions does also touch upon the social and economic aspects of sustainability, but the emphasis is still on the ecological aspect.

2.5. Why do we need sustainable solutions?

One of the main reasons for needing sustainable solutions to modern problems is the finite resources. George Orwell wrote in his book, The Road to Wigan Pier, about the limitations of Earth's resources, and where he details the need for cooperation to ensure fairness (Orwell, 1962). In order to make sure that future generations prosper that we don't deplete the earth's wealth it is important to make efforts to obtain sustainable solutions. The sustainable solutions are needed as most of sustainability problems are highly complex and, in some cases, can be categorized as wicked (Horst & Webber, 1973, p. 160). The problems usually have many dimensions such as environmental, social, and economic, that all ideally, individually, would get a sustainable solution (Horst & Webber, 1973, p. 161). Many of the problems related to sustainability deals with uncertainty, which adds an additional layer of complexity, as there might be a need for further scientific research or data collection in order to address the problems adequately (Dovers & Handmer, 1992, p. 264). Similarly, the scholarship on management of natural renewable resources, also termed “common pool resources”, by Nobel Prize Laureate Elinor Ostrom, shows that cooperation is possible and empirically present (Ostrom, 2015). Sustainable solutions might not necessarily only be within one of the sustainable pillars, it often need a mixture of all, or several of the categories in order to succeed. In this thesis we look at how it can be possible to obtain co-existence within a marine area where there are several different stakeholders who all depend on the same area to

have economic growth and be able to do their jobs. An inclusive approach might be needed for decision-making around this issue, as the stakeholders all come from different backgrounds, and have different interests, agendas, values, and priorities (Wickson et al., 2006, p. 1051). From an academic perspective, this inclusive approach might be best supported by transdisciplinary processes, to ensure all possible viewpoints and concerns are addressed (Carew & Wickson, 2010, p. 1147).

2.6. Interdisciplinary or transdisciplinary?

In academia traditional disciplinary boundaries has long served as pillar that have guided research within well-defined domains. However, due to increasing complexity of modern challenges, and the emergence of more wicked problems, knowledge that goes beyond singular disciplines is needed. To understand how this can be useful I will summarize both interdisciplinarity and transdisciplinary to show the importance of these approaches in dealing with growing complex issues.

Interdisciplinarity refers to collaboration and integration of knowledge, perspectives, and methods two or more academic disciplines, in order to address complex problems and questions that might not be adequately understood within the scope of a single discipline (Klein, 2020, p. 2). An interdisciplinary approach breaks down traditional boundaries between disciplines and tries to foster cooperation among experts from various fields.

By applying an interdisciplinary approach, scientists and researchers can apply a framework to meet and recognize the complexity of many real-world challenges such as public health crises, climate change, and sustainable development(Wickson et al., 2006, p. 1050). Identifying complexity is a first step needed to source insight from several different disciplines in order to better understand them and support high-quality decision-making around them. By combining expertise from different areas, we can indeed arrive at more creative and innovative solutions (Wickson et al., 2006, p. 1050), as well as provide a more in-depth and comprehensive understanding of the challenge, its intricacies, complexities, and uncertainties. In other words, interdisciplinarity encourages creativity, flexibility, and collaborations between scholars which in turn fosters a holistic understanding of complex challenges and encourages the development of more robust, context-based solutions for real world problems.

Transdisciplinarity goes further than interdisciplinarity. Whereas interdisciplinarity works across different disciplines, transdisciplinarity goes beyond the confines of disciplines and seeks to integrate diverse knowledge, perspectives, and methodologies (Wickson et al., 2006, p. 1050). It goes beyond the disciplinary boundaries and seek to create new conceptual frameworks and inquiry models (Klein, 2020, p. 4). Transdisciplinarity recognizes the value of various forms of knowledge, such as experiential, transit and indigenous knowledge, and uses this alongside scientific and industrial expertise (Wickson et al., 2006, p. 1051). By incorporating and embracing the different perspectives as well as engaging and incorporating stakeholders, transdisciplinarity generate more comprehensive, holistic, and relevant insights that are contextually relevant. The vast knowledge collection and application can enrich the research process as well as enhance the applicability and relevance of findings related to complex real-world challenges (Kaiser & Gluckman, 2023, p. 25).

In addition, transdisciplinarity can foster collaboration across disciplinary, cultural, and institutional boundaries, and promote co-creation culture as well as shared ownership and knowledge. Transdisciplinarity also encourages reflexivity and epistemic humility, which promote researchers to critically reflect on their own knowledge, assumptions, values, and biases. This can lead to researchers obtaining more nuanced understanding of complex challenges, and challenge traditional knowledge (Kaiser & Gluckman, 2023, p. 24).

2.7. EU directive on marine spatial planning: guidelines for development and implementation of MSP by EU member states.

In an effort to facilitate sustainable co-existence in marine areas, The European Parliament and the European Council developed Directive 2014/89/EU which was published in 2014. The directive details why, how, and when European member countries should implement MSPs. It is a legal framework that aims to provide a systematic approach to manage the European marine areas by promoting sustainable development, integration of various sectoral policies and coordinating activities. To get a better overview of the directive we will go through the different parts of the document presented.

The EU directive 2014/89/EU does apply to all member states and their marine areas as well as territorial waters, up to 12 nautical miles from the coast, and within exclusive economic zones(European Parliament & European Council, 2014). The directive required the member states to implement the directive in national legislation by 18th of September 2016. The requirement is to ensure effective implementation within members states. The directive

outlines several overreaching objectives to guide the implementation and development of MSPs in the member countries (European Parliament & European Council, 2014). Although the objectives all are set to promote and facilitate sustainable co-existence, they are vague. Reading through the directive there are no detailed requirements, except for implementation date.

- The directives intention is to promote sustainable development. It outlines that MSPs should support the sustainable use of marine resources and activities, to ensure long-term environmental, economic, and social benefits (European Parliament & European Council, 2014, p. 1).
- Coherence and integration, MSPs should contain sectorial policies. The focus is on sectors such as: fisheries, shipping, tourism, energy, environmental conservation and -protection. The directive wants the sector policies to be coherent as to achieve a coherent approach to marine spatial planning (European Parliament & European Council, 2014, p. 6).
- Capability, MSPs should aim to resolve conflicts and work toward ensuring compatibility between the different uses or the marine areas (European Parliament & European Council, 2014, p. 4).
- Enhancing coordination and cooperation, the development process as well as the MSP in itself should involve collaboration between relevant authorities, industry actors, other stakeholders as well as neighbouring countries. This to alleviate conflict within each country territorial wates, and to address possible boarder issues (European Parliament & European Council, 2014, p. 4).
- Fostering environmental protection and biodiversity conservation, in order to protect marine ecosystems, conserve biodiversity and maintain ecosystems the MSPs should incorporate ecosystem-basted measures and approaches (European Parliament & European Council, 2014, p. 3).
- Governance and decision making: The MSPs should promote transparency, accountability, and stakeholder engagement in order to contribute to improved governance structures and decision making (European Parliament & European Council, 2014, p. 7).

The directive does also say that it is expected that that the member states complete the initial preparation for their MSPs within four years of the publication of the directive. The directive

is legally binding and the member states should generally be done with their initial preparation by September 2020 (European Parliament & European Council, 2014, p. 5).

The objectives listed above are very vague, which is a reoccurring theme throughout the document. Although the directive aims to promote sustainable co-existence in marine areas through implementation of a marine spatial plan, the details are lacking. We will now look a little further into the objectives.

Firstly, the directive does state that the MSPs should address a range of marine interests and activities. Some of these include shipping lanes, fishing grounds, renewable energy development, zones for tourism and recreation, as well as marine protective areas. It also emphasizes participatory processes when developing the MSP, not only through involving stakeholders from those sectors of activity, but from the public as well (European Parliament & European Council, 2014, p. 8).

"In order to promote sustainable development in an effective manner, it is essential that stakeholders, authorities and the public be consulted at an appropriate stage in the preparation of maritime spatial plans under this Directive, in accordance with relevant Union legislation."(European Parliament & European Council, 2014, p. 2)

The directive addresses that the member states must establish mechanisms and routines to ensure effective public participation and stakeholder engagement and refers to Article 2(2) of Directive 2003/35/EC as an example of consultation provisions (European Parliament & European Council, 2014, p. 4). Other than governmental agencies stakeholders may include environmental NGOs, local communities, indigenous groups, industry representatives and other relevant groups or organizations. By involving these stakeholders in the process, the MSPs can benefit from local knowledge, diverse perspectives, and implementation support.

In addition to the focus on stakeholder engagement it also focuses on the compatibility and consistency of the MSPs being implemented throughout the member states. The directive states that the MSPs should be consistent and compatible with other relevant plans and policies (European Parliament & European Council, 2014, p. 6). This to get a more holistic view on policies and plans made on both national regional and international levels. This will include drafting the MSPs in harmony with existing legislation directives and strategies that are related to sectoral activities spatial planning marine safety, biodiversity, conservation, and environmental Protection (European Parliament & European Council, 2014, p. 8). When ensuring the coherence with broader policy frameworks the MSP can contribute to integrated

and sustainable marine management. As mentioned earlier in this chapter, this is very vague. The directive does refer to other EU directives, but the 2014/89/EU Directive does still not set any hard requirements.

The focus on compatibility and consistency also relates to the monitoring, evaluation, and reporting. The directive outlines that the member states are required to establish monitoring and evaluation mechanisms to assess the implementation and effectiveness of the countries MSPs (European Parliament & European Council, 2014, p. 10). This involves evaluating the socioeconomic and environmental impact of the MSP's implementation identifying opportunities for improvement and adaptations and tracking progress towards achieving the MSP's objectives. All the member states must report the implementation of MSPs to the European Commission every six years where they provide information on the challenges progress and acquired knowledge this to ensure the MSP's effectiveness its ability to adapt to changing circumstances and demonstrate accountability to stakeholders and the public (European Parliament & European Council, 2014, p. 10).

So, what is the European commission's role in this? The main role of the European Commission is supportive, it shall provide guidance technical assistance and capacity building support to its member states and help them develop and implement MSPs in an effective manner. The Commission shall facilitate exchanges of the best practices and acquired knowledge to the divide between the member states promoting cooperation, and collaborations across borders (European Parliament & European Council, 2014, p. 5). In addition, the Commission will assess the progress of MSP implementation true reviewing national reports and providing feedback to member states as well as thorough periodic reporting exercises. They have also funded programs such as horizon Europe end the European maritime and fisheries fund (EMFF) (European Commission et al., 2019). The Commission does also provide financial support for MSP related activities, projects, and research. Through offering these services to their member countries the Commission aim to contribute support as well as achievement of the common objective of sustainable marine spatial planning.

In summary, the MSP directive of the European Parliament and of the council does provide a framework for the development and implementation of marine spatial planning in the European Union. It aims to guide member states in promoting sustainable development, achieving integrated management of marine areas, and facilitate governance. They focus on stakeholder engagement compatibility with existing policies, evaluation, and monitoring, with

the aim to contribute to effective and sustainable use of Europe's marine resources. However, the directive is unspecified. It does refer to other directives for guidance and examples but does not take a firm standpoint throughout the directive.

As Norway is not part of the EU it does not abide by this directive, however the Norwegian government is eager to implement their own version of an MSP to keep up with the European Union.

2.8. How is the process today?

To gain a better perspective as to how we can obtain better co-existence in Norwegian marine areas, we can start by looking at the current planning process for offshore wind in Norway.

The process starts with the Government deciding on a limited area that can be opened for licence pursuant to section 3-1 of the Ocean Energy Act (Havenergilova, 2010). The opening of acreage takes place in accordance with Section 2-2 of the Ocean Energy Act. After the area has been established, the area will be divided into smaller areas, which will then be announced. It is in these smaller areas that offshore wind farms can be developed.

Before the areas are announced, the ministries review the opened area and decide how the areas are to be divided (Regjeringen, n.d.). In line with this process, a third-party consultation is also conducted. At these consultations, third-party actors, such as fisheries, shipping, and other affected industries, can provide input on the delimitation of those areas (Regjeringen, n.d.). The purpose of conducting a third-party consultation at this time is to avoid the most conflictive and vulnerable areas, to prevent land use conflicts. It is only after this that the areas are announced on the market for interested commercial actors (Regjeringen, n.d.).

Impact assessments for offshore wind in the opened areas will be carried out by the NVE. And shall be prepared in accordance with §2-2, second paragraph of the Ocean Energy Act (Havenergilova, 2010). Section 2-2 of the Act stipulates that:

> *"Environmental impact assessments shall include assessments of environmental and social impacts of renewable energy production, such as consequences for other business interests." (Havenergilova, 2010).*

> *«Konsekvensutgreiingane skal inkludere vurderingar av miljømessige og samfunnsmessige konsekvensar av fornybar energiproduksjon, så som konsekvensar for andre næringsinteresser.» (Havenergilova, 2010)*

To this date, there has only been one completed round of licencing in Norway, and that is for Southern North Sea II. For this case, there was first a pre-qualification round with qualitative assessment criteria that were decided after a public hearing round (Olje- og energidepartementet, 2022). Prequalification means the government have stipulated requirements that the wind energy consortia must meet before they are allowed enter an auction for the area. The prequalification requirements in Norway so far were linked to economic implementation capacity, sustainability and social impact (Olje- og energidepartementet, 2022). There are usually also requirements for environmental impact, but this is not the main focus in the prequalification phase. Part of the reason for this might be that the areas have already been assessed by the NVE pursuant to Section 2-2 of the Ocean Energy Act. The requirements in the prequalification phase are pursuant to §2-3 of the Ocean Energy Act (Havenergilova, 2010).

After consortia have successfully passed the prequalification stage, the government decided that there is a satisfactory number of companies to go ahead with an auction. For the auction of Southern North Sea II, it was decided that the auction would be a "reverse auction", where the consortium with the lowest price per kilowatt would be awarded the area. For Southern North Sea II it was Ventyr SN AS, owned by Parkwind and the Ingka-group that won the auction with 115 øre/kWh (Energidepatementet & Statsministerens kontor, 2024)

2.9.Research question

So, what can we do? As the topics in the background suggest, obtaining sustainable co-existence in Norwegian marine areas might be highly challenging, and complex. One of the variables making this such a complicated challenge is the size of the Norwegian ocean areas. Due to Norway's vast ocean areas, there is naturally many different variables that needs to be considered, not only to industries such as fishing or shipping, but also to environmental aspects that needs addressing. Norway's vast ocean areas and oceanic boarders might also pose a challenge in regard to mapping, planning and cross-border collaboration. In this thesis

we will look interview data, hearing excerpts, and literature to provide insights into the broad question:

To what extent marine spatial planning can help support co-existence in the Norwegian context?

3. Methods

3.1. Reflexive thematic analysis

Reflexive thematic analysis comes from thematic analysis. Thematic analysis is a popular method for analysing qualitative data within many disciplines. Its purpose is to develop themes from patterns across datasets that addresses a research question (University of Auckland, n.d.).

> *"TA is not a singular method – TA is best thought of as an umbrella term for a set or family of approaches for analysing qualitative data that share a focus on developing themes (patterns of meaning) from qualitative data. They tend to share some degree of theoretical flexibility but can differ enormously in terms of both underlying philosophy and procedures for theme development."* (University of Auckland, n.d.).

For this thesis, I chose to use reflexive thematic analysis to process and analyse my interview data. I chose this method because it gave me the opportunity to look for themes and trends within the interview data (Braun & Clarke, 2006, p. 80)

I first started to familiarize myself with the dataset. I transcribed all the interviews and familiarized myself with their content. While I heard and read the interviews over and over, I also noted down initial themes and trends that initially emerged (University of Auckland, n.d.).

Hereafter I started coding the data using NVivo. I initially found quotes that I found could answer or enlighten my research question before I coded the data into larger themes (University of Auckland, n.d.). The larger themes was initially the overall challenges and opportunities related to co-existence and the possible implementation of MSP in Norway. After coding my data into rough themes such as overall challenges and opportunities, as well as co-existence, I then looked over all the coded data in relation to the transcription for each different interviewee (University of Auckland, n.d.). I did this to determine if the coded data the interviewee had provided was most relevant in relation to my research question. When I was done determining what data should be included in the thesis, I started to divide the quotes into sub-themes and tried to give each group a descriptive and informative title (University of Auckland, n.d.). The themes and sub-themes that was found are summarised in Table 1 below.

Table 1: Identified themes from the interviews

THEME	SUB-THEME	TITLE
Challenges- MSP	Communication	Knowledge gap and lack of data sharing
	Knowledge	
	Biodiversity	
	Economy	Economic challenges
	Area	Area and shared boarders
	International importance	
Opportunities- MSP	Sustainability	Sustainable and holistic approach
	Cooperation	Stakeholder engagement
	Communication	
Co-existence	Challenges	Co-existence
	Opportunities	

3.2.Semi-structured interviews

To find what aspects are important in working with co-existence and possible implementation of MSP in Norway, I wished to collect reflections, opinions, and descriptions from appropriate stakeholders. I chose to use qualitative interviews as a method for my data collection. Qualitative interviews allow the interviewees to express their thoughts and ideas more freely on a subject (Arksey & Knight, 1999, p. 32). An interview also gives to opportunity to adapt the purpose and setting to different structures (Ryen, 2002, p. 12). The structure that I chose for this thesis is a semi-structured interview. The semi-structured interview grants the interviewer and the interviewees to explore unexpected themes and questions that emerge in the course of the interview (Ryen, 2002, p. 12).

3.2.1. Conducting the interviews

The interviews were conducted in November and December of 2023. Three of the four interview were conducted online due to physical distance. The interviews lasted approximately 25-45 minutes and were conducted in Norwegian. All of the interviewees

where given info-sheets where they were informed and consented to the interviews being audio recorded, see Appendix 1. All of the interviewees opted to be anonymous.

I contacted possible interviewees through e-email in the fall of 2023. I initially sent out an e-mail detailing what the thesis was about, and general information such as possible times for conducting the interviews. The first round of e-mails was sent to 11 different people asking for participation. From that I only heard back from 3 of them. I sent a follow-up e-mail one week after the original send date and from that I got in contact with one more interviewee and got a few that declined participation. I then tried contacting some of the possible interviewees that had not responded to my e-mail by phone. Unfortunately, I was not able to obtain more interviewees by doing so. Some of the e-mails I got from the people declining participation gave med possible other candidates that they though would fit better. I contacted these people by e-mail again but did not get any more participants.

I don't know why this was a subject that was hard to gain participants to, but a lot of the responses included that the person did not feel that they knew enough about the subject to participate or that they simply did not have time to participate. In the end I ended up with four interviewees (Table 2).

Table 2: Interviewee overview and codes

Interviewee code	**Interviewee number**	**Sector**	**Digital or in person**
I1	1	Fisheries union	Digital
I2	2	Fisheries governance	In person
I3	3	Water and energy directorate	Digital
I4	4	Renewable energy industry	Digital

The interview guide was developed with input from both my supervisors, as well as a lecturer. All the interviewees had the same interview guide and had a possibility to receive the

interview guide beforehand. The interview guide consists of seven questions with prompts. The seven main questions are listed below:

Table 3: Interview questions

Theme	Question in Norwegian	Question in English
General	Kan du kort presentere deg selv? Hva er yrket ditt, og hva jobber du med?	Could you briefly introduce yourself? What is your profession, and what do you work with?
Co-existence	Hvordan vil du definere sameksistens i marine strukturer/operasjoner?	How would you define co-existence I marine structures/ operations
	Hva tror du er nødvendig for å oppnå bærekraftige marine operasjoner?	What do you think is necessary to achieve sustainable marine operations?
MSP	Hvordan tror du en marin arealplan vil påvirke sameksistens?	How do you think an MSP would impact co-existence?
	Ved utvikling av en MSP, hva mener du en konsekvensvurdering bør omfatte?	When developing an MSP, what do you believe should be included in a consequence/risk assessment?
Individual impact	Kan du personlig bidra til å innføre bærekraftige endringer i organisasjonen din?	Can you personally contribute to sustainable change within your organisation?
General	Er det noe annet du ønsker å legge til?	Is there anything you wish to add?

The full interview guide with prompts in Norwegian can be seen in Appendix 2.

Throughout the interviews I used the interview guide actively but deviated from it if I saw that the interviewee had inputs worth exploring. Using the interview guide but deviating from it gave me the possibility to explore new avenues and viewpoints that I had not considered. Although the freedom of using semi-structured interviews is the reason I choose to do this method, it was also a challenge. I found that it could be hard to steer the conversation back to the theme if the interviewees had the opportunity to talk freely for a longer period. This made it so that I did not get to ask all the interviewees the same questions, or at least with the same formulation. It was important to me to get the viewpoint of my interviewees though the interviews and did therefor not want to ask leading questions. It is important to avoid closed end questions, leading questions and charged questions in an interview (Leech, 2002, p. 667). I did however have prompts ready in my interview guide if the interviewees did not have a clear answer for the question. I did not have to use the prompts often but used them in situations where the interviewee needed clarification or examples as to what I was asking about.

There are several challenges to using interview as a method. One challenge is the lack of-, or poor communication between the interviewer and the interviewee, or if the interviewer influence the interviewee (Grønmo, 2016, p. 160). In one of my interviews, I found it hard to communicate with the interviewee and had to continuously prompt the participant to reexplain what they meant, as it lacked clarity. This can have impacted the interview data as they could be influenced by my prompts. They might feel that they did not manage to elaborate their own thoughts and perceptions.

I chose to give the interviewees the opportunity to be anonymous. One of the reasons I chose to do this is the limited number of participants. When contacting different stakeholders to be interviewed, most of my e-mails went unanswered or the invitation was declined. With one of the interviewees the first question I was asked was if it would be anonymous. By providing the anonymity I hoped that the interviewees would be able to give me their true viewpoint without though to possible contradictions to their organization's viewpoint. The project was approved in RETTE, which is the University of Bergen's internal control system for processing personal information in student and research projects.

3.2.2. Interviewee selection

I wanted to make sure that my interviewees was in an organization that could be seen as either stakeholders with a possible implementation of an MSP or an organization that realistically would be part of the planning process. The interviewees where selected with the help of my supervisor, based on the criteria mentioned above. I tried to contact both people who were in leadership roles, and "ordinary" workers with the aim to get nuanced and representative responses. As mentioned previously, I also got referred new possible candidates from my initial contacts.

3.3. Use of AI

I have used Chat GPT 3,5 from Open AI, and the University of Bergens own chatbot AI, UIBchat, to help me translate the quotes from the interviews, and excerpts from the hearing process into English. Using AI as a translation tool was based on the decision to make sure that the quotes and excerpts would retain their meaning. It was important to me that the interviewees responses would have the same content in English as in Norwegian. As the interviews were conducted in Norwegian, tone, slang, euphemisms, and overall language use was important get correct to retain the original meaning in another language. Most of the quotes and excerpts where roughly translated through AI and then refined by me, to get the most accurate translation.

3.4. Limitations

One of the most significant limitations in this thesis is the low number of interviewees. I only manged to get four candidates willing to do an interview. As mentioned previously, I don't know why it was so difficult to get participants for this thesis problem, and I would ideally like to have at least double of current participants. Due to the low number of interviewees, we cannot derive any generalisations. However, those who have answered are experts in their field, with a strong interest and knowledge in Marine Spatial Planning. The information collected is therefore very instructive and insightful.

Another limitation is my academic background. For this thesis it was necessary to read through a large number of legislations, regulations, and technical plans in order to understand the context and derive an interview guide that would be relevant. As I don't have a background in law studies but rather a bachelors in renewable energy, the interpretations might differ from what someone in law would derive from the same text, and my understanding of the full regulation and legislation process might be deficient. I have however

been supported in my analysis by my main supervisor who is familiar with those texts and their interpretations.

5. Results: Challenges and opportunities around implementing MSP in Norway

The interviewees for this thesis were asked to answer questions regarding co-existence and the possibility of implementing MSP in Norway. They were asked to include what they ideally would like the MSP to contain, and how it would be done.

5.1.MSP:

The interviewees were given the opportunity to comment on what they thought an MSP should include as well as what the opportunities and challenges were for implementing MSP in Norway. The interviewees expressed an overall scepticism toward the MSP method, as currently conducted in other countries.

They all outlined different challenges that they feared would be a hindrance to MSP being effective in creating sustainable co-existence in Norway. The greatest challenges that were identified by the interviewees, and that we will go into detail below, were knowledge gaps and lack of data sharing between institutions, economic aspects and area size and shared borders. There was also the concern that stakeholders' interests were not being met in the current system as well.

5.1.1. Challenges

5.1.1.1. Knowledge gaps and lack of data sharing

Addressing identified knowledge gaps can come with significant challenges, including available funding, time, and resources. Arguably more challenging, however, is when dealing with 'unidentified knowledge gaps', or what Wynne (1992) calls 'ignorance'*: "Don't know what we don't know"* (Wynne, 1992, p. 114), or what can also be qualified as the 'unknown unknowns'. Relative to marine spatial planning, some knowledge gaps, and more uncertainties, may arise from more research, or unearth themselves in connection with development, or planning processes that calls for exploration of a topic, area, or species. (Wynne, 1992, p. 114)

Several interviewees talked about knowledge gaps in the interviews. They identified that as one of the biggest challenges related to co-existence and implementation of MSP. The interviewees also pointed out that the lack of data sharing, or knowledge exchange, between institutions, industries and organisations could also be a challenge.

In one of the interviews, I pushed further on this topic. I asked the interviewee to elaborate on the subject and they responded that their organisation where currently involved in research that aimed to address some the knowledge gaps related to marine wildlife:

> *"There are still knowledge gaps in relation to impacts on ocean life, for example: monitoring of fish. We are also involved in a number of studies, including looking at whether fish are attracted to wind farms or not, and to what extent? And whether it will lead to net increased productivity. There are some studies that are ongoing, but there are still some hypotheses and unclarified aspects."* (I4)

> *"There are probably some knowledge gaps that may not be so easy to answer either, without having things in place. But some things are absolutely possible." (I4)*

This quote above highlights the willingness within organisations to conduct research to address possible knowledge gaps in relation to co-existence and MSP. The interviewee also pointed out that there are still unknown knowledge gaps:

> *"There are many unforeseen consequences that we are not aware of due to numerous uncertainties." (I3)*

The interviewee highlights a part of the process that can be challenging. As mentioned, some knowledge gaps are unknown or hidden, it cannot be unveiled, or discovered until we see the impact of other influences (Dong, 2012, p. 11). In installations or projects, the unknown knowledge gaps will reveal themselves over time, or in some cases remain unknown. The phenomenon of knowledge gaps will be a "forever-challenge" as new knowledge emerges, new gaps will appear.

Even though there are knowledge gaps the interviewees gave the impression that the different institutions and organizations have great wells of knowledge at their disposal. Each of the interviewees stated that either they, or partnering organizations had considerable data banks with data pertaining to their field. The challenge here lies in sharing that data. Although none of the interviewees outright said that there is a lack of data sharing, they all emphasized their own data, and did not give me direct answers when asked about combining data with other institutions.

> *"The way we operate, we've managed to develop very high-quality map data in-house." (I2)*

This gives the impression that there is a lack of cooperation between different institutions and industries. Although I don't know why there is a lack of cooperation, I got the impression during the interviews that there were no real incentive for them to do so. There is also the argument to be made that they lack the knowledge and skill to facilitate collaboration. They all gave the impression that they felt it was not their responsibility to do so, but that they would all be happy to contribute if the government were to arrange for data collection. The quote form interviewee 1 seen below, shows that there is willingness to share, but that the collection and facilitation needs to be on someone else than the stakeholder themselves.

> *"And if there is to be development, then you have to listen to the fishermen. They have very good data and are honest about it." (I1)*

So, the willingness to share data is potentially there, but will not be done unless there is an incentive to do so. The challenge lies in the execution, and it is important to note, as mentioned above, that the willingness may not be what's holding it back, but rather the lack of skill, or knowledge (Dovers & Handmer, 1992). The lack of data sharing, and knowledge gaps are a significant challenge both to co-existence and the development of an MSP (Shucksmith & Kelly, 2014, p. 1). If the institutions do not wish to share data and try to work together to address some of the knowledge gaps without incentives, obtaining a sustainable MSP that focuses on optimal co-existence might be hard (Kostal et al., 2022, p. 5).

5.1.1.2. Economic challenges:

The interviewees were asked what they would include, ideally, in an MSP. The interviewees expressed that they could not give me what they would consider good answers to that question as they did not think it was achievable. When I asked why, they all answered a combination of time and economic challenges. They expressed that they did not see their ideal version as achievable as it would take too much time and money to execute properly. I therefore asked them to put those aspect aside and answer their questions as if the conditions where ideal for their idea.

Although they did not specifically give me any information about what amount of time would be needed, or what the economic aspects would ideally be, I found it interesting that they all were stagnated by the same aspects. I wanted to look further into this challenge even though I did not get any additional information from my interviewees.

Fist we will look at the economic aspect of planning and implementing an MSP. The cost lies first and foremost in data collection. Research expeditions can be costly, the Statsraad Lehmkuhl expedition had a price tag of 180-200 million NOK (Fanghol, 2021). Although this was a large expedition that took place over a year, it can still be an indicator as to what cost could be, as Norway has vast ocean areas that could potentially lead to many expeditions to map the whole area. The question here is who should take the cost of the data collection? The Norwegian government has in their 2024 state budget has allocated 170 million NOK to the facilitation of faster implementation of offshore wind (Klima- og miljødepartementet, 2023, p. 36).

> *"The government allocates a package composed of funds for the preparation of new offshore wind areas for a new tender round in 2025 and increased capacity for the energy authorities to follow up on management responsibilities within offshore wind. The majority of the package consists of funds for field surveys of new offshore wind areas, including surveys of benthic communities, fish and marine mammals, and birds." (Klima- og miljødepartementet, 2023, p. 37)*

By earmarking some of the resources for development of offshore wind the government demonstrate their willingness to invest in green solutions to mitigate carbon emissions. The emphasis on conducting field surveys for new offshore wind areas, which include assessment of benthic communities, fish, marine mammals, and birds, further shows their willingness to manage these areas responsibly (Briggs & Hudson, 2013, p. 17). These surveys can be crucial for assessing potential ecological impacts of offshore development and furthers the overall data collection needed to make an MSP (Briggs & Hudson, 2013, p. 17). From an economic perspective the government's investment in offshore wind development represents an opportunity not only for local job creation but also economic growth (Green & Vasilakos, 2011, p. 498).

However, the amount allocated does not reflect the overall need for mapping of the ocean areas. The amount us not unsignificant, but it is limited. This money is earmarked for offshore wind and will only be used for mapping of the specific areas used for offshore wind. This can be an indication as to the priories of the government. I did not find how much the Norwegian government is spending or allocating to mapping and implementation of an MSP, and other than claiming they want implementation, the state budget for 2024 does not specifically allocate money for a holistic MSP. The faster implementation of offshore wind is part of a larger overall priority area. They have divided the allocation into different post within the priority area, which in addition to faster implementation of offshore wind includes Investment in Green Transition, Measures in the Nuclear Area, Bionova, Grants for Urban Areas, Increased Financing of Large Collective Projects, Tinnosbanen, Strengthening of Energy Authorities, Energy Efficiency and Energy Savings, Prevention of Flood and Landslide Damage, and Mongstad Technology Centre (Klima- og miljødepartementet, 2023). As we can see, this list has quite diverse areas of action, but are all grouped together as "Important investments in the state budget for 2024 that provide clear climate and environmental benefits." (Klima- og miljødepartementet, 2023, p. 36).

The list gives the impression that surveying and mapping ocean areas for offshore wind implementation is mostly there as a formality. It gives the impression that they are only willing to allocate funds as they expect a greater profit from these areas after implementation of offshore wind (Green & Vasilakos, 2011, p. 498). Profitability is important in consideration to economic sustainability, but the efforts of mapping and surveying areas should in my opinion not only be tied to profitability.

5.1.1.3. Area and shared borders

Other European countries have already prepared and are implementing their MSPs. The biggest difference between these countries and Norway is the size of the sea areas. Norway has a coastline of 102,936 km (Thorsnæs, 2024), the largest in Europe, and the second largest in the world when including all islands and islets. This is also reflected in the size of Norway's sea areas. Large ocean areas create challenges in terms of mapping, time, and socio-economic benefits. The interviewees commented specifically on this as one of the biggest challenges for the implementation of MSP.

> *"For some countries like Belgium, they have a fairly implemented MSP. The advantage Belgium has is that it is small, which means that it is very easy to get an overview of what they actually possess. That is, what exists inside their areas. When it comes to Norway, for example, we have so much area. Where there are so many different things, where you have things like the deep-sea ridge up north, to the green coastal areas and the deep fjords."(I3)*

> *"Perhaps not as clearly defined as the European once are, at least not at the stage we are at now, because Norway lacks the knowledge to create such a detailed spatial plan. We have too vast areas, and insufficient capacity for mapping." (I3)*

The quotes from interviewee 3 shows the contrasting realties of countries like Norway and Belgium in implementation of MSPs, as well as managing ocean territories. The interviewee brings up that Belgium has a fairly well-implemented MSP, and while this highlights the importance of strategic planning and thorough governance framework to promote sustainability, and responsible resource management, it does also highlight the challenge with the size difference (Douvere, 2008, p. 769). With smaller areas Belgium can more easily obtain a clear understanding of their marine resources and boundaries, and can therefore better coordinate activities such as fisheries, offshore energy production and development, preservation efforts and shipping (Douvere, 2008, p. 769). This will give them the benefit of

minimizing conflicts and maximizing economic and environmental benefits (Briggs & Hudson, 2013, p. 16).

For Norway the situation is in complete contrast, due to the size of our ocean areas and the complexity of our oceanic landscape. The interviewees mention of the diverse landscapes like the deep-sea ridge, coastal areas and fjords further highlights the great biodiversity and potential natural resources within the Norwegian ocean areas. The interviewee does pose the vastness of the ocean areas as one of the main challenges. Moreover, the interviewee highlights the need to cooperate between bordering countries. Shared natural resources, migratory species and pollution all need to be considered when developing an MSP, as decisions made within our ocean boarders might have an impact on neighbouring countries ocean areas. Collaborative approaches and cross boarder cooperation is needed to ensure effective management and conservation efforts (Morf et al., 2019, p. 203). Marine areas are highly interconnected, migrating species can travel through many different boarders and as interviewee 3 states:

> *"Not only the Norwegian waters, but also the adjacent waters, because it's how Harald Heide-Steen, famously said, "that you can't see that boarder under water" and you can't, and neither do the fish or the animals."(I3)*

The challenges related to shared boarders and large ocean areas highlights the need for innovative approaches and adaptive environmental management. An inclusive and participatory MSP process, that is supported by robust technology and data, as well as good stakeholder engagement can help promote sustainable development, reconcile differences and safeguard the natural resources and oceanic ecosystems for future generations (Morf et al., 2019, p. 202).

5.1.2. Opportunities:

Through the interviews, the interviewees were asked what they would want if an MSP was implemented in Norway. They were asked to answer without thought to economic- or time restrictions, but more in 'ideal' conditions. They were asked to do so, as all of them expressed

that their views on a Norwegian MSP idea would not be very realistic with regards to economic and time constraints. Through the interviews the key opportunities that were envisaged were, A more sustainable and holistic approach to co-existence, better stakeholder engagement, better cooperation between stakeholders, and lower future risk when it comes to developing offshore wind and other offshore industries such as oil and gas fisheries, shipping, and offshore wind. I would like now to go into details into two of these foreseen opportunities and discuss them thoroughly.

5.1.2.1. Sustainable and Holistic approach

Let us first look at how the interviewees' MSP idea would foster a more sustainable and holistic approach to co-existence. One of the main aspects mentioned was that a MSP would allow a thorough mapping of what we currently know, that would help further build new knowledge on that basis:

> *"By first increasing the knowledge and knowing what do you actually have? So, what is out there? That is essential for all forms of marine operations if they are to be sustainable. You have to know what's actually out there. How is it affected by what you want to do, and last but not least this with cumulative effects, i.e. when you start doing several different things, how the impact will be." (I3)*

The quote, given by interviewee 3 stresses the significance of increasing knowledge about marine ecosystems before engaging in any operations (Briggs & Hudson, 2013, p. 16). It also highlights the importance of considering how marine operations can affect the environment. Researching and understanding what is currently there, and evaluating and understanding both direct impact, such as pollution or habitat, destruction, and indirect effects, as well as changes to an ecosystem dynamic, or the displacement of species, it can be possible to mitigate negative consequences and promote a more sustainable and holistic approach (Briggs & Hudson, 2013, p. 23). The interviewee in this quote also talks about the cumulative effects. Cumulative effects recognizes that individual operations may have relatively minor impact, but with more activities being done in one area, it can collectively lead to significant harm

(Stelzenmüller et al., 2020, p. 6). This is one of the risks when expanding activities in marine areas. But by categorizing them and researching the possible challenges and complications this knowledge can help in identifying conflict and implement management strategies that can minimize the overall harm. The interviewee implies a recognition of the complexities of these environments, and the need to understand and research them thoroughly to gain a sustainable strategy. By prioritizing knowledge acquisition, it gives us an indication of a commitment to make informed decisions, based on scientific research.

The second quote given by interviewee 2 highlights the need to understand existing ocean industries, and their uses of the space.

> *"It should include mapping existing ocean industries, and then it should find suitable areas for new industries." (I2)*

The theme mentioned by Interviewee 2 does somewhat overlap with the first quote regarding cumulative effects, as well as identification of possible locations. However, this quote does directly state the different industries and focuses on identifying sectors, such as fishing, shipping, tourism, renew energy production, as well as conservation efforts (Douvere, 2008, p. 769). By understanding the current uses of marine resources, and the social and economic dynamics that are associated with these, policies can be made that support synergies amongst the different industries and sectors. If the current uses, and needs, priorities and values of the different stakeholders are mapped, better understood, and discussed in a collaborative way, MSP can also help address conflicts and encourage synergies among the various stakeholders (Briggs & Hudson, 2013, p. 24). Considering the existing ocean industries, marine planners can identify suitable areas for new ventures that can minimize conflict (Douvere, 2008, p. 764). One example is locating new offshore wind farms in areas that have minimal fishing activities which will reduce risk of conflict with fisheries, while still potentially providing economic benefits to coastal communities. Similarly identifying areas for aquaculture that compliments existing fishing practices, might enhance food securities, while minimizing environmental impacts (Briggs & Hudson, 2013, p. 21). Lastly this quote also shows the need for long-term planning; in particular, it implies a forward-thinking, anticipatory, and responsive approach that considers the long-term sustainability of ocean industries. This involves not only identifying suitable areas or new venturous can occur, but also

implementing mechanisms for continuous monitoring, evaluation, and adaptive management, as well as encouraging collaboration and dialogue among the various stakeholders involved to iteratively reassess what is known, and the values and priorities of each stakeholder (Briggs & Hudson, 2013, p. 20).

> *"And it's one thing to map all the resources, what's there in the first place, but it's also that with suitability for different types of industry. There is no point in creating a spatial plan that singles out a specific area as very suitable for one thing, unless it is suitable form a technological standpoint It needs to have a positive impact on the industry side as well." (I4)*

The quote from interviewee 4 for emphasizes the importance of not only identifying resources and areas, but also addressing the suitability of areas for different type of industries, from both a technological and economic perspective. Firstly, they talk about the comprehensive resource mapping. As the previous interviewees, interviewee 4 also acknowledged the necessity of thoroughly mapping out the ocean resources and areas as the initial step. They also highlighted similar aspects as interviewee 2, namely that the sustainability assessment of the industry's needs, have to go beyond just mapping resources. This would involve considering factors such as oceanographic conditions, infrastructure availability and regulatory framework. It also highlights the need for technological feasibility when determining the suitability of areas for specific industries. This could include factors such as depth of water distance from shore and seabed conditions when planning for activities like offshore, wind, energy, or aquaculture. That technological requirements can realised, will be crucial for this successful implementation of new industries (Pınarbaşı et al., 2019, p. 314). However, there are significant uncertainties as to how to optimally implement technological innovations in that field, and what their long-term impacts might be, both on the environment and the various sectors of activities. It is therefore something that demands collaborative efforts for being responsive and adaptive when a technological innovation displays impacts that are not desirable. Going back to new industries, the quote emphasizes the importance of ensuring that spatial plans have a positive impact not only on the natural resources but also the industry. That involves considering economic factors, added opportunities for local communities, such

as job creation by prioritizing industries that can thrive in specific areas and contribute to sustainable economic development (Edwards, 2021, p. 384).

Although these three quotes all focus on mapping a variety of technological, environmental, spatial, social, and economic variables, they all focus on different sectors. The quotes from the interviewees working in regulatory directorates focus more on the mapping of the habitats, possible impacts, and possible mitigation, while the interviewee that comes from an energy company had their focus on the suitability of technology and economic sustainability. This might be a small sample pool of individuals, but the differences are prominent, nonetheless.

5.1.2.2. Stakeholder engagement

As stated above, the differences in what the interviewees focused on during the interviews show the need for diversity when planning an MSP. When asked who should be part of the MSP planning process, an interviewee said:

> *"It's really as simple as everyone having to join, everyone has to join. Yes, but maybe in the beginning you have to start with the grassroots as well as the big established and the scientists. So, then it is the scientists, oil and gas fisheries, and shipping that are perhaps the biggest and most essential." (*I3)

The quote highlights the need for diverse stakeholder participation when dealing with challenges related to environmental conservation and sustainable development. As the interviewee states "everyone has to join", this underlines the importance of inclusion, participation, and openness. This means drawing upon the expertise not only from public research or industry-based research and officials, to extend and include local communities, which have intricate knowledge of their own social dynamics and local environments. This is further promoted by interviewee 3 emphasizing the importance of including the "grassroot" – or local communities. Looking at how a challenge is perceived from the bottom up will give a clearer picture of what solution will work best over time (Curşeu & Schruijer, 2017, p. 115). While this quote does show the importance of engaging from the bottom up, it also acknowledges the need for bigger actors to be involved. More established industry actors and

regulation authorities, and scientist will have the academic weight and acquired knowledge to expand on the local knowledge.

If we break it down in different categories, local communities will be vital in providing knowledge of their social and economic dynamics, priorities, wishes and visions for the future, values, and how they might be impacted by legislation (Curșeu & Schruijer, 2017, p. 115). The scientists still play a central role in shaping evidence-based policies and strategies. Using their expertise, they provide the foundation for understanding complex challenges and issues and develop solutions (Curșeu & Schruijer, 2017, p. 115). Industry stakeholders come with the economic possibilities as well as in-depth technological knowledge (Curșeu & Schruijer, 2017, p. 115). They can provide knowledge to what technologies can be useful in what areas, while ensuring that the projects will be economically beneficial

While stakeholder involvement is essential to shape an MSP that will ensure some level of social, economic, and environmental sustainability, it is also important to address and acknowledge that this is not a straightforward process. Interests, agendas, and values among stakeholders are conflicting, and there are strong power imbalances among those stakeholders that will lend more weight to some knowledge claims that others. Therefore, some agendas will always be prioritised and deemed more 'legitimate' than others (Choi & Robertson, 2014, p. 497). The power imbalance can stem from many different sources. Usually it is the stakeholder that "adheres" most to the objective that will have the upper hand. An example of this is offshore wind development. The government want offshore wind implementation, that is the objective. The energy companies want to develop offshore wind in the areas designated by the government, they adhere the most to the objective. Fisheries does not want offshore wind development here as it interferes with their fishing routs. In this scenario the energy companies will be taken more into consideration as they adhere to the objective. However, collaboration, open discussions, and negotiations will help design solutions that recognize both sustainable practices and be economically beneficial long-term; but one should not be too naive, and we have to recognise that the road will be difficult.

"Of course, the authorities are the ones responsible for it, and they are liable for it. But yes, also the Institute of Marine Research, universities, research institutes and NINA, and others are the obvious actors. I also think that the industry should be heard and provide input." (I4)

The second quote from interviewee 4 shares similarities from interviewee 3, namely that there needs to be diversity when planning an MSP. However, there is a larger focus on the

government as a stakeholder. As the interviewee says, “they are responsible for it”. Indeed, when talking about the ocean areas of Norway, it is important to remember that these are not individuals’ property but governed and regulated by the Norwegian government. The government has a responsibility to make sure that the actions taken within its borders benefit their country and their citizens. They must therefore be an integral part of the development of an MSP.

5.2.Co-existence

The interviewees was asked how they would define co-existence in marine structures or operations. It became clear through the interviewees responses that there is not a common definition on co-existence.

> *“When everyone is somewhat dissatisfied that is when you've achieved co-existence.” (I3)*

The interviewee does paint a rather negative image of what co-existence is. However, the quote also addresses the nuances that presents themselves within co-existence, highlighting the challenge of a harmonious existence. The interviewee sheds light on the diverse perspectives that is needed to be able to co-exist. By expressing the notion that co-existence will manifest when everyone is dissatisfied, it points to the complexity of fostering consensus or unity between diverse interests and perspectives, also referred to as stakeholders.

Although sustainable co-existence is found in nature through dynamic equilibrium and ecological systems, designing man-made co-existence can be more of a challenge. In nature co-existence is governed by dynamic equilibrium, where a number of species co-exists within an ever-changing environment. The competition for resources, predation, and symbiotic relationships shapes the distribution and success of the species. This creates a delicate balance that changes over time. In man-made design there are several factors that needs to be considered when trying to achieve co-existence. Trying to obtain an equilibrium amidst complex and evolving circumstances involve efforts to address stakeholder grievances, mitigate imbalances and promote justice an inclusivity for all the stakeholders (Curșeu & Schruijer, 2017, p. 1).

The interviewee acknowledge the difficulty in accomplishing an equilibrium, stating that everybody have to be somewhat dissatisfied. The idea of dissatisfaction needing to be present

for the opportunity of achieving co-existence points to this interviewees belief that envisioning a conflict free co-existence is non obtainable. Although this definition of co-existence can be perceived as highly negative it can be important to see what opportunities this quote highlight.

The notion that "everyone have to be dissatisfied" does highlight one of the main tools when trying to obtain sustainable co-existence, namely communication. Having conflicts and disagreements is normal when different stakeholders have to share spaces and resources. However, these disagreements and conflicts can be used as a catalyst to better communication and discussion (Shucksmith & Kelly, 2014, p. 33). As all stakeholders wish to promote their views, ideas and agendas, communication and discussion is important to find solutions that respect and acknowledge their differences while finding common ground to be able to collaborate and find mutual benefits.

> *"It can quickly become somewhat of a theoretical issue in academia; there are different management systems. It can mean both establishing businesses in the same area, either at the same time or at different times, or it can involve considerations so as not to interfere with each other." (I1)*

Interviewee 1s quote does not necessarily go straight for the definition of co-existence, but rather highlights that there is a gap between academia and real life. The interviewee highlighted that they felt that it could quickly become a theoretical issue in academia. The fact that the interviewee does address this can allude to the lack of ownership over the term co-existence (Shucksmith & Kelly, 2014, p. 29). This is mirrored in the other interviews as well, where the interviewees did not have any solid or definite definition of what co-existence is in a marine setting. Lack of common language can be a challenge when working interdisciplinary, or transdisciplinary (Stephenson et al., 2019, p. 130). In issues that deal with co-existence, the stakeholder should in my opinion always be from different industries, academic bunkers, or organizations, to ensure that all stakeholder views get heard and evaluated. Having a common language to use in this setting is crucial to understand each other and avoid miscommunication and misunderstandings. It can also create a barrier between academia and industry, and local communities. Not having a common language when dealing

with co-existence issues is a problem. Where the responsibility lies in providing common definitions and facilitate communication, I don't know. It would need to be an interdisciplinary or transdisciplinary process to make sure that all stakeholders have their input. The lack of ownership to the word co-existence can also be due to lack of real-world examples. It can be difficult to understand what goes into co-existence if there are no good examples of it.

The interviewee also mentions the different management systems, or legislative systems. Not having legislation that covers the whole area for different sectors can pose a challenge as one piece of legislation can permit something that another would avoid. It also can create a hierarchy of importance. If one piece of legislation is prioritized more frequently than others it can create a bias that the one sector is more important than others and should be taken more in consideration when conducting projects in the shared space (Choi & Robertson, 2014, p. 497). Having different legislation for each sector does however point to the fact that co-existence in a marine setting is complex. It implies that there isn't a one-size-fits all solution and that trough groundwork is needed to obtain a sustainable co-existence.

Establishing new projects, or businesses, in the same area, either at the same time or at different times is usually the main challenge when talking about co-existence. The interviewee also mentions "consideration to not interfere with each other" which in my opinion does seem unachievable. Some considerations might be possible to accommodate, but the areas are limited, even with Norway's vast ocean areas, and different projects and businesses will need to occupy the same areas. The challenge here is once again the priority. Which business or project should be taken most into consideration? Which parts of sustainability should be prioritized? I will explore those themes later in the discussion.

> *"Co-existence for me? I'm not sure if there's a precise definition, but I suppose it must mean that different marine industries must be able to operate side by side, and that new marine industries, coastal industries, must find their place without displacing existing industries."* (I2)

The next quote given by interviewee 2 addresses some of the same concerns as interviewee 1. They both focus on the lack of common definition of the word co-existence and that their understanding of the term is that what shall be must does not disrupt what is. Although they both have the same focus, the difference in how it is worded is interesting. While interviewee 1 states that businesses are to be in the same are either at the same time or at different times, and then comments on mitigating interference, interviewee 2 states that they need to work side by side, and not displace existing industries. The wording of interviewee 2 does in my opinion appear more positive. The focus lies more on facilitating opportunities and conserving existing industries than the other quote.

The quote from interviewee 2 addresses the need to balance interests. By using the wording side by side, the interviewee shows the importance of co-existence in the context of marine industries with finding a balance between the industries and businesses. Balance can be obtained by considering the needs of existing industries such as fishing, shipping and petroleum and emerging industries such as renewable energy (Curșeu & Schruijer, 2017, p. 115). All industries have different requirements in order to be conducted. Industries such as petroleum production, oil rigs and bottom-fixed offshore wind are unmoveable installations. Fisheries are dependent on fish migration patterns and spawning grounds. While shipping does have more flexibility, they also have to take ocean currents, weather, and fuel-cost into consideration.

Balancing the interest of these industries can be a challenge and some solutions can be seen as theoretically easy. One example of this is between fisheries and renewable energy production, in theory we can set a boundary that new offshore wind instillations should not be put in fish migration paths. In practise the offshore wind installation is dependent on wind conditions, if these are in conflict with fish migration paths the theoretical boundary can hard to keep. This does also tie back to the quote given by interviewee 1 with consideration to legislative challenges. By being proactive in mitigating conflicts in planning processes there is the opportunity to create legislation or norms that can be beneficial for all industries in the long run (Stephenson et al., 2019, p. 130).

The quote also addresses the creation of space to grow. While interviewee 2 express the need for new industries not to displace existing industries it also highlight the need to create space to grow. These sentiments might present themselves as to opposing ideas, but they are equally important in a co-existence view. Allowing for new industries to emerge while conserving existing industries can be part of sustainable development. However, for the co-existence of

these new and established industries to be sustainable, the planning, mapping and execution must be managed with consideration to mitigation conflicts, protecting marine environment, conservation of biodiversity, as well as promoting responsible practices across all industries (Stephenson et al., 2019, p. 130). In other words, managing the marine resources and activities in such a way that ensures long-term resilience and viability.

6. Discussion

6.1. Why are the challenges and opportunities relevant?

The challenges presented above can paint a rather negative image of what lies before us. It is however important to understand that most of these challenges constitute the reality for the interviewees. This is their interpretation of what is important when considering what an MSP should include and look like, and what type of co-existence should be implemented. When we look at the first challenge of knowledge gap and lack of data sharing, it becomes clear that even though there are knowledge gaps that need to be addressed, there is also a lot of knowledge already available, and arguably enough to make some responsible decisions with regard to an MSP. Accepting the imperfect knowledge base is an opportunity to cooperate between different actors and create a more holistic view, also based on priorities, values, and include different ways of knowing, that would support a more open, inclusive and arguably sustainable approach to this issue (Kostal et al., 2022, p. 4). However, the current lack of dialogue, collaboration and sharing between different institutions shows us that this is not something that is readily available. Facilitation from a third party might be needed in order for the institutions to share their knowledge with each other (Kostal et al., 2022, p. 5).

If we look at the second challenge of economic challenges, it shows not only the current reality but also the expectation that is set today. The interviewees gave the impression that they could not realistically implement their ideal MSP due to lack of funding, and time allowances. The lack of funding to data collection endeavours, and the tight time restrictions in MSP development given by the government can be concerning (Stephenson et al., 2019, p. 134). This is also what the interviewees and other stakeholders currently must adhere to when dealing with development. The lack of economic focus and priority can signal the government does not take sustainable co-existence into consideration regarding MSP development. It can also signal the stakeholders and public that they do not wish to invest in this part of sustainable development, and that they might find it unimportant. Increasing economic resources and allow for a longer timeframe in development, can facilitate more extensive research and understanding of our ocean areas (Stephenson et al., 2019, p. 134). As well as signal increased importance and focus given to address wicked problems and find sustainable solutions, that puts co-existence forward.

Finally, the last challenge that I focussed on, about Norway's large marine area and the shared maritime borders, show why it can be complicated to map the Norwegian ocean areas and

ensure collaboration with neighbouring countries. Norway's large ocean areas require more resources to map and develop in order for implementation of an MSP than countries with smaller ocean areas, such as Belgium or the Netherlands. Not only in consideration to economics, but also in consideration to time and collaboration among stakeholders. As Norway has oceanic borders to many other countries it is also crucial to have great cooperation with these countries, and to streamline plans as to mitigate possible complications and have a holistic view on all ocean activities (Douvere, 2008, p. 764). Cross border collaboration and communication can be a challenge, as each country wishes to do what will be best for them. Differing motivations and opinions can create tension and delay plans.

When I examine my interview corpus for the opportunities for co-existence, the interviewees see potential in implementing an MSP and have a greater focus on co-existence in a marine setting. Indeed, the interviewees emphasize the importance of adopting a holistic view over the coastal and marine areas in Norway, in their ideal MSP situation. Better data acquisition and mapping of areas with transdisciplinary collaboration among institutions and actors is key, according to the interviewees. Further, credible and legitimate stakeholder engagement is of high importance to them, both as a way to inform and communicate about plans for the marine and coastal areas, but also as a deeper way to include important knowledge and values that should not be forgotten (Cash et al., 2003, p. 8086). Credible and legitimate stakeholder engagement contribute to the sustainability, robustness, and legitimacy of an MSP in Norway. Given the history of MSP in other countries, this focus on stakeholder engagement and participation comes as a stark contrast. The interviewees' perspectives, even if they see them as an ideal rather than an actionable reality right now, nevertheless inspire the direction that an MSP in Norway could take, and that would ensure a more sustainable approach.

So, in the light of the above-mentioned challenges and opportunities, what is possible? This is of course hard to tell, but my impression is that the interviewees think that they must adhere to what is currently happening, and not be too creative, and more open, participatory, transdisciplinary – this was seen as deeply desirable, but remained 'wishful thinking'. For instance, none of the interviewees seriously suggested larger, actionable systemic changes. This might be due to the questions that I posed. However, it gave me an indication that they generally adhere to the narrative that sustainability and co-existence are difficult to implement in practice, costly in terms of resources and time, and the details are overlooked in the current focus from the government. Also, there was this reservation that I observed throughout the interviews that they represent particular institutions, and therefore they shouldn't really have a

strong opinion on how things are conducted or how they progress. This in itself is a bit ironic: if the institutions are calling for co-existence but the people that make up these institutions do not enact measure for co-existence, who then is in charge of championing co-existence?

6.2. Changing expectations over what is feasible, important, and desirable?

The current expectation is probably most transparent in relation to offshore wind regulation. As stated in the background, the risk assessment set for development of offshore wind is vague. It is not as extensive as regulation on land, and there are nearly no firm and detailed requirements. This can potentially lead to significant mismanagement of the natural resources available to us, as there is no requirement to follow up on the impacts that the projects might cause, as well as no regulation legislation currently enforced (Douvere, 2008, p. 767).

The lack of defined requirements can be seen through the hearing process for the pre-qualification process for Southern North Sea II, where stakeholders sent their input. Going through the hearing inputs from this hearing process a clear pattern appeared. Directorates, organizations, and industries that are dealing with environmental issues and governance, all commented on environmental aspects they thought where missing from the prequalification requirements. The fist excerpt is from NVE, which is the Norwegian Water and Energy directorate.

> *"The sustainability criteria for Southern North Sea II and Utsira Nord should separate environmental and biodiversity considerations from the category of co-existence, as these aspects differ significantly from other elements within this category. By separating this as a new criterion, Environmental and Biodiversity, it will highlight the actor's understanding of the environmental values affected, as well as any mitigating measures and knowledge gaps that need to be addressed. This will not be adequately addressed with the number of pages outlined under co-existence"(NVE, 2023, p. 2)*

As they state in their hearing input, they would like to have environmental and biodiversity consideration as their own categories. Grouping together environmental and biodiversity considerations within co-existence, can demote the significance of these considerations. In my

experience environmental considerations and considerations that pertain to sustainability often are grouped together with other considerations. Environmental impact and consideration has not historically had the same focus and importance as it does now, and it can possibly be an intimidating area. The next two excerpt is from the Norwegian Directorate of Fisheries.

> *"There are significant knowledge gaps related to the impact of offshore wind on the marine ecosystem."(Fiskeridirektoratet, 2023, p. 1)*

> *"We also note that bird surveys are explicitly mentioned in the hearing, while fish and shellfish are not mentioned at all. The Norwegian Directorate of Fisheries believes there should be a criteria addressing biological surveys, where companies should account for the surveys they plan to conduct and the purposes of these surveys."(Fiskeridirektoratet, 2023, p. 1)*

In the first excerpt from The Norwegian Directorate of Fisheries they point out that there are significant knowledge gaps connected to offshore wind developments impact on marine ecosystems (Fiskeridirektoratet, 2023). By pointing this out they highlight the need for more data collection and research on this topic. By visualizing this in a public lasting document they too show the will to change the current expectation. They also call for more transparency and accountability in the second excerpt wanting companies to account for what surveys they are conducting, as well as the purpose of their surveys. Again, a will to change the set expectations, as The Norwegian Directorate of Fisheries are addressing the requirements they feel are missing.

The next excerpt is a collaborative hearing input from Renewables Norway, Institute of Marine Research, The Norwegian Fishermen's Association, Fiskebåt, DNV, Offshore Norge and WWF World Wildlife Fund. They are calling for government inclusion and accountability.

> *"There is a need for early government-controlled preliminary surveys/mapping of nature, which can ensure a solid foundation for*

pre-qualification/qualification - and later also impact assessments, licensing, and development."(Fornybar Norge et al., 2023)

This excerpt differs from the previous, not only because of it being a collaborative input, but also that all of these stakeholders agree on systems change. Getting the government involved, and as the accountable actor to manage and assess offshore wind development, is systems change. As mentioned in the background there is no current legislation that puts this as the responsibility of the government. The government does not give the impression that this is something they are willing to do on their own. None of the stakeholders behind this input hold any regulatory power but are central in research endeavours pertaining to environmental and biodiversity considerations in a marine setting. The fact that they are calling for government involvement and responsibility is significant. These stakeholders usually have direct contact and impact in development processes and who produce research that have influence in regulation development. Another stakeholder that is of significance, and actually have regulatory powers is the Norwegian Environment Agency.

"The surveys described under 'basic surveys' are limited to technical and geological surveys such as seismic testing. However, to plan the development of offshore wind in a way that minimizes impact on vulnerable nature, there is also a need for surveys of biodiversity on the seabed. This involves mapping of seabed habitats such as coral reefs, kelp forests, and sponge communities." *(Miljødirektoratet, 2023)*

As stated in the excerpt above the Norwegian Environment Agency is also missing biodiversity surveys from the requirements given in prequalification process. That a stakeholder that has regulatory and supervisory powers is stating that there is a need for augmented survey requirements that takes ecological and biological considerations into account is showing once again that there is a willingness to change the current expectations. So far, I have only presented excerpts from actors that would like ecological and biological considerations as part of the requirements. When I looked into the actors that where part of the bidding process either directly like Equinor, or more indirectly, like Hydro Energi AS who

were part of Equinor's bidding group, there were no mentions of ecological or biological considerations (Hydro Energi AS, 2023). The actors that where bidding only gave feedback in their hearing inputs that they thought the bidding process and requirements were satisfactory. This is not surprising. Actors or stakeholder who will benefit from the regulatory requirements as is, will most lightly not question them. However, some of the stakeholders surprised me in their responses. Industri Energi, which is a union for industry workers, particularly within oil and gas, said this in their hearing input.

> *"For the pre-qualification of Southern North Sea II, Industri Energi believes that considerations such as ripple effects, environment, and health, safety, and environment (HSE) should be given particular weight."(Industri Energi, 2022)*

> *"For Industri Energi, it is important that the ambition of 3000 MW is realized in Southern North Sea II quickly so that we get more power and industrial development."(Industri Energi, 2022)*

The excerpts show that Industri Energi not only focus on the power output and industrial development, but also emphasises the need to focus on ripple effects and HSE. So, while they have some of the same priorities as associating stakeholders, they do also wish for change and a broader consideration in the prequalification process.

As these excerpts from the hearing inputs show, there is not a lack of will to change expectations over what is feasible and implement ideas of what is important and desirable. Many stakeholders point out the lack of environmental and biodiversity considerations, as well as follow up on possible environmental impacts. Rather, there might be some lack of support mechanisms and skills to implement such ideas.

6.2.1. The role of the individual in sustainability work

Through the interviews I asked the interviewees if they personally could contribute to sustainable change within their organization. This proved to be a challenging question to get answered. Two of my interviewees answered that they themselves could contribute to sustainable changes through their jobs and institutions, and that the work they conducted did

in fact involve sustainability. When asked if they had the freedom and support to pursue sustainable ideas and concepts from their workplace, it was met with scepticism. The last two interviewees expressed that they could initiate sustainable ideas in their workplace. When asked if they had examples of such ideas, one mentioned increased recycling in-house and cycling to work. Although these are both sustainable changes and ideas that were implemented in their workplace, their impact is limited. The last interviewee said they have the opportunity to pursue sustainable ideas related to their field of work and had previously conducted a project focusing on marine sustainability with the support from their workplace. Whilst all of the interviewees did express that they could in some way have a sustainable impact through their organization, the scopes where very different.

I got the impression that they implemented sustainability measures that followed the set expectations within their organizations. What I found interesting was that some of my interviewees work in the same organizations that is setting new expectations in the hearing process. The organizations are pushing for systems change and are trying to alter the set expectations outward but does not give the impression of encouraging employees implement that change in practice. However, putting a participatory MSP that focusses on long-term sustainability is not straightforward and needs to be facilitated (Stephenson et al., 2019, p. 134). The knowledge needed to bridge the gap between expectations and practice seem to be lacking. So, where does the responsibility lie in encouraging and supporting this process to happen?

6.3. What to include in an MSP and MSP process?

As previously mentioned, I asked my interviewees what they would ideally include in an MSP. Through their responses we looked at the challenges and opportunities they saw with development and implementation of an MSP. We will now briefly look at what aspects they saw as important to include in an MSP that focuses on sustainable co-existence and in the MSP development process. But first we will look at the need for having adequate legislation.

6.3.1. Legislation

I have previously in the background of this thesis gone through how the regulation process is today. I also mentioned how the only currently conducted offshore wind project was regulated by the Petroleum Act instead of the Ocean Energy Act, which specifically is made for offshore renewable energy production, due to its close ties to the petroleum sector. In order to avoid

this happening in the future, a possible MSP needs to be statutory and holistic (Zuercher et al., 2022, p. 5) . Having a law that will regulate not only offshore wind, but the whole of Norwegian ocean areas is a challenge, but not impossible. The situation today is that each marine sector, such as fishing, shipping, petroleum, renewable energy, etc. each have their own regulations. There is no holistic plan for the co-existence of these sectors, and no plan or risk assessment of the possible impacts they might have on each other. This does not reflect the sustainability view in this thesis, and definitely not the sustainability definition given by the Brundtland commission.

6.3.2. Ecological and biodiversity consideration, and data collection

Having a thorough understanding of the area you are considering is important to promote sustainable co-existence (Douvere, 2008, p. 766). Thorough surveys of Norway's ocean areas with particular focus on ecological and biodiversity considerations would be one of the first steps. The data collected through these surveys can be used as a baseline. The baseline offers a starting point, which is important when it comes to measure possible impacts or conservation efforts. As interviewee 3 said.

> *"You have to know what's actually out there. How is it affected by what you want to do, and last but not least this with cumulative effects, i.e. when you start doing several different things, how the impact will be." (I3)*

The need to know what is "out there" and how it might get affected are requirements that should be part of MSP legislation. Through the pre-qualification hearing process this became apparent. Many stakeholders are not satisfied with the current requirements and there is a need to put the wanted requirements into legislation. Having data collection and risk assessment should be set with objective requirements within regulations and should be managed and surveyed through the legislation.

Data collection is not only about mapping and categorization but is also important with consideration to knowledge, and ways of knowing. Although data collection can help expand

knowledge, it is the researched and categorized data material that will be considered knowledge (Welbourne, 2001, p. 72).

6.3.3. Stakeholder engagement.

Including diverse stakeholders in the planning and development phases of the MSP process is important to develop a holistic and sustainable view. Nurturing stakeholder engagement will lead can possibly also lead the process to be more transparent and accepted (Curșeu & Schruijer, 2017, p. 118). It also allows for a communal ownership and a deeper understanding of the plan outcome. Combining inherent,

> *"Knowledge, perhaps, is the most crucial aspect—knowledge, overview, and coordination." (I3)*

Only allowing for stakeholder involvement in the planning and development phases of the MSP will not be sufficient. When asked how they would implement the MSP and who they would involve the interviewees gave differing answers, but where still clear that there needed to be a mix of stakeholders.

> *"It's really as simple as everyone have to join, everyone has to be considered." (I3)*

> *"The Institute of Marine Research, universities, research institutes and NINA, and others are the obvious actors. I also think that the industry should be heard and provide input." (I4)*

They also agreed that the overall responsibility for managing the areas et in the MSP where the responsibility of the government.

> *"It must be the national authorities that are responsible for it." (I2)*

"Of course, the authorities are the ones responsible for it, and they are liable for it." (I4)

As the interviewees are stating, the government should be responsible and liable for the MSP and MSP process. Having the government be responsible for the MSP and MSP process and development, includes them being responsible for stakeholder engagements as well. It is therefore imperative that the requirements for stakeholder engagement is present in possible legislation. Having statutory requirements for the government's involvement as well as stakeholder engagement requirements is important for compliance.

6.3.4. Implementation

Implementation of an MSP is nowhere near straightforward, as we have seen throughout this thesis. To ensure the sustainability, longevity an relevance of such MSP, there needs to be constant and iterative revisions and change, to adapt to the changing environment, legal frameworks, policy priorities and socio-economic concerns (Douvere, 2008, p. 766). I asked one of my interviewees about possible implementation of an MSP they stated that it should be gradually implemented, first in smaller areas, then larger after evaluation of its positive and negative impacts. They then added that they thought an MSP should be managed and surveyed the same way it should be developed.

"Fieldwork, workshops, working groups, yes, definitely yes. And maybe not too often, but it should be relatively frequent. Because if you only have a meeting once a year, then there could be a lot of information that either gets forgotten or doesn't get included. So, there should be regular meetings. Maybe not everyone meets at the same time, it could be that you have groupings that meet separately, but you need to have an ongoing dialogue." (I3)

The response shows the ever-changing aspects, as it highlight the need for continuous dialogue and transdisciplinary collaborations, across disciplines and sectors.

6.4. Transdisciplinary cooperation

Some practical aspects can help facilitate transdisciplinary cooperation between stakeholders, namely the structured sharing of knowledge, and the allocation of funds. At the end of this chapter, we will look at why cooperation is important to create holistic plans and try to mitigate future risk.

6.4.1. Structured sharing of knowledge

As stated in the challenge of lack of data sharing, I think there is a need for a third party to structure and facilitate knowledge exchange and cooperation between research, industry, policy, legislation and other actors (Cash et al., 2003, p. 8090). This could be a responsibility coming from higher levels of governance; with the Ministry of Fisheries elaborating tools to aid the understanding of co-existence and MSP. A crucial challenge when it comes to co-existence is the lack of shared language and understanding over specific issues. Therefore, a tool to support co-existence could include key definitions and terminologies used by different actors to avoid misunderstandings and provide an even footing for all involved parties (Curșeu & Schruijer, 2017, p. 118). In addition, such tool could also help map the ways of knowing, the values, the intentions, the priorities, and the sense of what is important, for the different stakeholders, when talking about MSP and co-existence. This could also a way to support and structure stakeholder engagement (Curșeu & Schruijer, 2017, p. 118).

Nurturing stakeholder engagement would most certainly lead to the development towards holistic MSP due to the varied inputs, viewpoints, values, and ways of knowing (Stephenson et al., 2019, p. 131). Of course, having more input can pose a challenge as it leads to more complex (and uncertain) problem definitions. This might be why the Norwegian government has not yet put an effort into ensuring some kind of transdisciplinary processes, and the involvement, engagement, and participation of stakeholders around the definition, framing and designing of MSP and co-existence mechanisms. But it could also be that the directorates and ministries lack the know-how of complex data-sharing combined with stakeholder nurturing. Ignorance of optimal solutions and pathways is a public concern and could also explain why stakeholders find themselves “grumbling in the boat” and not enabled to spark a new conversation of credible ways forward for transdisciplinary and holistic MSP (Gee & Mikkelsen, 2023, p. 10).

6.4.2. Allocation of funds

Having dedicated funds to ensure data collection and sharing across disciplines and sectors is important. One of the interviewees claimed that they had been mandated to undertake data collection, mapping, and risk assessment of ocean areas for the government with the aim to provide thorough data for future development. They did however also inform me that this ended in 2014 and that they have since not been contacted to do similar work. This could suggest that the government is not prioritizing data collection for marine projects, or that they would rather outsource the mapping and risk assessment to the stakeholders such as fisheries, energy companies, independent researchers, shipping, etc. This would be fine, if the government gave incentives to the stakeholders to map and risk assess. The reality is that stakeholders will map what is important for them. Fisheries will map migration patterns, breeding grounds and fishing hotspots. They might also collect data that pertains to water salinity, ocean temperatures, currents etc. Energy companies will collect data on wind conditions, bird migration patterns, etc. Shipping and petroleum industries will similarly collect data that is relevant for their industry (Shucksmith & Kelly, 2014, p. 33). With limited funds from the government to collect more data, the stakeholders have no reason to do so. I only see one possibility for collaboration between institutions in data collection, currently, and that is available funds, to create a shared data base where different types of data are assembled. As stated previously, data collection is expensive. By cooperating on data collection several stakeholders could potentially save money. Instead of several boats going out to collect different data from the same area, they could have one or two boats collecting data for them all. I do however have the impression from my interviews that this is not commonly practiced as of now.

6.4.3. Holistic plans and lower future risk

As stated above, ensuring meaningful stakeholder engagement and broader, transdisciplinary cooperation across the various actors in marine and coastal areas will lead to a more holistic development of MSP (Stephenson et al., 2019, p. 131). This is in no way straightforward, as having different viewpoints, ways of knowing, and values being taken into account and evaluated (according to commonly established criteria of quality) (Shucksmith & Kelly, 2014, p. 31) might uncover additional conflicts as well as uncertainties in the knowledge base If one is aware of the open-endedness and ‘messiness’ of transdisciplinary collaborations, and if one ensures that collaboration and dialogue is implemented right at the beginning, during framing, designing and planning processes, one can arrive at an MSP that is more inclusive, holistic,

and therefore arguably sustainable (Stephenson et al., 2019, p. 131) . The importance here is to be aware, as said, that transdisciplinary, collaborative processes are not linear, that uncertainties remain, and that one must take actions in the light of the best currently available knowledge (Funtowicz & Ravetz, 1993, p. 755). In addition, it is important to see this collaborative process around designing and implementing the MSP as an iterative, dialogic, flexible process, that can be revised in the light of new knowledge, or new perspectives being brought in (Stephenson et al., 2019, p. 130). This strongly depends on the willingness of governing bodies to engage stakeholders in a meaningfully, deeply transdisciplinary way, as well as the development of the skills needed to facilitation of such plans. The essence of co-existence and sustainability is in my opinion just that: to allow for holistic plans to be made, while knowing that these have to be flexible enough to be revised according to the changing and uncertain environmental, social, and economic context. Having flexible plan that can meet the everchanging requirements and variables will help mitigate future risk.

7. Conclusion

So, coming back to our overarching question, to what extent can marine spatial planning help support sustainable co-existence in the Norwegian context?

Developing and implementing a statutory MSP for Norwegian ocean areas will help address the gap in current legislation, where the details of multi-sectoral governance of coastal and marine areas around Norway are still left blurry and without clear guidance in many ways. Combining regulations for all marine activities can promote sustainable co-existence, in particular by considering the various sectorial challenges and impacts, assemble cross-disciplinary knowledge, and making sure that priorities, expectations and values of the different sectors are discussed. The current systems and requirements are neglectful to ecological and biodiversity considerations and does not promote stakeholder engagement. There is no real direction or ambition in the regulations regarding sustainable co-existence. The lack of direction and ambition can be problematic with increasing activity in ocean areas. Like my interviews have shown, stakeholders are pushing for change and want a much more integrated, holistic, transdisciplinary process around the governance of marine and coastal areas in Norway.

With such large-scale projects and ambitions as implementing an MSP for Norway, I would argue that the government, i.e. The Norwegian Directorate of Fisheries or The Norwegian Environment Agency, needs to have a central role in supporting transdisciplinary processes around creating such MSP. Funding for data collection in marine areas should be increased and dedicated to get a better understanding of what ecological and biodiversity considerations need to be taken when developing of an MSP. Governing bodies should also make sure that a possible MSP is statutory, as well as control the compliance. In this thesis it has become clear that to achieve an MSP that focuses on sustainable co-existence, there needs to be in-depth transdisciplinary practices, encouraged by governing bodies by means of funds targeted at stakeholder engagement.

If such top-down encouragement was clearer, the stakeholders would probably endorse the responsibility to promote sustainable co-existence within their own organizations, institutions, and industries, and develop and nurture the skills that are needed to bridge the gap between changing expectations and current practices. In particular, stakeholders might want to prioritise collaborating on knowledge exchange and data sharing to ensure that they are building holistic knowledge around sustainable co-existence. An MSP will have an important

impact on sustainable co-existence if it includes relevant, legitimate, and salient knowledge. By integrating technological feasibility, economic viability, and stakeholder perspectives into spatial planning processes, decision-makers can promote holistic and sustainable utilization of ocean resources for the benefit of present and future generations.

Based on the findings in this thesis I am of the opinion that an MSP would be most relevant if developed through transdisciplinary practices. Although there are significant challenges to that, that the interviewees have themselves pointed out, the input of a broad array of stakeholders is the only way to achieve a holistic and iterative MSP, that includes and addresses knowledge gaps, uncertainties, risks, and changing contexts, values, and priorities. Norway has a history of disregarding stakeholder interests and has often gone for a "ask forgiveness, not permission" strategy when conduction renewable energy projects. Changing this mindset is possible but will need a concerted effort from both government and stakeholders to promote sustainable co-existence.

Literature

Ang, F., & Passel, S. V. (2012). Beyond the Environmentalist's Paradox and the Debate on Weak versus Strong Sustainability. *Bioscience*, *62*(3), 251-259. https://doi.org/10.1525/bio.2012.62.3.6

Arestis, P., & Sawyer, M. (2023). *Prospects and Policies for Global Sustainable Recovery: Promoting Environmental and Economic Sustainability* (1 ed.). Cham: Springer International Publishing AG. https://doi.org/10.1007/978-3-031-19256-2

Arksey, H., & Knight, P. T. (1999). *Interviewing for social scientists : an introductory resource with examples*. Sage.

Assefa, G., & Frostell, B. (2007). Social sustainability and social acceptance in technology assessment: A case study of energy technologies. *Technology in society*, *29*(1), 63-78. https://doi.org/10.1016/j.techsoc.2006.10.007

Austrheim, E., Dahlgren, T. G., Handberg, Ø. N., Hestetun, J. T., Haugland, L. M., Aslesen, S. R., & Navrud, S. (2022). Wind and Fisheries: Desktop Study on the Coexistence Between Offshore Wind and Fisheries in Sothern North Sea II. In *Wind and Fisheries: Desktop Study on the Coexistence Between Offshore Wind and Fisheries in Sothern North Sea II*: NORCE Norwegian Research Centre.

Banela, M., Kyvelou, S. S., & Kitsiou, D. (2024). Mapping and Assessing Cultural Ecosystem Services to Inform Maritime Spatial Planning: A Systematic Review. *Heritage*, *7*(2), 697-736. https://doi.org/10.3390/heritage7020035

Barentswatch. (2012, 24.11.2023). *Norges maritime grenser*. barentswatch.no. Retrieved 04.02 from https://www.barentswatch.no/artikler/Norges-maritime-grenser/

Bendiksby, T., & NTB. (2024). Ella Marie Hætta Isaksen og fosenaktivistene i fjor. In. Fosna-folket.no: Fosna-Folket.

Berg-Nordlie, M., & Tvedt, K. A. (2024). Alta-saken. In *Store norske leksikon*: snl.no.

Braendstrup, L. (n.d.). *Celebrating 30 years of offshore adventure*. Siemens Gamesa. Retrieved 01.02 from https://www.siemensgamesa.com/en-int/explore/journal/2021/08/vindeby-30-anniversary-offshore

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, *3*(2), 77-101. https://doi.org/10.1191/1478088706qp063oa

Briggs, S., & Hudson, M. D. (2013). Determination of significance in Ecological Impact Assessment: Past change, current practice and future improvements. *Environmental impact assessment review*, *38*, 16-25. https://doi.org/10.1016/j.eiar.2012.04.003

Brundtland, G. H. (1987). *Our common future*. Oxford University Press. https://bibsys-almaprimo.hosted.exlibrisgroup.com/permalink/f/1cruloh/BIBSYS_ILS71499939980002201

Carew, A. L., & Wickson, F. (2010). The TD Wheel: A heuristic to shape, support and evaluate transdisciplinary research. *Futures : the journal of policy, planning and futures studies*, *42*(10), 1146-1155. https://doi.org/10.1016/j.futures.2010.04.025

Cash, D. W., Clark, W. C., Alcock, F., Dickson, N. M., Eckley, N., Guston, D. H., Jäger, J., & Mitchell, R. B. (2003). Knowledge Systems for Sustainable Development. *Proc Natl Acad Sci U S A*, *100*(14), 8086-8091. https://doi.org/10.1073/pnas.1231332100

Choi, T., & Robertson, P. J. (2014). Deliberation and Decision in Collaborative Governance: A Simulation of Approaches to Mitigate Power Imbalance. *Journal of public administration research and theory*, *24*(2), 495-518. https://doi.org/10.1093/jopart/mut003

Curșeu, P. L., & Schruijer, S. G. L. (2017). Stakeholder diversity and the comprehensiveness of sustainability decisions: the role of collaboration and conflict. *Current opinion in environmental sustainability*, *28*, 114-120. https://doi.org/10.1016/j.cosust.2017.09.007

Dong, A. (2012). The knowns and unknowns in research. *Artificial intelligence for engineering design, analysis and manufacturing*, *26*(1), 11-12. https://doi.org/10.1017/S0890060411000333

Douvere, F. (2008). The importance of marine spatial planning in advancing ecosystem-based sea use management. *Marine policy*, *32*(5), 762-771. https://doi.org/10.1016/j.marpol.2008.03.021

Dovers, S. R., & Handmer, J. W. (1992). Uncertainty, sustainability and change. *Global environmental change*, *2*(4), 262-276. https://doi.org/10.1016/0959-3780(92)90044-8

Edwards, M. G. (2021). The growth paradox, sustainable development, and business strategy. *Business strategy and the environment*, *30*(7), 3079-3094. https://doi.org/10.1002/bse.2790

Energidepatementet, & Statsministerens kontor. (2024). *Ventyr SN II AS har vunnet auksjonen om tildeling av prosjektområde for havvind i Sørlige Nordsjø II* https://www.regjeringen.no/no/aktuelt/ventyr-nordsjo-ii-har-vunnet-auksjonen-om-tildeling-av-prosjektomrade-for-havvind-i-sorlige-nordsjo-ii/id3030559/

Equinor. (2023). *The world's largest floating offshore wind farm officially opened*. Retrieved 01.02 from https://www.equinor.com/news/20230823-hywind-tampen-officially-opened

Equinor. (n.d.). *Our approach to sustainability*. Equinor. Retrieved 01.02 from https://www.equinor.com/sustainability/our-approach

Equinor, Petoro, OMV, ExxonMobil, Idemitsu, DEA Norge, & Energi., V. (2019). *Hywind Tampen PUD del 2- Konsekvensutredning*. file:///C:/Users/annaf/Downloads/equinor-hywind-tampen-pud-del-II-konsekvensutredning-mars-2019%20(1).pdf

European Commission, Executive Agency for Small Medium-sized Enterprises, Ooms, E., Onwona Ansong, J., Lukic, I., Schultz-Zehden, A., Gee, K., & Passerello, C. (2019). *Addressing conflicting spatial demands in MSP – Considerations for MSP planners – Final technical study*. Publications Office. https://doi.org/doi/10.2826/151447

European Parliament, & European Council. (2014). *Directive 2014/89/EU of the European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning* (L 257/135). O. J. o. t. E. Union. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0089

Fanghol, T. A. (2021). Politikk, makt og forskning på historisk jordomseiling. Retrieved 13.04.2024, from https://www.khrono.no/politikk-makt-og-forskning-pa-historisk-jordomseiling/599102

Fiskeridirektoratet. (2023). *Høring av kvalitative kriterier og støtteordning for Utsira Nord* https://www.regjeringen.no/contentassets/cede3ff147e14737bbc98bd0404bb669/fiskeridirektoratet.pdf?uid=Fiskeridirektoratet

Fornybar Norge, Havforskningsinstituttet, Norges Fiskarlag, Fiskebåt, DNV, Offshore Norge, & WWF. (2023). *Innspill fra Fornybar Norge, Havforskningsinstituttet, Norges Fiskarlag, Fiskebåt, DNV, Offshore*

Norge og WWF Verdens naturfond om tildeling av første fase av Sørlige Nordsjø II og Utsira Nord https://www.regjeringen.no/contentassets/cede3ff147e14737bbc98bd0404bb669/fornybar-norge-havforskningsinstituttet-norges-fiskarlag-fiskebat-dnv-offshore-norge-og-wwf.pdf?uid=Fornybar_Norge,_Havforskningsinstituttet,_Norges_Fiskarlag,_Fiskeb%C3%A5t,_DNV,_Offshore_Norge_og_WWF

Funtowicz, S. O., & Ravetz, J. R. (1993). Science for the post-normal age. *Futures : the journal of policy, planning and futures studies*, *25*(7), 739-755. https://doi.org/10.1016/0016-3287(93)90022-L

Gee, K., & Mikkelsen, E. (2023). *Understanding different types of conflicts and coexistence in marine spatial planning (MSP)*. https://ices-library.figshare.com/articles/report/Understanding_different_types_of_conflicts_and_coexistence_in_marine_spatial_planning_MSP_/24598734

Gormley, K. S. G., Hull, A. D., Porter, J. S., Bell, M. C., & Sanderson, W. G. (2015). Adaptive management, international co-operation and planning for marine conservation hotspots in a changing climate. *Marine policy*, *53*, 54-66. https://doi.org/10.1016/j.marpol.2014.11.017

Green, R., & Vasilakos, N. (2011). The economics of offshore wind. *Energy policy*, *39*(2), 496-502. https://doi.org/10.1016/j.enpol.2010.10.011

Grønmo, S. (2016). *Samfunnsvitenskapelige metoder* (2. utg. ed.). Fagbokforl.

Havenergilova. (2010). *Lov om fornybar energiproduksjon til havs (havenergilova)* (LOV-2010-06-04-21). Lovdata. https://lovdata.no/dokument/NL/lov/2010-06-04-21?q=havenergilova

Hogset, H., Alteren, J., Jæger, B., & Straume, S. (2022). Det vanskelige bærekraftsbegrepet. In. https://doi.org/https://doi.org/10.18261/9788215062938-2022-01
Horst, W. J. R., & Webber, M. M. (1973). Dilemmas in a General Theory of Planning. *Policy sciences*, *4*(2), 155-169. https://doi.org/10.1007/BF01405730
Hydro Energi AS. (2023). *Høring av prekvalifiseringskriterier og auksjonsmodell for Sørlige Nordsjø II fase 1* https://www.regjeringen.no/no/dokumenter/horing-av-prekvalifiseringskriterier-og-auksjonsmodell-for-sorlige-nordsjo-ii/id2949763/?uid=0b8982be-b048-4fc5-a215-b272e033a3fe
Industri Energi. (2022). *Høring- prekvalifiseringskriterier og auksjonsmodell for Sørlige Nordsjø II* https://www.regjeringen.no/no/dokumenter/horing-av-prekvalifiseringskriterier-og-auksjonsmodell-for-sorlige-nordsjo-ii/id2949763/?uid=61306a39-9cda-40a2-9454-bcd9014237f8
IPBES. (2019). *Global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*. https://zenodo.org/records/6417333
Jørgensen, B. H., & Madsen, P. H. (2021). *Mapping the known and unknowns of wind energy* (DTU International Energy Report 2021: Perspectives on Wind Energy, Issue. D. W. Energy. https://backend.orbit.dtu.dk/ws/portalfiles/portal/268853179/Chapter_2_DTU_International_Energy_Report_2021.pdf
Kaiser, M., & Gluckman, P. (2023). *Looking at the future of transdisciplinarity*.
Kartverket. (2012). Maritime Grenser: soner ved Fastlands-Norge. In: Kartverket.
Kartverket. (2015). Norges maritime grenser. In.
Klein, J. T. (2020). Sustainability and Collaboration: Crossdisciplinary and Cross-Sector Horizons. *Sustainability (Basel, Switzerland)*, *12*(4), 1515. https://doi.org/10.3390/su12041515
Klima- og miljødepartementet. (2023). *Prop. 1 S (2023-2024)* https://www.regjeringen.no/contentassets/6b83f50e55a54ba78e161758c9198c37/nn-no/pdfs/prp202320240001kldddpdfs.pdf
Kostal, J., Brooks, B. W., Smith, C. A., & Devineni, G. (2022). O data, where art thou? Revolutionizing data sharing to advance our sustainability goals through smart chemical innovation. *iScience*, *25*(11), 105256-105256. https://doi.org/10.1016/j.isci.2022.105256
Leech, B. L. (2002). Asking Questions: Techniques for Semistructured Interviews. *APSC*, *35*(4), 665-668. https://doi.org/10.1017/S1049096502001129
Miljødirektoratet. (2023). *Høringsuttalelse til høring av prekvalifiseringskriterier og auksjonsmodell for Sørlige Nordsjø II* https://www.regjeringen.no/no/dokumenter/horing-av-prekvalifiseringskriterier-og-auksjonsmodell-for-sorlige-nordsjo-ii/id2949763/?uid=24888e44-2eed-4971-b725-9f85b91cc6b2
Miljødirektoratet. (n.d.). *Miljømål 5.1.* miljostatus.miljodirketoratet.no. Retrieved 01.04 from https://miljostatus.miljodirektoratet.no/miljomal/klima/miljomal-5.1
Miljødirektoratet, Enova, Statens vegvesen, Kystverket, Landbruksdirektoratet, & NVE. (2020). Klimakur 2030. Retrieved 01.02.2030, from https://www.miljodirektoratet.no/globalassets/publikasjoner/m1625/m1625.pdf#page=417
Morf, A., Moodie, J., Gee, K., Giacometti, A., Kull, M., Piwowarczyk, J., Schiele, K., Zaucha, J., Kellecioglu, I., Luttmann, A., & Strand, H. (2019). Towards sustainability of marine governance: Challenges and enablers for stakeholder integration in transboundary marine spatial planning in the Baltic Sea. *Ocean & coastal management*, *177*, 200-212. https://doi.org/10.1016/j.ocecoaman.2019.04.009
Norsk petroleum. (n.d.). *Produksjon og eksport av olje- og gass*. Norsk petroleum. Retrieved 04.03 from https://www.norskpetroleum.no/produksjon-og-eksport/eksport-av-olje-og-gass/
NVE. (2023). *Høringssvar fra NVE - forslag til prekvalifiseringskriterier og auksjonsmodell for Sørlige Nordsjø II.pdf* https://www.regjeringen.no/no/dokumenter/horing-av-prekvalifiseringskriterier-og-auksjonsmodell-for-sorlige-nordsjo-ii/id2949763/?uid=19eaa4cd-4fcd-44cd-9943-4bfa25e07d97

Næss, A. The Shallow and the Deep, Long-Range Ecology Movement: A Summary. In (pp. 2263-2269). Dordrecht: Springer Netherlands. https://doi.org/10.1007/978-1-4020-4519-6_85
Office of the Prime Minister, Ministry of Energy, Finance., M. o., & Ministry of Trade, I. a. F. (2022). *Ambitious offshore wind initiative* https://www.regjeringen.no/en/aktuelt/ambitious-offshore-wind-power-initiative/id2912297/
Offshore Norge, Norges Fiskarlag, & Fiskebåt. (2023). *Dreiebok Anbefalt praksis for sameksistens mellom fiskeri og havvind*. Offshore Norge. Retrieved 12.12 from https://www.offshorenorge.no/contentassets/2a9710414f0349b99647e685bc431cd7/dreiebok---anbefalt-praksis-for-sameksistens-mellom-fiskeri-og-havvind---05.12.23.pdf#page=6&zoom=100,53,432
Olje- og energidepartementet. (2022). *Høringsnotat om tildeling av fase én av Sørlige Nordsjø II* https://www.regjeringen.no/contentassets/c28fb5b140f94abba054a418464927ec/horingsnotat-sorlige-nordsjo-ii.pdf
Orsted. (2022). *Hornsea 2, the world's largest windfarm enters full operation*. Orsted. Retrieved 11.12 from https://orsted.com/en/media/news/2022/08/20220831559011
Orwell, G. (1962). *The road to Wigan Pier*. Penguin Books.
Ostrom, E. (2015). *Governing the commons : the evolution of institutions for collective action* (Canto classics edition. ed.). Cambridge University Press.
Pettorelli, N., Graham, N. A. J., Seddon, N., Maria da Cunha Bustamante, M., Lowton, M. J., Sutherland, W. J., Koldewey, H. J., Prentice, H. C., & Barlow, J. (2021). Time to integrate global climate change and biodiversity science-policy agendas. *The Journal of applied ecology*, *58*(11), 2384-2393. https://doi.org/10.1111/1365-2664.13985
Pınarbaşı, K., Galparsoro, I., Depellegrin, D., Bald, J., Pérez-Morán, G., & Borja, Á. (2019). A modelling approach for offshore wind farm feasibility with respect to ecosystem-based marine spatial planning. *Sci Total Environ*, *667*, 306-317. https://doi.org/10.1016/j.scitotenv.2019.02.268
Plan-og byggningsloven. (2008). *Lov om planlegging og byggesaksbehandling* (LOV-2008-06-27-71). Lovdata. https://lovdata.no/dokument/NL/lov/2008-06-27-71?q=pbl
Ramírez., L., Fraile., D., & Brindley., G. (2021). *Offshore wind in Europe, Key trends and statistics 2020*. https://windeurope.org/intelligence-platform/product/offshore-wind-in-europe-key-trends-and-statistics-2020/
Regjeringen. (n.d.). *Vindkraft til havs- tidslinje*. Regjeringen. https://www.regjeringen.no/no/tema/energi/vindkraft-til-havs/id2873850/
Ryen, A. (2002). *Det kvalitative intervjuet : fra vitenskapsteori til feltarbeid*. Fagbokforl.
Shucksmith, R. J., & Kelly, C. (2014). Data collection and mapping – Principles, processes and application in marine spatial planning. *Marine policy*, *50*, 27-33. https://doi.org/10.1016/j.marpol.2014.05.006
Sire, E., & Offshore Norge. (2023). Audun Maråk, Hildegunn T. Blindheim og Kåre Heggebø under konferansen Fisk og havvind på Gardermoen tirsdag. In. fiskarlaget.no.
Skogvang, S. F. (2024). Fosen-saken. In *Store norske leksikon*: snl.no.
Solow, R. (1993). An almost practical step toward sustainability. *Resources policy*, *19*(3), 162-172. https://doi.org/10.1016/0301-4207(93)90001-4
Steffen, W., Grinevald, J., Crutzen, P., & McNeill, J. (2011). The Anthropocene; conceptual and historical perspectives. *Proc. R. Soc. A*, *369*(1938), 842-867. https://doi.org/10.1098/rsta.2010.0327
Stelzenmüller, V., Coll, M., Cormier, R., Mazaris, A. D., Pascual, M., Loiseau, C., Claudet, J., Katsanevakis, S., Gissi, E., Evagelopoulos, A., Rumes, B., Degraer, S., Ojaveer, H., Moller, T., Giménez, J., Piroddi, C., Markantonatou, V., & Dimitriadis, C. (2020). Operationalizing risk-based cumulative effect assessments in the marine environment. *Sci Total Environ*, *724*, 138118-138118. https://doi.org/10.1016/j.scitotenv.2020.138118
Stephenson, R. L., Hobday, A. J., Cvitanovic, C., Alexander, K. A., Begg, G. A., Bustamante, R. H., Dunstan, P. K., Frusher, S., Fudge, M., Fulton, E. A., Haward, M., Macleod, C., McDonald, J., Nash, K. L., Ogier, E., Pecl, G., Plagányi, É. E., van Putten, I., Smith, T., & Ward, T. M. (2019). A

practical framework for implementing and evaluating integrated management of marine activities. *Ocean & coastal management*, *177*, 127-138. https://doi.org/10.1016/j.ocecoaman.2019.04.008

Thorsnæs, G. (2024). Norges geografi. In *Store Norske Leksikon*. snl.no.

University of Auckland. (n.d.). *UnderstandingTA*. University of Auckland,. Retrieved 10.12 from https://www.thematicanalysis.net/understanding-ta/

Warner, J. (2020). Prosperity without Growth: Foundations for the Economy of Tomorrow. In (Vol. 25, pp. 231-233). Abingdon: Abingdon: Taylor & Francis Ltd.

Welbourne, M. (2001). *Knowledge*. Acumen Publishing.

Wickson, F., Carew, A. L., & Russell, A. W. (2006). Transdisciplinary research: characteristics, quandaries and quality. *Futures : the journal of policy, planning and futures studies*, *38*(9), 1046-1059. https://doi.org/10.1016/j.futures.2006.02.011

Wynne, B. (1992). Uncertainty and environmental learning: Reconceiving science and policy in the preventive paradigm. *Global environmental change*, *2*(2), 111-127. https://doi.org/10.1016/0959-3780(92)90017-2

Zaucha, J., Zaucha, J., & Gee, K. (2019). *Maritime Spatial Planning : past, present, future* (1st 2019. ed.). Springer Nature.

Zuercher, R., Ban, N. C., Flannery, W., Guerry, A. D., Halpern, B. S., Magris, R. A., Mahajan, S. L., Motzer, N., Spalding, A. K., Stelzenmüller, V., & Kramer, J. G. (2022). Enabling conditions for effective marine spatial planning. *Marine policy*, *143*, 105141. https://doi.org/10.1016/j.marpol.2022.105141

Appendix 1

Samtykkeskjema for deltakelse i intervju

Dette er et spørsmål om du ønsker å delta som respondent i intervju til et Masterprosjekt.

Formål

Oppgaven vil se på hvordan man bærekraftig kan forvalte havvind i marine områder på norsk kontinentalsokkel, med fokus på sameksistensen mellom havvind og marineaktører og marine økosystemer. Datainnsamlingen og forskningen vil være fokusert på hvordan man kan balansere bærekraftig utvikling og bevaring av marine økosystemer

Hva innebærer det for deg å delta?

Dersom du ønsker å delta innebærer det deltakelse i et anonymt intervju, hvor innholdet vil benyttes i besvarelsen av problemstillingen. Veilederen vil få innsyn i intervjuets innhold, men informasjonene vil være anonymisert og kan ikke føre til identifikasjon av deg.

Det er frivillig å delta

Deltakelse i intervjuet er helt frivillig. Dersom du ønsker å delta kan du når som helst trekke samtykket ditt, men setter pris på om det gjøres før 15.01.2024. Hvis du trekker samtykket, vil all informasjon og alle personopplysninger slettes umiddelbart.

Personvern – Hva blir samlet inn og hvordan oppbevares det?

Intervjuet vil bli tatt opp på lydopptaker. Det vil også bli hentet inn informasjon om navn og stillingstittel.

Intervjuets innhold og oppgaven som helhet vil være anonymisert med mindre noe annet er avtalt. Personopplysningene behandles konfidensielt og i samsvar med personvernregelverket. Notater og opptak fra intervjuet oppbevares utilgjengelig for andre. Notatene fra intervjuet og opptak slettes etter at oppgaven er levert og godkjent. Oppgaven skal leveres mai 2024.

Hvor kan jeg finne ut mer?

Dersom du har spørsmål til oppgaven eller ønsker ytterligere informasjon kan du kontakte

meg på: Anna Furhovden, xxxxxxxx eller anfur4023@uib.no

Samtykkeerklæring

Jeg har mottatt og forstått informasjonen om prosjektet, og fått anledning til å stille spørsmål.

Jeg samtykker til:

Å delta som respondent i intervju. Jeg samtykker til at mine svar kan oppbevares og behandles frem til prosjektet er avsluttet.

Dato	Sted	Signatur av prosjektdeltaker

Appendix 2

Intervju guide

Generelt:

1. Kan du kort presentere deg selv? Hva er yrket ditt, og hva jobber du med?
    a. Arbeidssted/Yrkestittel, Ansvarsområder

Sameksistens:

2. Hvordan vil du definere sameksistens i marine strukturer/operasjoner?
    a. Hva betyr sameksistens for deg? Mellom hvilke aktiviteter, og hva innebærer sameksistens når det gjelder samarbeid, synergieffekter, beslutninger, osv.?
    b. Hva er etter din mening de viktigste mulighetene ved sameksistens i marine strukturer/operasjoner?
    c. Hva ser du på som de viktigste utfordringene ved sameksistens i marine strukturer/operasjoner?
3. Hva tror du er nødvendig for å oppnå bærekraftige marine operasjoner?
    a. Finnes det spesifikke tilnærminger eller verktøy du mener er avgjørende?
    b. Er en marin arealplan et slikt verktøy?
        i. Ser du det som et viktig verktøy på sikt, 5-10 år?

MAP/MSP (Marin areal plan/ Marine spatial plan):

4. Hvordan tror du en marin arealplan vil påvirke sameksistens?
    a. Hva mener du den bør den inkludere?
    b. Hvem bør være involvert i utviklingen? Og hvordan? (Når, hvor ofte, hvordan – enkle møter eller feltarbeid, workshops, arbeidsgrupper?)
    c. Politisk styrt, forskningsbasert?
        i. Og hvis en blanding av begge, hvordan bør politikk og akademisk kunnskap balanseres og kombineres i en slik plan?
5. Ved utvikling av en MSP, hva mener du en konsekvensvurdering bør omfatte?

a. Miljøpåvirkning? Biologisk, kjemisk og/eller påvirkning på lokalsamfunn?
b. Kompensasjon for inntektstap for fiskere?
c. Bør den i begynnelsen testes i stor skala eller i mindre områder?
d. Hva er, etter din mening, de viktigste kunnskapshullene som kan hindre at en MRP blir relevant/anvendbar?

Individuell påvirkning:

6. Kan du personlig bidra til å innføre bærekraftige endringer i organisasjonen din?
    a. På hvilken måte?
7. Er det noe annet du ønsker å legge til?